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<td>Lahore</td>
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Government of U.K. put complete lockdown on 23 March after recommendations of the SAGE, U.K. (Scientific advisory group of emergencies UK) which resulted in devastating impacts on the public personal and social lives and collapsed the economy to 14% which is equal to three centuries.

Serious mishandling of the health care system deprived of millions of patients waiting for their investigations and treatment. Two third of the elderly people in the nursing homes died due to COVID 19 related or other ongoing health issues.

Vast number of elderly patients admitted in U.K. hospitals were transferred to the nursing and elderly care homes as a result of total lockdown and expected admission of the patients due to with the COVID -19 in the hospitals as advised by the SAGE.

But it turned out to be “once in a century evidence fiasco “with devastating effects on the public personal & social lives, business, education, health and health services and economy.

NHS England sent alerts to all the Country wide Trusts and health organisation to over 1000 Trusts & Private hospitals in U.K.

Surprisingly the rate of admission was not dramatically as large as expected and advised by the SAGE group of scientists in U.K. resulting 60-70 beds in all hospitals and trusts lying vacant which resulted a serious waste of resources and time.

This has been detrimental to the millions of sick and unwell patients waiting for their investigations and treatments which was kept on hold during the period of the lockdown.

According to the NHS figures the waiting list of patients waiting for their investigations and treatments in January 2020 was 2.7 million patients and out of that 780,000 patients were on 18/52 wait rule in U.K.

Due to lockdown and restriction on public figures of patients waiting for their investigations and treatment is 5 millions in U.K. and NHS would require 5 years to clear the lot with the good infra structure.

The infection fatality rate, remarkably, Dr John Ioannidis says for people younger than age 45, the infection fatality rate is ZERO !!! And, for people age 45 to 70, the infection fatality rate is probably about 0.05-0.3%, historically similar to other seasonal respiratory viruses.

However, fatality rate for frail nursing home patients may be as high as 25%.

Test positive / negative people RT-PCR, blood tests , CT scan

False impression of test positive who are actually not infected unless they get serious symptoms which requires isolation to admission depending on their symptoms. RT-PCR has 60-80% of false positive and 40-50 % false negative. It means false positive may not be true positive and false negative may not be true negatives.

We now live in a polarized society of two types of people. On one hand we have people obediently watching the nightly news who believe what they hear and see on the television. These people are fearful of viruses and want government protection with “security measures” that coincidentally abolish constitutional rights and liberties.

On the other hand, there are people who are not fearful, and who do not watch the nightly news. These people do not want government protection from a virus with the far reaching effects on their personal, family and employment lives.

These people want the government to stop interfering in their right to work and make a living to support their families. They want to have their constitutional rights and liberties restored.

According to the Centers for Disease Control and Prevention (CDC), there were 2,813,503 registered deaths in the United States in 2017. The age-adjusted death rate, which accounts for the aging population, is 731.9 deaths per 100,000 people in the U.S. This is an increase of 0.4% over 2016’s death rate. 4 Jul 2019.

Health services have been treating only Corona Virus (COVID-19) and nothing else which caused the neglect of the patients other than corona virus for their investigations and treatment. That why, I think the recent pandemic has not been addressed properly.

Treatement options for COVID-19 should have been debated and spoken about among the medical colleagues and experts.

The governments and world leaders across the world should have had a round table debate and discussion with the experienced health professionals to find the best possible way of treatment, guidelines and SOPs for the public health issues.

Face masks are helpful while someone is coughing or have severe chest infection to protect others. They are also useful during surgical or medical procedures by the health professionals to protect patients. Face masks are most beneficial during the pandemic Covid-19.

There were few number of patients with COVID-19 require ITU admission and ventilations.
I believe on equality, justice, mutual respect, equal opportunity regardless of colour, race, religion, language, individuality. Nobody should be discriminated on the basis of rich or poor with abundant or limited resources. Many people are underprivileged and in disadvantaged but we need to support them in their difficult time. We should be standing on the basis of the humanity without any monetary or political gain. We are here neither to play down the virus nor any political gain but we are here to look into the far reaching effects of the virus and lockdown causing serious atrocities across the world. We need to reassure public in UK and across the world to reassure, support their health, employments to reduce poverty, recommence business and trade to boast the crippling economy and students to get back to their school to resume their education. We all are born equal from Adam, all are brothers and sisters. We have to protect everyone.

Online education, online shopping, online medical treatment, online business, online congresses and online meetings, online college and universities are preferable mode in this senerio. Mishandling of the recent COVID-19 pandemics in the world resulted in serious health, economical crisis, social and mental issues due to the lockdown. A critical approach for future learning is necessary to learn a good lesson. It’s the duty of the world leaders, governments, politicians and the health professionals to get public out of overwhelming fear, anxiety and depression in the given circumstances. I appreciate brave men and women and the health professionals standing up for their freedom, liberty and fundamental across the world. If we are worried about the mortality rate from a virus, just think about this and compare with the above figures which reflects the mortality rate every year.
Clinical Presentation and Evaluation of Risk Factors in Acute Ischemic Stroke Patients Presented to MMC Mardan

Muhammad Abbas, Shahzeb, Jehandad Khan, Sarmad Raza and Jamal Nasir

ABSTRACT

Objective: Stroke is extremely common in our set up, it is associated with high risk of mortality, morbidity and permanent disability but very little is known about it by the general public in a developing country like Pakistan. So the main objective of the study was to find out the clinical presentation and the risk factors associated with acute ischemic stroke and to know about the general public awareness about stroke.

Study Design: Descriptive /cross-sectional study

Place and Duration of Study: This study was conducted at the Medical Units of Mardan Medical Complex (M.M.C), Mardan from July 2019 to December 2019.

Materials and Methods: Adult 183 male and female patients of acute ischemic stroke admitted through emergency and medical OPD in medical units of MMC were included in study after taking an informed verbal consent from them. Following detailed history and clinical examination they were subjected to relevant investigations and CT brain. Patients with finding of bleed on CT and those having venous infarct were excluded.

Results: Hyperlipidemias, hypertension, diabetes and smoking were the major risk factors causing ischemic stroke in our sample of patients. Other risk factors given in detail below were also present, atrial fibrillation was found to be common risk factor in elderly population. 24% of patients presented with re stroke.

Conclusion: It was concluded that majority of patients were unaware of the risk factors causing stroke, so if we as a professional not only treat them but also educate them the incidence of stroke can be considerably reduced in society.

Key Words: Ischemic stroke, risk factors of ischemic stroke, stroke and diabetes.

INTRODUCTION

Stroke is a leading cause of death and disability throughout the world and causes a considerable burden due to its mortality, morbidity and permanent disability. It is one of the commonest conditions and a serious public health problem encountered in medical units of our set up. Despite the high seriousness of disease ordinary people know very little about the clinical presentation and associated risk factors causing it. So the purpose of this study was to evaluate the risk factors, clinical presentation of ischemic stroke among the adult patients and then to educate them properly regarding their disease so that they can lead a normal life and are prevented from re-stroke.

It not only adversely influences the life of the patients but also has got worse effects on their families and caretakers. Data from global burden of diseases, injuries and risk factors study group (GBD) of 2010 has declared stroke as a major cause of morbidity and mortality in developing countries. Due to advancement in the management of stroke and control of risk factors causing it mortality from stroke have been reduced. The advance treatment and management such as the use of intravenous tissue type plasminogen activator and certain other interventional management in certain cases of acute ischemic stroke, the effective prevention still remains the best management of stroke. Greater the duration of exposure to risk factors of stroke higher the chance of getting it. Effectively controlling these risk factors not only reduces the occurrence or re-occurrence of stroke but also the mortality rates. 77% of strokes are primary so controlling the risk factors highlights the importance of primary prevention. People living a healthy life style have 80% less chance of developing stroke than those who do not. Risk factors for developing stroke are modifiable which can be controlled and permanent which are uncontrollable. The non-modifiable or permanent risk factors include sex, old age, race, heredity and ethnicity. Modifiable risk factors include hypertension, diabetes, dyslipidemia, atrial fibrillation, smoking, alcohol.
MATERIALS AND METHODS

This was a cross-sectional descriptive study including 183 patients presented to us with acute ischemic stroke of twenty-four hours or of less duration. Adult patients of both genders were included in study, ranging between 15 to 90 years of age. Those who sustained stroke due bleed or venous infarct were excluded. Verbally informed consent was followed by written consent from the patients or their attendants. Approval of the study was taken from local ethical committee of the hospital. Detailed history was followed by clinical examination; history taking was mainly focus on:

**Diabetes Mellitus:** patients either on oral hypoglycemic drugs / insulin or fasting blood sugar more than 126 mg / dl or random blood sugar of 200 mg /dl or more on two occasions or were having HbA1c 6.5 % or more8,9,10,11.

**Hyperlipidemia:** either patient was already on statins / fibrates, or total cholesterol equal to or more than 200 mg /dl, LDL cholesterol equal to or more than 100 mg /dl, HDL cholesterol less than 40 mg /dl in men or less than 50 mg / dl in women or serum triglyceride equal to or more than 150 mg / dl9,12.

**Hypertension:** patients were already on anti-hypertensive or BP > 140/90 on two measurements8,9,10,11.

**Obesity:** BMI > 30 kg/m2, while central obesity was taken as waist circumference of more than 102 cm in men and 88 cm in women10.

**Smoker:** current smokers were who smoked two cigarettes / day for men and for women it was one cigarette / day since 1 year and ex-smokers were taken as patients who were not smoking since 1 year13.

Routine base line investigations including FBC, LFTs, RFTs, PT/INR, daily FBS, RBS, HbA1c, ECG, LIPID PROFILE were done on all patients. Radiological assessment of the patients included CT brain, echocardiogram, carotid Doppler and certain immunological test such as ANF, Anti ds DNA, antiphospholipid, protein s and c, anti thrombin11, and factor v Leiden were also done in few selected cases.

RESULTS

These were the different clinical presentation of stroke depending upon the area of brain involved. Headache, hemi paresis /hemiplegia and speech disturbance were the common clinical presentation of acute ischemic stroke. Facial palsy was also presented in 87 cases and was mainly of UMN type though LMN type also occurs in few cases of brainstem infarct. Elderly patients presented with convulsion along with stroke.

In this study majority of patients were male mainly illiterate belonging to lower socioeconomic groups, it was less common in educated people and younger age group of less than 45 years of age as evident in tables. HTN, DM, hyperlipidemias, smoking and atrial fibrillation (mainly in elderly) were the common risk factors to be found associated with stroke in this study. Relative percentage of other risk factors is given in table.

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<th>Table No.1: Clinical Presentation of Stroke</th>
<th>No. of Patients (N=183)</th>
<th>% Age</th>
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<tr>
<td>Headache</td>
<td>131</td>
<td>71.58%</td>
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<tr>
<td>Speech disturbance</td>
<td>104</td>
<td>56.83%</td>
</tr>
<tr>
<td>Hemiparesis / Hemiplegia</td>
<td>99</td>
<td>54.10%</td>
</tr>
<tr>
<td>Unconsciousness/Coma</td>
<td>15</td>
<td>8.20%</td>
</tr>
<tr>
<td>Confessional State</td>
<td>71</td>
<td>38.80%</td>
</tr>
<tr>
<td>Facial Palsy</td>
<td>87</td>
<td>47.54%</td>
</tr>
<tr>
<td>Convulsion/Seizure</td>
<td>19</td>
<td>10.38%</td>
</tr>
<tr>
<td>Visual Field Defect</td>
<td>6</td>
<td>3.28%</td>
</tr>
<tr>
<td>Ataxia/Gait abnormality</td>
<td>24</td>
<td>13.11%</td>
</tr>
<tr>
<td>Vertigo/dizziness</td>
<td>24</td>
<td>13.11%</td>
</tr>
<tr>
<td>Diplopia</td>
<td>10</td>
<td>5.46%</td>
</tr>
<tr>
<td>Monoparesis/Monoplegia</td>
<td>4</td>
<td>2.19%</td>
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<tr>
<td>Dysphagia</td>
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<td>19.67%</td>
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<th>Table No.2: Individual Characteristics of Stroke Patients</th>
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<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 45</td>
<td>13</td>
<td>7.10%</td>
</tr>
<tr>
<td>45 – 60</td>
<td>122</td>
<td>66.67%</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>48</td>
<td>26.23%</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>129</td>
<td>70.49%</td>
</tr>
<tr>
<td>Female</td>
<td>54</td>
<td>29.51%</td>
</tr>
<tr>
<td>Educational Qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>87</td>
<td>47.54%</td>
</tr>
<tr>
<td>Only able to Read &amp; Write</td>
<td>77</td>
<td>42.08%</td>
</tr>
<tr>
<td>Higher Secondary School (10-12 Classes)</td>
<td>11</td>
<td>6.01%</td>
</tr>
<tr>
<td>Graduation or Above</td>
<td>8</td>
<td>4.37%</td>
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Table No.3: Risk Factors in Individuals with Stroke (N=183)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Number</th>
<th>%Age</th>
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<tbody>
<tr>
<td>Hyperlipidemia</td>
<td>112</td>
<td>61.20%</td>
</tr>
<tr>
<td>HTN</td>
<td>110</td>
<td>60.11%</td>
</tr>
<tr>
<td>DM</td>
<td>76</td>
<td>41.53%</td>
</tr>
<tr>
<td>Smoking</td>
<td>69</td>
<td>37.70%</td>
</tr>
<tr>
<td>Atrial Fibrillation</td>
<td>52</td>
<td>28.42%</td>
</tr>
<tr>
<td>Re-Stroke</td>
<td>44</td>
<td>24.04%</td>
</tr>
<tr>
<td>Obesity</td>
<td>25</td>
<td>13.66%</td>
</tr>
<tr>
<td>History of TIA</td>
<td>13</td>
<td>7.10%</td>
</tr>
<tr>
<td>Family History</td>
<td>11</td>
<td>6.01%</td>
</tr>
<tr>
<td>Carotid Stenosis</td>
<td>10</td>
<td>5.46%</td>
</tr>
<tr>
<td>Cardiac Emboli</td>
<td>9</td>
<td>4.92%</td>
</tr>
<tr>
<td>Stress</td>
<td>7</td>
<td>3.83%</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>3</td>
<td>1.64%</td>
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Figure No.2: Risk factors in individuals with stroke

DISCUSSION

This study included 183 adult patients ranging from 15 years to 90 years of age with mean age of 57.40. 129 male and 54 female patients making 70.49% and 29.5% respectively of the sample studied. This is in accordance with the several studies in the past which also demonstrated high prevalence of stroke in males than in females. Protective role of female hormones, high level of exposure to stressful conditions and also higher incidence of smoking in males may account for this. Our study demonstrated that the incidence of ischemic stroke increases with advancing age. It was found in this study that under the age of 45 the incidence of ischemic stroke was 7.1%, between 45-60 years of age it was 66.66% and in patients above 60 years of age it was 26.22%. A linear relationship between ischemic stroke and age was also demonstrated by marwat et al and Grau et al.

Hypertension was found to be a common risk factor for ischemic stroke and was found in 60.1% of patients. Several studies done in the past also demonstrated hypertension as a common risk factor of ischemic stroke. This may be mainly due to high prevalence of essential hypertension in our society and also high blood pressure co exists with diabetes mellitus and smoking. This is further compounded by non-compliance with anti-hypertensive drugs mainly due to economic reasons and also due to low literacy rates in our set up. There is a linear relationship between HTN and stroke and a study showed a reduction of 10 mm of Hg in blood pressure was associated with 33% reduction in stroke risk.

Hyperlipidemia was found to be another common risk factor associated with stroke and was present in 60.2% of cases in our study. This was considerably higher than the study done by Grau et al who found its association with ischemic stroke in 35.1% of cases in his study, while it was slightly higher than El Tallawi et al who demonstrated it in 54.21% of cases in his study. Grau et al conducted their study in 2001 at that time the junk fast food was not as common as it is now days that may be the reason for less percentage of hyperlipidemia in his study as compared to El Tallawi et al who conducted their study in 2015 and ours in 2020. The risk of stroke can be reduced by treating hyperlipidemias with statins.

Diabetes was the third common risk factor associated with ischemic stroke in our study and was found in 41.53% of the sample studied. El Tallawi et al found this risk factor in their study in 54.2% of cases, while Essa et al found this risk factor to be associated in their sample studied in 66.8% of cases. People becoming more aware of diabetes and its management and this may be the reason for low percentage of diabetes in our study than the above mentioned studies done in past. Coagulation factors, insulin levels are increased in diabetes both of which accounts for causing microangiopathic stroke and is also responsible for accelerating atherosclerotic process in large cerebral arteries and leading to macroangiopathic stroke.

Diabetes is also associated with HTN in majority of cases and this may have got an additive effect with it in causing ischemic stroke.

Smoking was found in our study in 37.7% of cases. Association of smoking with atherosclerosis is known since long. Framingham study showed the risk of stroke in male smokers was 2.3 and in female smokers it was 3.1 times more than in nonsmokers. It also concluded that heavy smokers have double risk of stroke when compared with light smokers. When a smoker abstains from smoking for 5 years the risk of stroke returns to that of nonsmokers level. Shinton found smoking as a risk factor in his study in 55% of cases, which was considerably higher than our study. This is a good point meaning that people are becoming more aware of hazardous effects of smoking and it is decreasing among them.

Atrial fibrillation was found to be present in 28.41% of cases as a risk factor for ischemic stroke in our study which is comparable to the study done by Soliman et al. Majority of stroke patients secondary to atrial fibrillation in our study were elderly and were having...
lone atrial fibrillation, though few cases of rheumatic heart disease were also found mainly in young patients. 24% of patients in our study presented to us with re-stroke, which is nearly equal to the study done by Altafi who found it in 26% of cases. Majority of patients with re-stroke were non-compliant with medicines mainly due to socioeconomic reasons and low literacy rates of our country. Overall incidence of stroke in our study was higher among illiterate people than those who have attained higher school/inter level education while it was extremely low among graduates.

CONCLUSION

Clinical presentation of stroke in our study was similar to the other studies done in the past. Common clinical presentation was headache and motor symptoms (speech disturbance and motor weakness of one half of body). Majority of the patients in this study were uneducated middle aged male belonging to lower socioeconomic class. Hypertension, hyperlipidemias, diabetes, smoking and atrial fibrillation were the common risk factors associated with stroke. Most of the patients with diabetes, HTN, were non-compliant with medicines mainly due to illiteracy and socioeconomic reasons. Therefore, a large-scale community based health education should be started, (mainly taking help from social media) in which ordinary people should be educated regarding clinical features of stroke including the warning signs manifested as T.I.A and the risk factors which can cause stroke so that risk factors can be effectively controlled. This will help to control the occurrence and prognosis both of stroke.

Author’s Contribution:
Concept & Design of Study: Muhammad Abbas
Drafting: Sarmad Raza
Data Analysis: Jehandad Khan, Shahzeb, Jamal Nasir
Revisiting Critically: Muhammad Abbas, Shahzeb
Final Approval of version: Muhammad Abbas

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Diagnostic Value of Magnetic Resonance Imaging (MRI) in Morbidly Adherent Placenta, Taking Surgical Findings as Gold Standard

Abdul Sattar¹, Humaira Bashir², Saeeda Rana³ and Sadia Anjum¹

ABSTRACT

Objective: To evaluate the diagnostic accuracy of Magnetic Resonance Imaging in diagnosis of morbidly adherent placenta, comparing with surgical findings.

Study Design: Comparative study.

Place and Duration of Study: This study was conducted at the Radiology Department of Nishtar Medical Teaching Hospital from Jan, 2019 to Jan, 2020.

Materials and Methods: Total 77 patients with clinical suspicion of morbidly adherent placenta having age between 18-38 years were included. Patients with history of more than one cesarean section, antepartum hemorrhage and contra-indications to magnetic resonance imaging were excluded. All the patients were under went MRI pelvis with 1.5 Tesla MRI Achiva scanning system using multiplanner multi-echo imaging. MRI findings were recorded as positive and negative for placenta accreta. MRI findings were correlated with operative findings. Using SPSS-18, data was analyzed and diagnostic accuracy, positive predictive value, negative predictive value, sensitivity and specificity were calculated.

Results: 77 patients were included in study according to inclusion criteria. Patients mean age was 26.95±4.05 years. MRI was true positive for 25 and false positive for 3 patients. True negatives were 19 and false negative were only 3 patients. Diagnostic accuracy, positive predictive value (PPV), negative predictive value (NPV), sensitivity and specificity of MRI were 87.01%, 88.37%, 85.29 %, 88.37% and 85.29% respectively.

Conclusion: MRI is a new non-invasive diagnostic modality with significantly high accuracy in diagnosis of morbid adherence of placenta.

Key Words: MRI, Morbidly adherent placenta, imaging modality, sensitivity.


INTRODUCTION

Morbid adherence of placenta occurs due to a defect in decidua basalis resulting in abnormal invasion of placental tissue into uterus. Morbid adherence is classified as placenta accrete (reaching myometrium), placenta increta (into myometrium) and placenta percreta (through myometrium).¹ Risk factors of morbid adherence of placenta includes Placenta Previa, increasing number of deliveries by previous C-sections and higher maternal age at deliveries.²

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Prevalence of morbid adherence of placenta has increased to 69% in developed countries due to delay in child bearing and increased in trends of C-Sections.³

The frequency of morbid adherence of placenta in the presence of Placenta Previa increases from 24% after one C-Section to 67% after four or more C-sections.⁴

Very important complication of morbid adherence of placenta is massive hemorrhage at the time of delivery, so accurate antenatal diagnosis of morbid adherence has significant impact on morbidity and mortality that needs early preparation of surgical team for a complicated delivery. Accurate antenatal diagnosis is also essential for appropriate counseling and surgical planning.⁵

Definite diagnosis depends on the visualization of chorionic villi embedded in the myometrium with absent decidua. Radiologically ultrasonography and MRI are the diagnostic tests for evaluation of morbid adherence of placenta. Traditionally ultrasound is used as a screening tool for patients with risk factors, but definite diagnosis is made with histopathology.⁶

MR imaging is indicated when placenta is implanted posteriorly or when sonographic findings are equivocal.
MR imaging can better define areas of abnormal implantation, degree of invasion and ultimately can change surgical management planning and should be used routinely. Rationale of our study was to determine the diagnostic accuracy of MRI in morbid adherence of placenta but also these particular patients can be provided with an accurate diagnostic modality for screening of placenta accreta which will help the surgeons to make accurate management steps to decrease the maternal morbidity and mortality.

MATERIALS AND METHODS

Study was conducted at Radiology Department of Nishtar Medical Teaching Hospital, Punjab, Pakistan including 77 patients from Jan, 2019 to Jan, 2020. Patients mean age, gestational age & parity were collected. Patients with history of more than one cesarean section, antepartum hemorrhage and contraindications to magnetic resonance imaging were excluded. MRI pelvis of all patients was done with 1.5 Tesla MRI Achiva scanning system using multiplanner multi-echo imaging. MRI findings were recorded as positive and negative for placenta accreta. MRI findings were correlated with surgical findings. Using SPSS-20, data was analyzed and diagnostic accuracy, positive predictive value, negative predictive value, sensitivity and specificity were calculated.

Effect modifier like age, gestational age, BMI and parity were controlled by stratification. Chi-square test was applied post stratification and p-value ≤0.05 was considered as significant.

RESULTS

Total 77 patients fulfilling inclusion criteria were included. Patients mean age was 26.95±4.05 years with range of 18-38 years. Mean gestational age was 37.57±1.85 weeks. Mean parity was 3.75±0.87. Mean BMI was 29.55±2.15.

MRI was true positive for 25 and false positive for 3 patients. True negatives were 19 and false negative were only 3 patients.

Diagnostic accuracy, positive predictive value (PPV), negative predictive value (NPV). sensitivity and specificity of MRI were 87.01%, 88.37%, 85.29 %, 88.37%, and 85.29% respectively.

Post stratification association of outcome with age, gestational age, BMI and parity were calculated using chi square test considered p≤0.05 as significant. The results showed significant association with gender, age and duration of gestation.

Table No. 1: Diagnostic Accuracy of MRI in Evaluation of Morbidly Adherent Placenta Taking Surgical Findings as Gold Standard (n=77)

<table>
<thead>
<tr>
<th>MRI Findings</th>
<th>Operative Findings</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Positive</td>
<td>True positive (a)</td>
<td>False positive (b)</td>
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<td></td>
<td>38 (49.35%)</td>
<td>5 (6.49%)</td>
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<tr>
<td>Negative</td>
<td>False negative (c)</td>
<td>True negative (d)</td>
</tr>
<tr>
<td></td>
<td>5 (6.49%)</td>
<td>29 (37.66%)</td>
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<tr>
<td>Total</td>
<td>a + c = 43</td>
<td>b + d = 34</td>
</tr>
<tr>
<td></td>
<td>(55.84%)</td>
<td>(44.16%)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>= True +ve / (True +ve + True -ve) x 100 = 87.01%</td>
<td></td>
</tr>
<tr>
<td>PPV</td>
<td>= True +ve / (True +ve + False +ve) x 100 =88.37%</td>
<td></td>
</tr>
<tr>
<td>NPV</td>
<td>= True -ve / (True -ve + False -ve) x 100 = 85.29%</td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>= True +ve / (True +ve + False -ve) x 100 = 88.37%</td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>= True -ve / (True -ve + False +ve) x 100 = 85.29%</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Placenta is responsible for the nutritive, respiratory and excretory functions of the fetus in pregnancy. Morbid adherence of placenta (MAP) increases the morbidity and mortality of both mother and fetus due to severe postpartum hemorrhage with possible multi-organ failure.

One third to one half of all emergency hysterectomies are performed due to morbid adherence of placenta. Previous C-section deliveries increases the risk to 3% for first delivery to 40% and 65% for the third and fifth deliveries respectively. Placenta Previa is another major risk factor of morbid adherence. Antenatal sonography is the first line investigation for diagnosis of morbid adherence of placenta (MAP) with high sensitivity and specificity reaching up to 85.9% and 88.4% respectively. However posterior placement of placenta is difficult to evaluate by ultrasound, where Magnetic Resonance Imaging (MRI) is consider the preferred diagnostic modality. Specific signs of abnormal placental implantation are reported in literature.

We have conducted this study to determine the diagnostic accuracy of MRI in cases of morbid adherence of placenta. MRI is considered as significant. The results showed significant association with gender, age and duration of gestation.
adherence of placenta considering operative findings as gold standard.

In our study, age range was 18-38 years with mean age of 26.95±4.05 years. Majority of patients were between 29-38 years of age. In MRI positive patients, 25 were true positive while three were false positive. Among 22 MRI negative patients, 19 were true negative and three were false negative. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of MRI in diagnosing morbidity adhering placenta, taking intra-operative findings as gold standard was 88.37%, 85.29%, 88.37%, 85.29% and 87.01% respectively.

According to Berkley EM et al has found the sensitivity and specificity of MRI in diagnosing morbid adherence of placenta is 84.14% and 80.34% respectively, however Warshak CR et al has shown the sensitivity and specificity of 88.45% and 100% respectively. Many signs have been demonstrated in literature regarding morbid adherence of placenta, using the clinical evidence at the time of C-Section as the reference standard. A recent study of 28 patients using the clinical findings as the reference standard that an association of characteristic signs strongly indicates placental invasion by MRI. 12

Three meta-analysis have considered the accuracy of ultrasound in diagnosing invasive placental implantation, the use of MRI and the comparison of ultrasound and MRI. According to D'Antonio et al the sensitivity and specificity of ultrasound and MRI were 90.72%, 96.90% and 94.40%, 84.40% respectively. These meta-analyses showed good accuracy of ultrasound and MRI in the diagnosis of placental invasion. 5

According to Lim et al abnormal implantation was correctly identified by MRI in seven out of nine patients with two false positive and placenta accreta in three out of four patients (one false negative). Toe et al found that the most useful MRI findings for the diagnosis of placenta accreta were heterogeneous signals with in the placental tissue and dark intraplacental bands on T2W imaging. Accurate diagnosis of morbid adherence in antenatal period is very important to reduced maternal morbidity and mortality. Sonography has an important role in the diagnosis of placenta accreta in which placental lacunae is the highly sensitive sonographic sign with 93% sensitivity that is conformed with Color Doppler Ultrasound. 13,14,15

MRI is important to differentiate placenta accreta, increta and percreta. According to Teo THet MRI has reported sensitivity and specificity of 90% and 99% respectively. In a study by Elhawary TM et al 30.7% patient were for positive and 69.3% were negative for placenta accreta on MRI. He concluded the sensitivity, specificity, positive predictive value, negative predictive value of MRI as 88.8%, 86.8%, 66.6% and 96.2% respectively.

One of the limitations of this study is that it was conducted with small sample size and in urban environment therefore, the results might not be generalized to larger populations. Further, it could have been better if other related risk variables could be included in the study.

CONCLUSION

Our results have demonstrated that MRI is a highly sensitive and accurate modality in diagnosing morbid adherence of placenta that has not only dramatically improved our ability of diagnosing morbid adherence, but also improves patient care taking proper pre-operative measures. So being non-invasive and a highly sensitive tool of investigation, we should consider as a primary tool for accurate identification of morbid adherence of placenta to reduce maternal morbidity and mortality.

Author’s Contribution:

Concept & Design of Study: Abdul Sattar
Drafting: Humaira Bashir, Saeeda Rana
Data Analysis: Sadia Anjum
Revisiting Critically: Abdul Sattar, Humaira Bashir
Final Approval of version: Abdul Sattar

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Frequency of Early Detection of Disseminated Intravascular Coagulation in Neonates with Sepsis

Sumaira Haamid, Ubaidullah Khan and Mimpal Singh

ABSTRACT

Objective: The aim of this study was to identify frequency of early symptomatic DIC in neonates presenting with sepsis resulting in major neonatal morbidity and mortality.

Study Design: It was a cross-sectional study.

Place and Duration of Study: This study was conducted at the Pediatric department, Fatima Memorial Hospital, Lahore from July 2016 to January 2017.

Materials and Methods: A total of 200 patients were included in this study. Venous sample 3cc was collected to get CBC, CRP, blood culture and sensitivity, PT, APTT, FDP’s, CXR, urine R/E and culture and sensitivity, LP when required. All the data was analyzed using SPSS version 20.

Results: The mean gestational age of the patients was 38.76 ± 1.19 weeks. The mean duration of symptoms was found as 13.25 ± 3.29 days. There were 111 (55.5%) males and 89 (45.5%) females in our study. DIC was found in 85 patients (42.5%) while not found in 115 patients (57.5%). DIC was also stratified according to gestational age, gender and duration of symptoms and was found significant for gestational age and duration of symptoms.

Conclusion: A high percentage of DIC (42.5%) was found in patients presenting with neonatal sepsis.

Key Words: DIC, Sepsis; Neonates; NICU.


INTRODUCTION

Sepsis is an uncontrolled progressive Infectious process, suspected or proven, which by the production of pro and anti-inflammatory cytokines can lead to systemic inflammatory response syndrome (SIRS)\(^1\). Based upon age of onset after birth, Neonatal sepsis is further classified into three types. First one is Early-onset infection which are acquired before or during delivery and appear from birth to 7 days of life and usually within 72 hours of life. Second one is Late-onset infections which are usually acquired from the organism from hospital or community, appear during 7 days to 1 month of life. Third one is Very late-onset infections which appears after 1 month of life and are mostly acquired from environment or community\(^2,3\).

According to many studies neonatal sepsis is major cause of morbidity and mortality in developing countries. Incidence of neonatal sepsis varies from 1 to 5/1000 live births in developing countries. Data about its incidence in Pakistan is very limited; it is 1.13/1000 to 3.8/1000 live births in this country. About 20% of neonatal deaths are due to neonatal sepsis in Asia. According to a study on latest Pakistan Demographic and Health Survey (PDHS), 2012-13 neonatal mortality in Pakistan is 55/1000 live births\(^4\).

Thrombotic micro-angiopathy is heterogeneous group of conditions including Disseminated Intravascular Coagulation (DIC) that results in consumption of clotting factors, platelets and anticoagulation proteins. During sepsis abnormally activated cytokines activates platelets and coagulation factors which cause damage to endothelial cells which results in increase vascular permeability and leakage which eventually leads to thrombosis in small vessels, DIC and eventually multi-organ failure\(^5\). Most commonly occurring complication associated with sepsis are coagulation abnormalities. Approximately 20-40% of all sepsis patients are complicated with DIC\(^6\). A study also reported that early DIC occurred in 44% cases in the neonates with sepsis\(^7\).

As sepsis is major cause of DIC in our population that’s why the current study want to confirm the hypothesis in our population by doing coagulation profile and septic screen of patients admitted with suspected or proven...
sepsis to identify and treat early symptomatic DIC in neonates causing major neonatal morbidity and mortality.

MATERIALS AND METHODS

A cross sectional study was conducted at Pediatric department, Fatima Memorial Hospital, Lahore for a duration of 6 months after approval of synopsis i.e. 07-07-2016 to 06-01-2017. The sample size of 200 children was calculated with confidence level as 95%, margin of error as 7%, anticipated proportion of DIC as 44% among those having neonatal sepsis. Non-probability and consecutive sampling was done. Children of age less than 1 month, of either gender presenting admitted with clinical suspicion of neonatal sepsis were included. Premature babies (<37 weeks of gestation) or the patients which didn’t give consent were excluded.

After taking informed consent from the ethical committee of hospital and from the parents, history was obtained by researcher. Venous sample 3cc was collected to get complete blood count (CBC), C-reactive protein (CRP), blood culture and sensitivity, prothrombin time (PT), activated partial thromboplastin time (APTT), fibrin degradation products (FDP), chest x-ray (CXR), urine routine examination (R/E) and culture and sensitivity, lumbar puncture (LP) when required. Results were analyzed by researcher and consultant physician. Cut off values for these labs parameters were defined as per operational definitions and patients with deranged results were labeled as DIC in sepsis.

The collected data were entered and analyzed accordingly using SPSS version 21 through its statistical program. Mean ± SD was calculated for gestational age and duration of symptoms. Qualitative variables like gender and early asymptomatic DIC were presented as frequency and percentages. Data was stratified for gestational age, gender and duration of symptoms to control the effect modifiers. Post-stratification chi-square test was applied. P-value ≤ 0.05 was considered as significant.

RESULTS

A total of 200 patients were included in the study. The mean gestational age of the patients was found to be 38.76 ± 1.19 weeks. Patients were further categorized according to gestational age into two groups which is summarized in Table 1. The mean duration of symptoms was found as 13.25 ± 3.29 days and is given in table 2. Gender distribution of the patients showed 111 patients (55.5%) were male while remaining 89 patients (45.5%) were female.

The final outcome of the study was detection of DIC. It was found in 85 patients (42.5%) while it was not found in 115 patients (57.5%). Also DIC was stratified according to gestational age, gender and duration of symptoms and results are summarized in table 3.

DISCUSSION

Microthrombi, containing erythrocytes, platelets, leukocytes are rare, but their presence is the very important feature of DIC as well. Platelet and leukocyte microthrombi are more often observed in children with complicated sepsis. The specific feature of DIC in children is the presence of microthrombi not only in microvasculature, but also in the small vessels of macrovasculature. At the same time in capillaries they are rare. Such microthrombi localization may be explained by anatomophysiologic peculiarities of hemocirculation in premature children. The most common site of microthrombi localization is found in pulmonary circulation, independently on etiology or course of the process. The same data are presented in other reports. To explain this phenomenon the theory of “the first filter” has been suggested: toxins, activated cells (mostly neutrophils) or cytokines enter pulmonary capillaries and damage endothelial cells inducing intravascular coagulation (localized or disseminated). The occurrence of microvasculature occlusion by microthrombi in other organs depends on etiology of
sepsis. Vessels of brain layers, spleen, brain, liver, thymus are commonly involved in bacterial sepsis. Microvasculature of brain, thymus, intestinal wall and adrenals is altered in sepsis caused by Candida albicans, and bacterio-fungal etiology induces intravascular coagulation of brain, pia mater and intestinal wall. The current results showed that hemocoagulation is more common in cases of bacterial and bacteriofungal sepsis than in sepsis caused by Candida. However, in Candida sepsis, the severity of alteration depends not only on microvasculature occlusion, but also on fungal alternative vasculitis seen in macrovasculature and microvasculature of lungs, brain and rarely of other organs. Such vasculitis is manifested by vascular wall necrosis with mild inflammatory reaction, fungal growth within the wall and lumen associated with thrombosis.

In a study by Naeme et al on adult patients, thrombocytopenia occurred in about 75% of patients. Furthermore, it was observed that the incidence of thrombocytopenia was more common in LBW babies (67.1%) as compared to normal birth weight babies (48.1%, P<.05). The former group developed a lower platelet nadir. This was similar to observation of many authors.

**CONCLUSION**

DIC was found in 42.5% of patients presenting with neonatal sepsis in our NICU. This is a high percentage which makes it necessary to screen all neonates presenting in NICU with sepsis, to make a prompt and timely diagnosis of this important entity so that neonate is appropriately and timely managed.

**Author’s Contribution:**
- Concept & Design of Study: Sumaira Haamid
- Drafting: Ubaidullah Khan
- Data Analysis: Mimpal Singh
- Revisiting Critically: Sumaira Haamid, Ubaidullah Khan
- Final Approval of version: Sumaira Haamid

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

**REFERENCES**

To Evaluate the Level of Patient Satisfaction with OPD Services in Terms of Describing the Experiences of Patients About OPD Services in District Swat
Qaribullah¹, Naeemullah², Munib² and M Ishaq²

ABSTRACT

Objective: To determine the level of patient satisfaction in OPD services in terms of describing the experience of patients about OPD services and accessibility to services among the patients who attended the OPD of public-sector of tehsil head quarter hospitals in district swat.

Study Design: Observational study

Place and Duration of Study: This study was conducted at the Department of Community Medicine, Swat Medical College, Swat from January 2020 to June 2020.

Materials and Methods: The patients from the six public-sectors, tehsil head quarter hospitals of district Swat were included in the study. The data was collected through questionnaire from all patients attending OPD’s of the 6 tehsil head quarter, public-sector hospital in district Swat

Results: Out of the 2000 subjects in the Sample, 57.5% to 91.4% were in view as they were satisfied from their doctor as procedures related to doctor are concerned and 1830 (91.5%) were in view that the doctor did not wash his hand before/after each patient’s examination and 1176(58.8%) were in view that the visiting/examination times of the patient by the doctor was not suitable. The Space in waiting room was reported adequate by 507 (25.35%), Good by 485(24.25) and very good by 315(15.75%) of the viewers. The OPD staff during the working hours consider adequate by 573(28.65%), good by 465(23.25%) and very good by 342(17.1%). In terms of overall satisfaction, 84.5% were satisfied from the cleanliness of waiting room and 92% were satisfied from the cleanliness of the doctor room. 58.6% were satisfied from bathroom facility, 86.6% were satisfied with the staff and 84.5% were satisfied with other associated services (e.g. pharmacy, radiology, community based Lab tests etc. of the hospitals.

Conclusion: The majority of the Patients were relatively satisfied with the staff and doctor but the patient examination time and doctor’s hand washing before/after each patient examination were a matter of concern for majority of the patients.

Key Words: Patient satisfaction, Public-sector hospital, associated services, Outpatient department.

Citation of article: Qaribullah, Naeemullah, Munib, Ishaq M. To Evaluate the Level of Patient Satisfaction with OPD Services in Terms of Describing the Experiences of Patients About OPD Services in District Swat. Med Forum 2020;31(8):15-19.

INTRODUCTION

Patient satisfaction has emerged as a critical outcome of medical care due to increasing emphasis on patients as consumers of services in medical place.¹ The real benefit of Patient satisfaction survey is that it provides information about hospital performance.

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It serves as an indicator, and if the indicator is below the average level, it is a signal as well as an opportunity to review. Outpatient department (OPD) is the first point of contact of the hospital and in them is believed to indicate the quality of services of a hospital. Patient satisfaction embodies the patient’s perceived need, his expectations from the health system, and experience of health care. This multimdimensional concept includes both medical and non-medical aspects of health care.² Satisfaction of patients is one of the desirable targets for clinical practice in order to achieve good results in terms of outcomes.³ Some studies referred to overall quality of the hospital as the principal key for acquiring patient satisfaction.⁴ Others reported nursing care and a few considered that organizational efforts play an integral part in ensuring satisfaction among patients.⁵ Nevertheless, literature has considered patient-physician communication as a successful key for
adherence to treatment. The care in the OPD is reflected by patient’s satisfaction with the services being provided. Better appreciation of the factors pertaining to patient satisfaction would result in implementation of custom-made programs according to the requirements of the patients, as perceived by patients and service providers.

Patient satisfaction is an important issue both for evaluation and improvement of healthcare services. It reflects the gap between the expected service and the experience of the service from the patient’s point of view. Measuring patient satisfaction has become an integral part of hospital/clinic management strategy across the globe.

Patient satisfaction is a reflection of patients’ perceptions of medical care processes, and it is considered an important index of medical quality.

For most of the patients, a visit to a hospital is often a new and frightening experience. The attention, attitude, and the information the hospital staff provide are very important to the patients. Satisfaction is one of the core outcome measures for health care.

There are quite a few studies from Pakistan about measuring the patient satisfaction. However, most of them were either conducted in a single center or worked on a single aspect with a small sample size covering a non-representative general population. This study was designed to get a pertinent insight about patient satisfaction towards different domains of quality services in Government’s hospitals of all tehsil headquarter (THQ) hospitals of district Swat with the following objective.

MATERIALS AND METHODS

Medicine, Swat Medical College, Swat from 1st January 2020 to 30th June 2020. The patients attending OPD’s of the 6 tehsil headquarter, public-sector hospital (Barikot, Kabal, Khwazakhela, Matta, Madian, Kalam) in district Swat were included in the study. A well informed consent from eligible participants was taken.

The randomized sample size of 2000 patients was collected from the general OPD and OPDs of gynecology, surgery, surgical, medical, and pediatric on working days, available in the OPD’s of these hospitals in such a way that the 1st patient was selected randomly and then every 10th patient was selected till the number of sample was completed.

The total patient was divided in two strata of male and female. A randomized sample of 2000 patient was selected from these two strata. The data was obtained on a pre tested questionnaire. All questionnaires were filled by trained volunteer underwent a two days training during which they were taught how to fill questionnaires from the patients. The data was divided in two strata of male and female. From each type of 5 OPD’s, the required number of patient were selected as shown in the table No.1. The data was presented in the various tables as shown in table No.1.2.3.4. All the respondents were assured of complete anonymity and confidentiality.

RESULTS

We included 2000 patients in this study. 333 participants were included from each of Barikot, Kabal, Khwazakhela and Kalam hospital and 334 participants were included from each of Matta and Madian hospital. These numbers have nearly equally divided into General OPD and OPDs of Medicine, G. Surgery, Gynae/Obs and pediatrics.

Our sample included 1232 (61.6%) of male and 768 (38.4%) of female Participants. Participants with No formal education were 477 (23.85%) while the rest of the participant 1523 (76.15%) having various level of education. The highest response (27.75%) came from age group 40-49 years followed by age group 30-39 year which is 27.25%.

Table No.1: Distribution of Participants from OPDs of Various Specialty in Various Tehsil Head Quarter Hospitals of District Swat

<table>
<thead>
<tr>
<th>Name of hospital</th>
<th>Total number</th>
<th>Medicine</th>
<th>G.Surgery</th>
<th>Peads</th>
<th>General OPD</th>
<th>Gynae/Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barikot</td>
<td>333</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Kabal</td>
<td>333</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Khwazakhela</td>
<td>333</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Matta</td>
<td>334</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Madian</td>
<td>334</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Kalam</td>
<td>333</td>
<td>67</td>
<td>67</td>
<td>66</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Grand total</td>
<td>2000</td>
<td>402</td>
<td>402</td>
<td>396</td>
<td>402</td>
<td>398</td>
</tr>
</tbody>
</table>
The participants were satisfied from the visit of the doctor concerned in all respect with the exception that 1176(58.8%) answered that the visiting/examination times of the patient was not suitable (less), and 1830 (91.5%) answered that the doctor concerned did not washed his hands before/after each patient examination, and 1288(64.4%) were not satisfied from the time spent at the place of test/ investigation as showed in Table 3. Most of the patients were satisfaction from various general and associated services of the hospital as shown in Table 4.

Table No.4: Rate of Response and Level of Satisfaction of the Participants According to the General and Associated Services of the Hospitals

<table>
<thead>
<tr>
<th>Items/ services</th>
<th>Poor (%)</th>
<th>Adequate (%)</th>
<th>Good (%)</th>
<th>Very Good (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the Space of waiting room?</td>
<td>693 (34.65%)</td>
<td>507 (25.35%)</td>
<td>485 (24.25%)</td>
<td>315 (15.75%)</td>
</tr>
<tr>
<td>How would you rate the required OPD staff during the working hours.</td>
<td>620 (31%)</td>
<td>573 (28.65%)</td>
<td>465 (23.25%)</td>
<td>342 (17.1%)</td>
</tr>
<tr>
<td>How would you rate the cleanliness of the bathroom facilities?</td>
<td>822 (41.4%)</td>
<td>678 (33.9%)</td>
<td>395 (19.75%)</td>
<td>105 (5.25%)</td>
</tr>
<tr>
<td>Were the staff courteous, polite, friendly and helpful during your stay in the waiting room?</td>
<td>292 (14.6%)</td>
<td>508 (25.4%)</td>
<td>877 (43.85%)</td>
<td>323 (16.15%)</td>
</tr>
</tbody>
</table>

Table No.3: Rate of Satisfaction from the Visit of the Concerned Doctor

<table>
<thead>
<tr>
<th>Items/ services</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident about this doctor’s ability to provide care</td>
<td>1294 (64.7%)</td>
<td>706 (35.3%)</td>
</tr>
<tr>
<td>Being polite</td>
<td>1360 (68%)</td>
<td>640 (32.0%)</td>
</tr>
<tr>
<td>Was the doctor washed his hand before/after each patient examination?</td>
<td>170 (8.5%)</td>
<td>1830 (91.5%)</td>
</tr>
<tr>
<td>Was your condition managed/ treated in a sympathetic manner?</td>
<td>1487 (74.35%)</td>
<td>413 (25.65%)</td>
</tr>
<tr>
<td>Were visiting/ examination times suitable?</td>
<td>824 (41.2%)</td>
<td>1176 (58.8%)</td>
</tr>
<tr>
<td>Obtaining the appointment number for doctor visit was reasonable.</td>
<td>1511 (75.5%)</td>
<td>489 (24.5%)</td>
</tr>
<tr>
<td>The services provided to me, met my needs related to my visit</td>
<td>1459 (72.95%)</td>
<td>541 (27.05%)</td>
</tr>
<tr>
<td>The waiting time to see my doctor was acceptable</td>
<td>1330 (66.5%)</td>
<td>670 (33.5%)</td>
</tr>
<tr>
<td>Involving you in decisions about your Treatment</td>
<td>1150 (57.5%)</td>
<td>750 (42.5%)</td>
</tr>
<tr>
<td>When prescribed medication, I was informed how the medication Worked and possible side effects in a manner that I understood</td>
<td>1282 (64.1%)</td>
<td>718 (35.9%)</td>
</tr>
<tr>
<td>I felt my concerns were heard, and I received answers to my questions</td>
<td>1562 (78.1%)</td>
<td>438 (21.9%)</td>
</tr>
<tr>
<td>I was cared for promptly in the place of test/investigation</td>
<td>712 (35.6%)</td>
<td>1288 (64.4%)</td>
</tr>
<tr>
<td>I was treated with dignity and Respect in the place of test/ investigation.</td>
<td>1828 (91.4%)</td>
<td>172 (8.6%)</td>
</tr>
</tbody>
</table>

Table No.2: Demographic characteristics of the participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1232</td>
<td>61.6</td>
</tr>
<tr>
<td>Female</td>
<td>768</td>
<td>38.4</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20</td>
<td>210</td>
<td>10.5</td>
</tr>
<tr>
<td>20–39</td>
<td>545</td>
<td>27.25</td>
</tr>
<tr>
<td>40–49</td>
<td>555</td>
<td>27.75</td>
</tr>
<tr>
<td>50–59</td>
<td>406</td>
<td>20.3</td>
</tr>
<tr>
<td>60 and above</td>
<td>284</td>
<td>14.2</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>477</td>
<td>23.85</td>
</tr>
<tr>
<td>Primary</td>
<td>623</td>
<td>31.15</td>
</tr>
<tr>
<td>Secondary/high school</td>
<td>452</td>
<td>22.60</td>
</tr>
<tr>
<td>undergraduate, and graduate</td>
<td>348</td>
<td>17.40</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>100</td>
<td>5.00</td>
</tr>
</tbody>
</table>
DISCUSSION

The present study was an attempt to assess the level of satisfaction of the patients with the various aspects of health care in tehsil head quarter hospitals of district Swat. Identification of the patients was kept confidential.

Total experiences of two thousand patients were computed to determine their experiences regarding different services provided by the OPDs of public-sector tehsil head quarter hospital. The patient with good experience showed high level of satisfaction as compared to those who had poor/low level of satisfaction. Patients had good experience from all the components of services provided by the hospitals but the services provided by the doctors, the patients had the highest level of good satisfaction. This is the same as for the other study\textsuperscript{12}.

While covering the aspect of all problems and issues suffered by public-sector hospitals in district Swat, this study is the first of its kind to cover multi-center and large sample population to measure satisfaction of the patients. Our study had a brilliant response rate of 100%. This was largely due to the tactic of using dedicated assistants who went and spoke directly with the patients. Our excellent response rate is more than the response rate (91.2\%) of a study done by Joshi S et al\textsuperscript{3}.

Our study results showed that there was more presentation of male 1232 (61.6\%) as compare to female 768 (38.4\%) while in a study done by Mukhtar F, Anjum A et al\textsuperscript{1} the representation of males 127 (51\%) and females 121 (49\%). This difference is because of the culture of district swat that most of the participant to answer the questions on behalf of children and female were male. 110 (44\%) of the respondents were in the age category of 15-30 years whereas, 18 (7\%) were in the age category of 60-75 years in their study while in our study 555 (27.75\%) of the respondents were in the age category of 40-49 and 284 (14.2\%) were from 60 years and above. The education of the patients was categorized into five categories in our study as: No formal education, primary, secondary, undergraduate/ graduate and postgraduate. Among them 477 (23.85\%) were illiterate, 623 (31.15\%) completed primary school, 452 (22.60\%) completed secondary school, 348 (17.40\%) undergraduate/ graduate, 100 (5.0\%) were postgraduate. In the study of Mukhtar F, Anjum A et al\textsuperscript{1} 41 (17\%) were illiterate, 40 (16\%) completed primary school, 74 (30\%) completed secondary school, 78 (31\%) were undergraduates and 15 (6\%) were graduates. These values are nearly equal to the values in our study with the exception that postgraduate values were higher in our study. This is because the higher level of education in swat was more as compare to other areas.

Our study showed that up to 91\% of the patients who visited the OPD were satisfied with their doctor except “the act of hand washing before / after patient examination of the patient” as shown in table No.4. This level is a little low than the study\textsuperscript{7} in which 94\% of the Patients’ views were ascertained. Majority of patients found the doctor to be courteous (98\%), listened attentively to the patients (88\%), gave patients an opportunity to talk about their illness (87\%), provided instructions regarding dose and time of medication (82\%), advised follow up to the patients (80\%) and made the patient comfortable during examination (79\%). This is similar to other international studies which reported that 88–92\% of their patients believed that they were treated with respect and dignity\textsuperscript{10}.

In our study, majority of patients found the doctor to be sympathetic (74.35\%), polite (68\%). Obtaining the appointment number for doctor visit (75.55\%) was easy, the services provided to them, met their needs related to their visit (72.95\%). 66.5\% were in view that the waiting time to see their doctor was acceptable. 57.5\% were in view that the doctor involved them in decisions about their treatment. 64.1\% were in view that the doctor informed them about the use of medication and possible side effects in a manner that they understood, their concerns were heard, and they received answers to their questions (78.1\%), treated them with dignity and Respect in the place of test/ investigation (91.4\%). These values were low as compare to the study\textsuperscript{12}. This is because of the fact that their study was done in OPD services in a Tertiary Care Hospital of Lahore which was large city. But these values in our study are more than the value of the study\textsuperscript{13}. This is because of the fact that study was done in single OPD services in a Tertiary Care Hospital while our study was done in many OPDs of various specialties as well as (multi- centered). Therefore, our study is more reliable.

Patients were asked about rate of response and level of satisfaction of the participants according to the general and associated services of the hospitals (cleanliness, adequate ventilation, location of the registration desk and availability of seats and toilet facility in the waiting area). Majority of the patients were found satisfied with respect to these facilities. This satisfaction is in coherent with other studies\textsuperscript{5}.

In a study of Joshi S, et al\textsuperscript{2}, the satisfactory level was from 58\% to 74\% on various aspects of questions about doctors in OPD, which was from 41\% to 91\% in our study. The values in these two studies on important items were nearly the same. The value given in the study\textsuperscript{14} are also similar as given in our study for doctor satisfaction however, there value of experiences for general and associated services were low as compare to our study. This is because that study taken the values only for surgical OPD in tertiary hospital was single.
center while our study considered the 6 number of tehsil head quarter hospital OPDs of 5 specialties as a whole.

A major limitation of our study (like other studies) was use of self-reported intention/ wishes. These may have introduced bias and resulted in systematic under- or over- reporting. Thus, our data may have underestimated or overestimate the true condition.

CONCLUSION

The patients were satisfied from their visits to the hospital. However, the chance of further improvement can never be missed.

Author’s Contribution:

Concept & Design of Study: Qaribullah
Drafting: Qaribullah, Munib
Data Analysis: Naeemullah, M Ishaq
Revisiting Critically: Qaribullah, Naeemullah, Munib M Ishaq

Final Approval of version: Qaribullah

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Evaluation of the Status of Motorcycles Accidents with the Different Pattern of Injuries Following Motorcycles Accident in District Swat
Naeemullah¹ and Qaribullah²

ABSTRACT

Objective: To determine the percentage of houses having Motorcycle, Motorcycle accidents and the different pattern of injuries and their frequencies in various age groups caused in Motorcycle accidents during the last one year in district Swat.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Department of Community Medicine, Swat Medical College, district Swat from June 2018 to May 2019.

Materials and Methods: Out of 65 union councils we have randomly selected 8 union council. The data was collected from the heads of the houses by a pre-tested questionnaire from 536 randomly selected houses in these randomized eight (8) union councils in district Swat, after the informed consent of the heads of the families. Both sex of all ages were included.

Results: 204 (38.1 %) out of 536 houses were found to have motorcycles. The percentage of the houses involved in motorcycle accidents were 14.7%. The common injuries found were that of head and neck (31.8%), followed by lower limbs (20.5%) injuries.

Conclusion: Motorcycle related morbidities and mortalities remain to be a major public health issue in Swat as well as all over Pakistan. There is an urgent need for an efficacious interventional programs to decline the burden of motorcycle related morbidity and mortalities.

Key Words: Motorcycle accidents, Motorcycle injuries, Public health. Road traffic accident.

Citation of article: Naeemullah, Qaribullah. Evaluation of the Status of Motorcycles Accidents with the Different Pattern of Injuries Following Motorcycles Accident in District Swat. Med Forum 2020;31(8):20-23.

INTRODUCTION

The increasing use of motorcycle as mode of transportation has become important source of morbidity and mortality. These injuries and disability are a major public health problem and constitute an enormous burden for individuals, families, society and the country¹. The drivers involved in majority of these accidents are either under age or without license. Unregistered motorcycles with improper or no number plates are used in street crimes and in target killings². The potential of motorbikes as an alternative means of commuting to public transport, and it has many advantages such as low initial price, easy to drive, easy maintenance easy passages in rush. In a third world country like Pakistan, motorcycles tend to be the lifeline for masses. The auto industry in Pakistan is fast evolving as a robust industry. Some sub-sectors of this fast growing industry, like motorcycle production, have already achieved economies of scale³.

The increase in the motorbike numbers is visibly causing congestion on the roads, adding to noise and air pollution and fatal accidents⁴. In the city the main source of traffic noise are the motors and exhaust systems of autos, smaller trucks, buses and motorcycles. Noise has become a very important "stress factor" in the environment of man. The term "noise pollution" has been recently used to signify the hazard of sounds which are consequence of modern day development, leading to health hazards of different types⁵. Certain studies (e.g., Sezgin et al. 2003; Banerjee 2003) have indicated that the most common heavy metals introduced to the environment by overland transport are zinc, copper and lead⁶. These accidents constitute an enormous burden for individuals, society and the country. All over the world, motorcycle accidents are one of the major causes of
road death and injuries. The risk of injury and death per mile with motorbikes are 3 to 16 times more than with cars. In 2010, the number of motorbikes in Karachi was one million. In Karachi, 16,000 road traffic accidents were recorded in the January-June period of 2012. About 63% motorcyclists were injured, which is more than other types of vehicles injuries. Motorcycles with improper or no number plates are used in street crimes and in target killings. Lack of respect for traffic rules, over speeding and stunts by bike enthusiasts and youngsters result in majority of bike accidents. Lower limb abrasions and fractures (56.8%) were the most common injuries. Motorcycle riders have a 34-fold higher risk of death in a crash than people driving other types of motor vehicles. The commonest injuries among motorcyclists are lower-extremity and head injuries. Several studies have also addressed the high rates of lower extremity, chest, and abdominal injuries following motorcycle crashes. Motorcyclists, of whom approximately two-thirds (66%) were 39 years of age or less. The vast majority (95%) of injured riders were men. Head injury represents a common cause of morbidity and mortality following motorcycle injuries in our environment. As the population of the Khyber Pakhtunkhwa is increasing, the traffic situation is worsening day by day. The motorbike use is increased in district Swat from the last few years. This is due to the fact that law and order situation become worsen, relatively easy passage by day. We arranged this study with a randomized sampling technique in community/population of district Swat to assess the prevalence and pattern of motorcycles injury with the following objectives.

MATERIALS AND METHODS

This Retrospective study was conducted at the Department of Community Medicine, Swat Medical College, district Swat from 1st June 2018 to 31st May 2019 with a randomized sample taken from the general population of District Swat. Out of the total number of union councils (65) in District Swat, we have randomly selected eight (8) union councils for our study. The name of these eight union councils (U.Cs) Tirat, Kanju, Gulkada, Malook Abad, Manglor, Gwalerai, Miandam and kalakalay. Then the total number of houses in each union council was counted by going through house to house. Out of these 10716 houses, 536 houses were selected randomly for data collection. Data was collected from house to house survey from randomly selected houses after the informed consent of the heads of the families. Repeated visits were made to the locked houses and to the houses where the heads of the families were not available till the collection of information. For convenience, the pattern of injury was recorded by dividing the body into regions. Thoracic spinal injuries combined with thorax and lumbar spine combined with the abdomen. The neck, face and head were defined together. Injuries of the shoulder with upper limb and hip joint were included with the lower limb region. Descriptive statistics was used and data presented in the form of percentage in proper tables. Frequency and percentages were calculated for categorical variables. The result was presented in tabulated form. Percentage of houses with motorcycle, percentage of motorcycle accident in the inhabitants of these houses, age wise distribution of injuries and pattern of injuries caused in these motorcycle accident plotted against the name of the various union councils as shown in Table 1, 2 and 3.

Inclusion Criteria: All houses situated in the boundaries of these 8 U.Cs, injuries due to motorcycle accident during the last one year suffered by the residents of these houses.

Exclusion Criteria: All vacant houses and houses situated outside the boundaries of these U.Cs. All inhabitants of these houses injured in accident of other vehicles or injured due to other cause. Pedestrians injured & passengers other than the residence of these houses. Injured in motorcycle accident before or after the study duration.

RESULTS

204 (38.1 %) out 536 houses were having motorcyles, ranging from 39% in union council Kalakalay to 20% in union council Manglor. 30 (14.7%) out of 204 houses suffered from motorcycle accident with a range of 9.7% to 21.4% in various union councils (table 1).

Table No. 1: Table Showing Status of Houses, Houses Faced Motorcycle Accident.

<table>
<thead>
<tr>
<th>U.C Name</th>
<th>Total No. of houses</th>
<th>Houses in sample</th>
<th>Houses having motorcycles</th>
<th>% of houses having motorcycles</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tirat</td>
<td>1196</td>
<td>60</td>
<td>25</td>
<td>42%</td>
<td>4</td>
<td>16%</td>
</tr>
<tr>
<td>Kanju</td>
<td>1340</td>
<td>67</td>
<td>28</td>
<td>42%</td>
<td>5</td>
<td>17.9%</td>
</tr>
<tr>
<td>Gulkada</td>
<td>1460</td>
<td>73</td>
<td>30</td>
<td>41%</td>
<td>4</td>
<td>13.3%</td>
</tr>
<tr>
<td>Malook Abad</td>
<td>1600</td>
<td>80</td>
<td>32</td>
<td>40%</td>
<td>5</td>
<td>15.6%</td>
</tr>
<tr>
<td>Manglor</td>
<td>1360</td>
<td>68</td>
<td>14</td>
<td>20%</td>
<td>3</td>
<td>21.4%</td>
</tr>
<tr>
<td>Gwalerai</td>
<td>1260</td>
<td>63</td>
<td>24</td>
<td>38%</td>
<td>4</td>
<td>16.7%</td>
</tr>
<tr>
<td>Miandam</td>
<td>900</td>
<td>45</td>
<td>20</td>
<td>44%</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Kalakalay</td>
<td>1600</td>
<td>80</td>
<td>31</td>
<td>39%</td>
<td>3</td>
<td>9.7%</td>
</tr>
<tr>
<td>Total</td>
<td>10716</td>
<td>536</td>
<td>204</td>
<td>38.1%</td>
<td>30</td>
<td>--</td>
</tr>
<tr>
<td>Average %</td>
<td>--</td>
<td>5%</td>
<td>38.1%</td>
<td>--</td>
<td>14.7%</td>
<td></td>
</tr>
</tbody>
</table>
Out of the total numbers (44) of sufferer (injured), 8 (18.2%) persons were suffered with multiple injuries and expired at the spot of accident or within 24 hours after the accident while the other 36 (81.8%) who had single injuries of various type as shown in table 2. The most frequently occurring injury (31.8%) was that of head and neck, followed by lower limbs injuries (20.5%). Motorcyclists and other riders of the motorcycle were included in the above figures while the record of the pedestrians was not available.

Table No. 3 shows that most sufferers (29.5%) were in the 21-30 years’ age group; this is followed by the 31-40 years (22.7%) group. The least incidence (6.8%) noted in the 0-10 years as well as in 50 and above age groups.

Table No. 2: Site & Type of Injuries During Motorcycle Accident

<table>
<thead>
<tr>
<th>Injury</th>
<th>Total</th>
<th>% age</th>
<th>G. total</th>
<th>% G. total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death within 24 hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple/ Crushed/ head</td>
<td>8</td>
<td>18.8%</td>
<td>8</td>
<td>18.2%</td>
</tr>
<tr>
<td>Survived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head and neck</td>
<td>14</td>
<td>31.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower limbs</td>
<td>9</td>
<td>20.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper limbs</td>
<td>7</td>
<td>15.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdomen and pelvic</td>
<td>6</td>
<td>13.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>81.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table No. 3: Age distribution of the Sufferers

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>3</td>
<td>6.8%</td>
</tr>
<tr>
<td>11-20</td>
<td>7</td>
<td>15.9%</td>
</tr>
<tr>
<td>21-30</td>
<td>13</td>
<td>29.5%</td>
</tr>
<tr>
<td>31-40</td>
<td>10</td>
<td>22.7%</td>
</tr>
<tr>
<td>41-50</td>
<td>8</td>
<td>18.2%</td>
</tr>
<tr>
<td>50 and above</td>
<td>3</td>
<td>6.8%</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Some motorcycle has more than one rider.

DISCUSSION

In our study 38.1% of the houses used motorcycle as means of transportation. This is nearly in accordance with the study done by H. Arif⁴ stated that the motorbike is economical, saves time, provides maneuverability in traffic jams and is spacious enough to accommodate a couple and one child. Below 40 years’ age people that faced accidents in our study were 74.9%. This figure is higher from the figures of the study⁵ of whom approximately two-thirds (66%) were 39 years of age or less. The higher rate of injuries in our study was due to the fact that we took randomized sample from the population while their study was hospital base and cross-sectional. However, the distribution of specific part injury involved was different, the most common body region of injury was head followed by lower extremity in our study. While in their study the most common body region involved was lower extremity followed by upper extremity.

In another study, Francis Faduyile⁶, the most common (29.6%) age group suffered was 31-40 year, followed 26.1% by the group of 21-30 year. This also shows that cranio-cerebral injury was the cause of death in the majority of the victims (50.7%), which is incoherence with our study (50%).

In another study by N wadiaro HC⁷ Head injury (40.1%) was the most frequently occurring injury followed closely by extremity injuries (38.1%), with a peak incidence (37.1%) from 21 to 30 years. The peak incidence (37.1%) from 21–30 years is a little higher than the value as in our study (29.5%) but our study including multiple injury including head injury as part of it and head injury alone is slightly more (50%).

In a study done by Patricia C⁸, 95.1% were survived and 4.9% were the ratio of death within 24 hours of the motorbike accident. Younger males (34.2%) patients between age 16-30 years were more prone to motorbike injuries. Lower limb abrasions and fractures (56.8%) were the most common injuries⁹. Both of these values were higher as compare to our study. While in our study the survivors were 81.8 % while the death was 18.2%, which is higher. This is due to the fact that our study is randomized study and included all the sufferer in the area and this study was performed in the community. That is why it is more reliable as compared to their studies. Because their studies were cross-sectional and hospital based studies, in which the chance of missing the patients died at the spot of accident were more. Furthermore, some of the dead persons may not reach to the hospitals while others can go to the hospitals of the other areas.

CONCLUSION

38.1% of the houses had motorcycle while 14.7% of people among the users became victim of motorcycle accident. The common injury in our study is of the head and neck (31.8%) followed by the injuries of lower limbs (20.5%). The most common age group (21-30 years) was the young people. From whom 29.5% were became the victim of various types of injuries followed (22.7%) by the age group of 31-40 year.

Recommendations: Proper driving training, strict enforcement of traffic laws, inclusion of traffic rules in syllabus of primary and secondary education, awareness campaign regarding road safety, good road condition and proper training before issuing driving license. Traumas centers are needed to be established in each District headquarter.

Government needs to make some core courses/training before the provision of license and traffic police should keep strong check and balance in this regard.
Author’s Contribution:
Concept & Design of Study: Naeemullah
Drafting: Qaribullah
Data Analysis: Qaribullah, Naeemullah
Revisiting Critically: Qaribullah
Final Approval of version: Qaribullah

Conflict of Interest: The study has no conflict of interest to declare by any author.

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3. Automotive industry in Pakistan, published by Galiwala, view 373, Likes 6, p.1-45
Original Article

Comparison of Prostaglandin E2 with Misoprostol 25 Mcg for Labour Induction at Term Pregnancy
Aneesa Sadiq, Zul-e-Huma and Surraya Israr

ABSTRACT

Objective: To Compare the efficacy and cost effectiveness of prostaglandin E2 with misoprostol 25 mcg for labour induction at term pregnancy.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynecology, Gajju Khan Medical College Swabi in six months from January 2019 to June 2019.

Materials and Methods: Total 120 subjects were included in this study. These patients were divided in two groups. Group-1 and Group- 2. Group-1 was induced with PGE2, 3 mg tablets maximum of 2 doses, 6 hours apart. Group-2 induced with misoprostol 25 mcg 4 hourly, 4 doses. The subjects were full term pregnant women who were primigravida, 2nd or 3rd gravid and had bishop score less than 5.

Results: The patients included in the study were between the ages of 20 to 40 years. The mean age of patients was 31.35±5.82 in both groups (p value > 0.05). All the patients in both groups were between 37 to 42 weeks of gestation. The mean gestational age of group-1 and group-2 was 39.23±1.46 weeks and 39.08±1.60 weeks (p > 0.05) respectively. Mean duration of labor in group 1 was 7.8±3.81 hours whereas in group 2, it was 6.50±3.35 hours. Oxytocin injection was given in 55% (33) patients in group 1 and 43.33% (26) in group 2. 25 % (15) patients in group 1 and 15 % (9) in group 2 were having duration of labor more than 10 hours.

Conclusion: Misoprostol (PGE1 analogue) is a potent drug for labour induction with a short induction delivery interval and reduced need for Oxytocin augmentation. There is less rate of instrumental delivery and caesarean section and a reduced failure rate of induction with misoprostol.

Key Words: Misoprostol, Labour induction, PGE2, induction delivery interval, mode of delivery.


INTRODUCTION

Induction of labour is the intentional initiation of uterine contractions before spontaneous onset, leading to progressive dilatation and effacement of cervix and delivery of the baby.1,2 The rate of induction varies by location and in many centers is currently more than 20%.3,4 Cervical ripening is the most important part of the process of labour induction and the most important predictor of success. Ripening of the cervix greatly facilitates labour and increases the likelihood of vaginal delivery5. There is an increased risk of caesarean delivery and its associated complications due to induction 1,2,6,7,8. Nulliparous women with an unfavourable cervix, or low Bishop score, particularly are at high risk of caesarean delivery, due to lack of progress in labour if labour is induced7,8. Ripening agents are used when the cervix is unfavorable to increase the likelihood of successful induction, commonly prostaglandin E2 1,2,9. Prostaglandins may be given via oral, intravaginal, intracervical and intravenous routes, all of which are effective1. Intravaginal administration of prostaglandin E2 is the most widely used pharmacological method to promote cervical ripening and labour induction10. Misoprostol, a prostaglandin E1 analogue manufactured for the prevention and treatment of gastric ulcers, has also been evaluated as a cervical ripening agent and has some potential advantages compared with PGE2. Misoprostol is inexpensive, stable at room temperature, easy to administer and may be given as an oral medication. The above features make it ideal for its use in third world countries. Though the drug in not licensed with FDA for use in pregnant women but worldwide it is being used for ripening of cervix and induction of labour as well11. There is concern that misoprostol may increase the rates of tachysystole and hyper stimulation 12,14. The objective of this study was to evaluate the efficacy and cost effectiveness of
misoprostol, compared with PgE2, for labour induction in women at term.

MATERIALS AND METHODS

The study was conducted at Gynecology and Obstetrics department, Gajju Khan Medical College. Duration of the study was 6 months. Study design was randomized controlled trial. Inclusion criteria include Nulliparous and/or multiparous women admitted for the induction of labor at term (>37 weeks) (i) singleton pregnancy with cephalic presentation and no contraindication to vaginal delivery (ii) unfavorable cervix (Bishop’s <6); (iv) intact membranes (v) absence of active labor or fetal distress. Exclusion criteria included: (i) ruptured membranes (ii) previous cesarean delivery or history of uterine surgery; and (iii) cephalopelvic disproportion. Permission from the ethical committee of was taken for the study. Informed written consent for induction of labour was taken from all patients included in this study. The group was divided into two groups 1 and 2 random sampling using random table. Patients were randomized into 2 groups, each consisting of 60 patients. Patients in group 1 were induced with prostaglandin E2 vaginal pessary (3 mg), maximum 2 doses 6 hours apart. While patients in group 2 were induced with misoprostol i.e prostaglandin E1, given vaginally at a dose of 25 mcg 4 hourly, 4 doses maximum. A patient was labeled as failed induction if no improvement in Bishop Score was observed after 4 doses. Cardiotocograph was taken before and after insertion of each dose. Partogram was maintained in all cases as per the hospital protocol. Uterine contractions were monitored to detect hyper stimulation and tachysystole. Pelvic examination was mandatory before repeating the dose. Data was collected by means of questionnaire proforma. Data analysis was computer based. Data entry sheet was designed in SPSS version 22. There were 2 groups of patients. Data was presented in proportions (percentages) and means with SD. The 2 groups were compared using Chi Square test for quantitative variables (proportions) and t, test used to compare quantitative variables. The test of significance was taken at a p value <0.05.

RESULTS

120 patients were equally divided into two groups. The mean age of the patients was 31.35±5.82 years. The gestational age of participants in both age groups was 37 to 42 weeks with mean in group 1 was 39.23±1.46 weeks and in group 2 was 39.08±1.60 weeks. Mean gravidity in group 1 was 3.76±1.67 and group 2 was 3.80±1.61. Mean duration of labor in group 1 was 7.8±3.81 hours whereas in group 2 it was 6.5±3.35 hours. Post stratification independent sample t test was applied and p value was 0.158 which is not significant. 23.33% (14) patients were primigravida in group 1. 31.66% (19) were primigravida in group 2. 18.33% (11) LSCS were done in group 1 and 4(6.66%) in group 2. Oxytocin injection was given in 55% (33) patients in group 1 and 43.33% (26) in group 2. 25 % (15) patients in group 1 and 15 % (9) in group 2 were having duration of labor more than 10 hours.

Table No. 1: Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%ages</td>
</tr>
<tr>
<td>20-25</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>26-30</td>
<td>14</td>
<td>23.33%</td>
</tr>
<tr>
<td>31-35</td>
<td>15</td>
<td>25%</td>
</tr>
<tr>
<td>36-40</td>
<td>19</td>
<td>31.66%</td>
</tr>
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Table No. 2: Gravidity

<table>
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<th>Gravidity</th>
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<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%ages</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>23.33%</td>
</tr>
<tr>
<td>≥3</td>
<td>34</td>
<td>56.66%</td>
</tr>
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</table>

Table No. 3: LSCS

<table>
<thead>
<tr>
<th>LSCS</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%ages</td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>18.33%</td>
</tr>
<tr>
<td>No</td>
<td>49</td>
<td>81.66%</td>
</tr>
</tbody>
</table>

Table No. 4: Duration of Labour

<table>
<thead>
<tr>
<th>Duration of labour</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%ages</td>
</tr>
<tr>
<td>&lt;5 hrs</td>
<td>8</td>
<td>13.33%</td>
</tr>
<tr>
<td>5-10 hrs</td>
<td>37</td>
<td>61.66%</td>
</tr>
<tr>
<td>&gt;10 hrs</td>
<td>15</td>
<td>25%</td>
</tr>
</tbody>
</table>

DISCUSSION

Labour induction is the commonest intervention as far as obstetric is concerned. It is done when the fetal survival is an anticipated outcome and prolongation of gestation is not advisable for fetal or maternal wellbeing. The cervix ripening is the most important part of labour induction and predictor of success. Prostaglandins play a critical role in cervical ripening by increasing inflammatory mediators in the cervix and inducing cervical remodeling supported by a number of randomized controlled trials. Prostaglandin E1 (PGE1) and prostaglandin E2 (PGE2) exert different effects on these processes and on myometrial contractility. These mechanistic differences may affect outcomes in women treated with dinoprostone, a formulation identical to endogenous PG E2, compared with misoprostol, a PGE1 analog. Misoprostol, a strong uterotonic drug used primarily for induction of labour has been recently...
Several clinical trials were carried out at Kingston General Hospital, Kingston, Ontario and elsewhere to compare the vaginal use of misoprostol for induction of labour with oral use of misoprostol. These studies suggested that vaginal use of misoprostol is more effective than oral administration, resulting in shorter induction-delivery interval and decrease need for oxytocin augmentation. However, the difference in instrumental delivery rate and cesarean section rate was non-significant. As far as apgar scores were concerned there was no clinically significant difference seen between the two groups. The current study was carried out to compare the results of misoprostol with prostaglandin E2 for induction of labour, in full term pregnancy. Although misoprostol use started in GKMC swabi one year ago, it has been used for the indication of labour, for cervical dilatation in cases of missed abortions and mid trimester abortions. In our study all our patients with successful labour induction delivered within 12 hours of induction, 28.33% of patients induced with misoprostol were delivered within 4 hours of induction while 13.33% in group with prostin tablet. Misoprostol is found more effective in induction of labour through vaginal route and maximum patients delivered in 5-10 hours i.e. 56.66%. The maximum patients in group-A i.e. 61.66% cases induced with prostin delivered in 5-10 hrs of induction. This study also showed that induction delivery interval is short in cases of misoprostol. These results are comparable with the study of Schroder et al. Misoprostol is a useful drug for ripening of cervix and induction of labour. In cases of misoprostol i.e. group-B, maximum patients i.e. 93.33% delivered vaginally and 6.66% underwent LSCS. In group-A i.e. dinoprostone group 81.66% vaginal deliveries and 18.33% LSCS. Our study gave us results comparable with other studies and showed better results with misoprostol. The priming of cervix to induction and induction to delivery intervals were also considerably shortened in cases of misoprostol and also delivery rate by LSCS was lowered in the misoprostol group. Apgar score at 5 minutes after birth was same in both groups. A number of studies carried out to compare the safety and efficacy of misoprostol for cervical ripening at term with dinoprostone. Garry et al reported that intravaginal misoprostol and dinoprostone are safe and effective medications for use in cervical ripening before labour induction. Misoprostol results in a shorter interval from induction to delivery. Moodley concluded that in selected women, the efficacy of misoprostol for the induction of labour at term is similar to that of dinoprostone but misoprostol associated with a higher incidence of hyperstimulation. There was no uterine hyperstimulation noted with any of the drug, used for induction. Limitations of Study We cannot use misoprostol for labour induction in grand multiparous and scarred uterus because of the hyperstimulation. The effects of misoprostol on the fetus needs further investigation before it is used as routine agent for induction of labour.

CONCLUSION
Misoprostol PGE1 is a useful drug for labour induction. There is short induction delivery interval in case of PGE1 and also reduced need for the use of oxytocin augmentation. There are also less failure rates of induction with misoprostol and rates of instrumental delivery and lower segment caesarean section is also less. The cases should be properly selected for induction, carefully monitored during labour, to have better results and to avoid complications. It is also important to have more clinical experience.

Author’s Contribution:
Concept & Design of Study: Aneesa Sadiq
Drafting: Zul-e-Huma
Data Analysis: Surraya Israr
Revisiting Critically: Aneesa Sadiq, Zul-e-Huma
Final Approval of version: Aneesa Sadiq

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
Histopathological Study of Uterine Leiomyoma in Hysterectomy Specimens at a Tertiary Care Hospital of Sindh

Inayatullah Memon, Ghulam Abbas Soomro, Shahzad Ali Jiskani and Qandeel Abbas Soomro

ABSTRACT

Objective: Analyze histopathological changes within uterine leiomyomas in hysterectomy specimens and associated pathologies including variant uterine leiomyomas.

Study Design: Observational study.

Place and Duration of Study: This study was conducted at the Departments of Pathology and Gynecology/Obstetrics, Indus Medical College, Tando Muhammad Khan from July 2019 to February 2020.

Materials and Methods: Clinically diagnosed uterine leiomyomas hysterectomy specimens were subjected to gross and microscopic histopathological (H&E) examination with relevant clinical data. 337 specimens were examined during study period. Findings were noted in a pre – structured proforma. Data was analyzed on SPSS 21.0 (IBM, Incorporation, USA) at 95% CI (P≤ 0.05) and Microsoft Excel sheet.

Results: Mean age was 41.78±3.21 years. Age group 40 – 49.9 years comprised 54.89% of total cases. Intramural, sub – mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. Leiomyoma variants of cellular type was noted in 13 (3.85%), epithelioid 5 (1.48%), symplastic 6(1.78%), neurilemma – like 3(0.89%), lipo – and angioleiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (0.59%), hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively.

Conclusion: The present study reports majorities of leiomyomas were intramural (54.3%) and leiomyomas variants were found in 35 (10.38%) of specimen, thus making the histopathological examination mandatory.

Key Words: Uterine leiomyoma, Variant leiomyoma, Histopathology, Sindh.

INTRODUCTION

Uterus is vital female reproductive organ next to the ovary. Inner lining is endometrium and middle is smooth muscle layer called myometrium. Both are hormone sensitive layers. Uterus is a site of various benign and malignant growths.1 Most common benign tumor of uterus is the Leiomyoma (fibroids). Leiomyoma is a smooth muscle cell myometrium derived tumor. It is noted in 20 – 30% of women over 30 years of age. As much as 75% of uterine Leiomyoma has been reported in hysterectomy specimens.1,2 Leiomyoma is uterine tumor of reproductive age detected in middle aged female around peri–menopausal period.3 Pathogenesis of leiomyoma is influenced by hormonal milieu. Occurrence is noted with increased estrogen and progesterone receptor expression in myometrium. Increased growth in size is often noted in pregnant uterus and estrogen therapy. 4,5 For the same reasons, shrinkage of leiomyoma is observed after menopause. Severity of symptoms often depends on the location, size and number of lesions. Leiomyoma are often asymptomatic and common complaints are; abdominal mass, pain and uterine bleeding, depending on the size and location of lesions. Uterine leiomyomas are often complicated by infertility, spontaneous abortions, premature membrane rupture, dystocia and postpartum bleeding.6 Leiomyomas are often diagnosed by sonography imaging technique. In young reproductive age females, they are treated by myomectomy and by hysterectomy in older age and menopause women.7,8 Grossly leiomyomas appear as firm, spherical masses, and uncommonly multiple lesions. Cut section shows gray white color with whorled trabeculae. Microscopic examination shows whorled anastomosing fascicles of smooth muscle cells showing elongated nuclei, fine chromatin and indistinct cell outlines. Hyaline and mucoid degeneration, hydropic changes and dystrophic calcification are common degenerative manifestations. Leiomyomas may be sub – mucosal, intramural or extra...
RESULTS

Age (mean±SD) of 337 cases was 41.78±3.21 years. Most common age category was 5th decade (40.0 – 49.9 years) noted in 185 (54.89%), 4th decade in 185(35.31%), 3rd decade in 11 (3.24%), 6th decade in 15 (4.45%) and ≥6th decade in 7(2.07%) cases respectively (Graph 1). Table 1 shows the frequency distribution of hysterectomy as vaginal, total abdominal, total abdominal+ bilateral salpingo - oophorectomy, total abdominal+ unilateral salpingo – oophorectomy and radical hysterectomy were noted in 12 (3.56%), 221 (65.57%), 28 (8.30%), 71 (21.06%) and 5 (1.8%) respectively. Intramural, sub –mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. Table 3 shows the frequency distribution of endometrial patterns in histopathology. Uterine histopathology leiomyoma associated conditions are shown in table 4. Frequency of various lesions was noted as; chronic endometritis 113 (33.53%), chronic cervicitis 173 (51.33%), adenomyosis 7(2.07%), endometrial polyps in 3 (0.89%), cervical polyps in 11(3.26%), ovarian serous cystadenoma, mature cystadenoma and cystadenocarcinoma were noted in 5 (1.48%), 6 (1.78%) and 3(0.89%) respectively, endometriosis in 13 (3.85%) and carcinoma cervix in 3 (0.89%) cases. Variants and abnormal types of leiomyoma are shown in table 5. Leiomyoma such as cellular was noted in 13 (3.85%), Epithelioid 5 (1.48%), Symplastic 6(1.78%), Neurilemma – like 3(0.89%), lipo – & angio – leiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (%0.59), hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively.

Table No.1: Types of Hysterectomy

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>%</th>
<th>X²-value</th>
<th>P</th>
</tr>
</thead>
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<tr>
<td>Vaginal hysterectomy</td>
<td>12</td>
<td>3.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total abdominal hysterectomy</td>
<td>221</td>
<td>65.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total abdominal hysterectomy + Bilateral salpingo-oophorectomy</td>
<td>28</td>
<td>8.30</td>
<td>134.8</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total abdominal hysterectomy + Unilateral salpingo-oophorectomy</td>
<td>71</td>
<td>21.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radical hysterectomy</td>
<td>5</td>
<td>1.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>337</td>
<td>100</td>
<td></td>
<td></td>
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</table>
TABLE No.2: Location of Leiomyoma

<table>
<thead>
<tr>
<th>Location</th>
<th>No.</th>
<th>%</th>
<th>X²-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intramural</td>
<td>183</td>
<td>54.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub mucosal</td>
<td>65</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub serosal</td>
<td>71</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1 location</td>
<td>18</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>337</td>
<td>100</td>
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</tbody>
</table>

TABLE No.3: Frequency distribution of Endometrial patterns

<table>
<thead>
<tr>
<th>Endometrial patterns</th>
<th>No.</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Proliferative phase</td>
<td>189</td>
<td>3.24</td>
</tr>
<tr>
<td>Secretory phase</td>
<td>125</td>
<td>54.89</td>
</tr>
<tr>
<td>Atrophic endometrium</td>
<td>13</td>
<td>35.31</td>
</tr>
<tr>
<td>Simple hyperplasia</td>
<td>7</td>
<td>4.45</td>
</tr>
<tr>
<td>Disordered Proliferative endometrium</td>
<td>3</td>
<td>4.45</td>
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<tr>
<td>Total</td>
<td>337</td>
<td>100</td>
</tr>
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DISCUSSION

The present one is the first hospital based clinicopathological study that analyzed the uterine leiomyoma and associated pathologies in uterine specimen received from Department of Gynecology and Obstetrics and analyzed at the Department of Pathology of Indus Medical College Hospital. Our hospital caters hundreds of gynecological patients a month. Leiomyoma in uterine specimen is a common pathology with or without associated abnormal finding. Leiomyomas are benign tumors of uterine myometrium of reproductive age group. We found mean age of 41.78±3.21 years in 337 cases. This shows the common presenting age was the reproductive age group. Most common age category was 40.0 – 49.9 years noted in 185 (54.89%), 4th decade in 185(35.31%), 3rd decade in 11 (3.24%), 6th decade in 15 (4.45%) and ≥6th decade in 7(2.07%) cases respectively. The findings are in agreement with previous studies.10-12 We found 54.89%
women of perimenopause age group i.e.; 40.0 – 49.9 years. The findings are in line with previous studies. An incidence of 46.5 to 61.84% has been reported by above studies that is consistent finding. A recent study has reported incidence of 54.53% in the perimenopause age group, the findings are in agreement with the present study. However, the age ranged from 22-80 years that is inconsistent finding. This might be because of different study population. Vaginal and abdominal hysterectomies were found in 12 (3.56%) and 221 (65.57%) of cases. The findings are in keeping with previous studies of Geethamala et al mentioned 80.24% abdominal hysterectomies and 19.76% vaginal hysterectomies. Total abdominal with bilateral salpingo – oophorectomy, total abdominal with unilateral salpingo – oophorectomy and radical hysterectomy were noted in 28 (8.30%), 71 (21.06%) and 5 (1.8%) respectively, in present study. The findings are supported by previous studies. However, a recent study revealed 66.23% specimen included utero-cervix with bilateral adnexa, 22.45% utero-cervix only and 1.32% utero-cervix with unilateral adnexa. Frequency of specimen of present study is different from above study; possible reason could be different study populations. Intramural, sub – mucosal, sub – serosal and >1 location of leiomyoma was observed in 183 (54.3%), 65(19.2%), 71(21.0%) and 18 (5.3%) cases respectively. The findings are supported by previous studies. Intramural leiomyoma was noted in 183 (54.3%) that is close to a recent study that noted intramural fibroids in 80.25%. Submucosal and subserosal leiomyoma were observed in 65(19.2%) and 71(21.0%) cases that is inconsistent to a recent study that mentioned in 4.27% and 24.34% cases. However, comparable results were reported by Geethamala et al and Lahori et al. The present study noted chronic endometritis 113 (33.53%), chronic cervicitis 173 (51.33%), adenomyosis 7(2.07%), endometrial polyps in 3 (0.89%), cervical polyps in 11(3.26%), ovarian serous cystadenoma, mature cystadenoma and cystadenocarcinoma were noted in 5 (1.48%), 6 (1.78%) and 3(0.89%) respectively, endomietriosis in 13 (3.85%) and carcinoma cervix in 3 (0.89%) cases. Dual pathology of adenomyosis and leiomyomas was noted in 7(2.07%) of specimen that is consistent with a study reported as 2.07% but contrary to Geethamala et al observed in 29.1%, Gowri et al noted in 29% and Kaur et al noted in 27.69%, Lahori et al in 19.23% and Kulkarni et al in 16%. Low incidence of co – existent adenomyosis and leiomyoma of present study possibly may be because of small sample size. In present study, the cellular leiomyoma was observed in 13 (3.85%), symplastic leiomyoma in 6(1.78%), epithelioid leiomyoma in 5 (1.48%), neureillem – like leiomyoma in 3(0.89%), lipo – and angio – leiomyoma in 1 (0.29%) each, dissecting leiomyoma in 2 (%0.59), leiomyoma with hyaline globules 3 (0.89%) and mitotically active leiomyoma 1 (0.29%) respectively. Finding of cellular leiomyoma is consistent with literature as its incidence is usually <5%, A recent study has reported cellular leiomyoma in 1.13% cases and symplastic leiomyoma in 0.44% that is inconsistent finding but literature shows its incidence range is 0.03 – 0.2%. The evidence based findings of uterine leiomyoma and variant leiomyoma in context of published literature shows the significance of histopathology. Each hysterectomy specimen must be examined by histopathology in proper clinical context to exclude rare pathologies of grave consequences.

CONCLUSION

The present study reports majorities of leiomyomas were intramural (54.3%) and noted in perimenopause aged women. Variants and abnormal types of leiomyomas were observed in 35 (10.38%) of specimen including cellular, epithelioid, symplastic, neureillem – like, lipoleiomyoma, angioleiomyoma, dissecting leiomyoma, and mitotically active leiomyomas. It is recommended each uterine specimen should be analyzed by histopathological examination to rule out incidental grave pathology.

Author’s Contribution:

Concept & Design of Inayatullah Memon

Drafting: Ghulam Abbas Soomro, Shahzad Ali Jiskani

Data Analysis: Qandeel Abbas Soomro

Revisiting Critically: Inayatullah Memon

Final Approval of version: Inayatullah Memon

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Knowledge, Attitude & Perception of Patients about Manual VS Ultrasonic Scaling and its Polishing Treatment
Muhammad Nadeem¹, Nadia Inayat² and Tazeen Zehra³

ABSTRACT

Objective: To evaluate the clinical efficacy and compare the attitudes of patients towards the benefits and cost of routine scaling and polishing and to compare the experience of using manual versus ultrasonic instruments to scale teeth.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Out Patient Department (OPD) in dental block at Darul Sehet Hospital, Karachi from July 2019 to December 2019.

Materials and Methods: A cross sectional study conducted involving 40 adult volunteers attending Out Patient Department (OPD) in dental block at Darul Sehet Hospital. Participants were healthy adults with no significant periodontal diseases randomly allocated to two groups to receive scaling and polishing. 50 patients participated in this study. Patients were randomly allocated to either group. Patients' attitudes towards, and experience of, the scaling and polishing were elicited by means of self-administered questionnaires.

Results: The majority of patients (99%) believed a scaling and polishing was beneficial. Patients considered ultrasonic treatment to be appropriate on significantly more occasions than they did for manual scaling and polishing (P < 0.001). Patient discomfort: with ultrasonic scaling 69.2% felt ‘a little uncomfortable’ or worse compared with 60% of those undergoing manual treatment (P = 0.072).

Conclusion: Routine scaling and polishing is considered beneficial by patients. The majority of patients, regardless of treatment method, experience some degree of discomfort when undergoing a scaling and polishing procedure.

Key Words: Benefit of Scaling, Bleeding on Probing, Plaque.


INTRODUCTION

Dental plaque is defined as soft deposits that form a biofilm adhering to the tooth surface, removable and fixed restorations. It has long been recognized that the presence of dental plaque leads to gingivitis, periodontitis and is also capable of reducing the pH at the surface of enamel to the levels that can cause dissolution of the hydroxyapatite crystals and initiates caries. Periodontal literature shows strong evidence of the critical role of periodontal maintenance provides following active periodontal therapy¹,².

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Nyman et al³ found the recurrence of pockets in treated but noncompliant patients. Others⁴ found an increase in bone loss resulting in greater tooth loss in their noncompliant group. Wilson et al⁵ reported that fewer teeth were lost when patients were compliant.

The main goal in the treatment of patients with periodontitis is to establish and maintain adequate infection control in the dentogingival area. Root/pocket instrumentation (scaling and root planning), combined with effective self-performed supragingival plaque control measures, serves this purpose by altering the subgingival ecological environment through disruption of the microbial biofilm and suppression of the inflammation. According to systematic reviews (Tunkel et al. 2002, van der Weijden & Timmerman 2002, Hallmon & Rees 2003)⁶,⁷, there is no major difference in the efficacy of debridement techniques using hand- or power-driven instruments in terms of pocket reduction and gain in clinical attachment.

A key aim of the programme is to encourage the development of an interest in the link between improvements in primary dental care. More recently, Quirynen et al.1995⁸ advocated the benefit of performing fullmouth SRP within 24h in order to prevent re-infection of the treated sites from the remaining untreated periodontal pockets.
Another consideration in relation to non-surgically performe scaling and root planning is the extent of root instrumentation required for periodontal healing. The original intention with scaling and root planning was not only to remove microbial biofilm and calculus but also ‘contaminated’ root cementum or dentin in order to prepare a root surface biocompatible for soft-tissue healing.

Prior to the 1980s, ultrasonic scalers tip design limited their use to removal of supragingival calculus, plaque, and stain. A technique described the use of modified tips in a manually adjustable ultrasonic unit that facilitated a more thorough periodontal debridement of all subgingival root surfaces. Studies have shown that these modified tips reach closer to the bottom of a periodontal pocket than do hand instruments, cause less root damage, and are less fatiguing to the operator. Cavitation activity occurs as water touches the vibrating ultrasonic tip. This phenomenon may dislodge plaque and other surface irritants at and slightly beyond the reach of the instrument tip.

The 1996 World Workshop in Periodontics concluded that: “Due to demands of skill, time, and endurance (both clinician and patient), a technique for scaling and root planning that is instrument driven, requiring less skill, but facilitating a highly efficient removal of plaque and calculus, would appear to be desirable for the average clinical practice. Further, given a choice, it would seem prudent for the clinician to choose an instrument which would minimize damage to the root surface while achieving the desired end-point.”

The American Academy of Periodontology states: “Since the attitudes toward specific mechanical therapy techniques may influence patient compliance with prescribed treatment regimens, patient acceptance of power-driven scalers versus hand instruments is important. Surprisingly, with regard to comfort, very little data exist comparing different types of instrumentation”.

Prior research has concentrated on the effects of scaling and polishing on periodontal health. Little research has been carried out into the attitudes of patients towards this treatment. This trial was designed to address this gap in the knowledge base by investigating, patients’ attitude towards routine scaling and polishing, and by comparing the experience, again from patients’ of using either manual or ultrasonic techniques.

MATERIALS AND METHODS

A cross sectional study conducted from July 2019 to December 2019 involving 40 adult volunteers attending Out Patient Department (OPD) in dental block at Darul Sehet Hospital. A total of 50 patients with an age range of 20 to 50 years each answered a questionnaire. This questionnaire was created so that a meaningful statistical analysis could be completed. Each patient completed the questionnaire anonymously. A key consideration, when developing the protocol, was to limit disruption of the normal routine of the surgery as much as possible.

**Participation:** Each group was to recruit 25 patients. All adult patients who were dentate generally fit and well, attending for a routine check-up appointment, and who, in the dentist’s clinical opinion, required a simple scaling and polishing were eligible for inclusion in the study. The treatment was defined as: ‘non-surgical treatment involving scaling, polishing, and simple periodontal treatment included oral hygiene instruction, requiring only one visit’. A patient’s eligibility was determined only after examination by the dentist. No influence was made on the decision of the patient’s choice of treatment.

**Inclusion Criteria:**
- Male or Female in need of nonsurgical treatment.
- History of previous scaling and polishing.
- Aged 20 – 50 years.
- Good general health.
- 20+ permanent teeth (including crowned teeth).
- At least eight teeth must show probing pocket depths (PPD) of ≥5mm and bleeding on probing (BOP).

**Exclusion Criteria:**
- Requirement for prophylactic (prescaling) antibiotic cover.
- Removable prosthesis or orthodontic appliance present.
- Existing systemic condition which poses a risk factor for periodontal health e.g. diabetes mellitus.
- Medication which is known to affect the appearance or health of the periodontal tissues.
- Immunosuppressant state.
- Pregnancy.

Participates were healthy, with no systemic risk factors for periodontal disease and no clinical evidence of significant periodontal disease. Individual patient trial questionnaires consisted chiefly of closed single or multiple response questions that were developed following a review of the literature. Questionnaires were self-administered and investigated reasons for carrying out the scaling and polishing and attitudes towards this treatment from the patient. Both groups filled out questionnaires once the treatment had been completed and then concealed them in opaque envelopes.

**Statistical analysis:** Fischer test was conducted to compare patient preference for ultrasonic scaling to patient preference for hand scaling. Overall, respondents found statistical significant result with p value of ≤ 0.001 ultrasonic scaling, better in all respects compared to hand scaling.

**RESULTS**

Patients had a strong preference (99%) for ultrasonic scaling when compared to hand scaling. Particular
preference for the ultrasonic scaling was registered for effective build-up removal, less irritating sound, clean feeling, less overall pain, more overall efficiency. Figure 1 summarises the patient’s perception for the procedure being performed. Patient’s perception for ultrasonic method was more preferable when comparison was done on improved gum condition, esthetic appearances and bad breath. Figure .2 shows the patients preference for both the procedure. About 48% patients were satisfied with the ultrasonic scaling group and only 2% of people had felt they would prefer hand scaling method instead. About 14% people felt uncomfortable with the use of ultrasonic unit and 34% felt sensitivity while the procedure was being performed. While about 44% patients were satisfied with hand scaling procedure and 6% of patients said they would like to go for ultrasonic scaling instead. About 14% people felt uncomfortable with the use of ultrasonic unit and 34% felt sensitivity while the procedure was being performed. While about 44% patients were satisfied with hand scaling procedure and 6% of patients said they would like to go for ultrasonic scaling instead. About 6% patients complained that they were very uncomfortable and about 20% said that they were little uncomfortable during the procedure.

Figure 3 shows that patients were more satisfied with their appearance with ultrasonic scaling.

DISCUSSION

The results of this questionnaire indicated that patients preferred ultrasonic scaling with a manually adjustable unit using specialized tips to hand scaling. There was a stronger preference for ultrasonic scaling among patients in practices using this method without any supplementary use of hand instruments. The ultimate goal with instrumentation of a pathological periodontal pocket is to render the root free from microbial deposits and calculus. However, a number of studies have demonstrated that this goal is frequently not attainable by scaling and root planning (e.g. Waerhaug 1978, Eaton et al. 1985, Caffesse et al. 1986, Brayer et al. 1989, Sherman et al. 1990, Wylam et al. 1993). Despite this fact, non-surgically performed scaling and root planning is an effective treatment modality for periodontal disease, as demonstrated by marked reduction in clinical signs and symptoms of the disease following treatment (for reviews, see Cobb 1996, 2002, Hung & Douglass 2002, van der Weijden & Timmerman 2002, Hallmon & Rees 2003).

A randomized control study could further validate the overall patient preference to the ultrasonic technique. There was also an inherent nonresponse bias to the survey. Patients who may have objected to the use of ultrasonic scaling were free to leave the treatment and hence their opinions were not included.

The results of the patient questionnaire support previous findings which indicate that patients believe that scaling and polishing keep their gums healthy, stop tooth decay make their mouth feel good and improve their appearance 15. The majority of participants surveyed thought that scaling and polishing was important to prevent oral health from deteriorating and for their mouths to be aesthetically and socially acceptable.

A recent review of a number of, mostly hospital based, comparisons between these two techniques did note a moderate time saving16. The comfort of patients during scaling should be considered, as many nervous dental patients apparently find dental hygiene treatment contributes greatly to their anxiety towards visits for dental treatment. Undoubtedly, there are difficulties in conducting studies in general dental practice, including time pressures to both patients and dentists and the need to fit in with the priority of providing good patient care. However, this pilot trial has shown that primary care-focused studies can be successfully carried out with a more positive view of the concept of undertaking research in the dental surgery.

CONCLUSION

The results have demonstrated that routine scaling and polishing is considered to be beneficial by patients and that the majority of patients, regardless of whether they
received ultrasonic or manual treatment, experience some degree of discomfort. This study has also demonstrated that it is possible, with careful choice of research topic and a pragmatic approach, to carry out meaningful research in a primary care setting.

Currently, in the absence of a strong evidence base to support (or refute) the clinical effectiveness of single visit scaling and polishing, the beliefs and preferences of patients regarding scaling and polishing are likely to be influential drivers for treatment provision.

As the evidence base for scaling and polishing develops to a stage at which clear guidelines can be developed, it is important and appropriate that dental professionals and patients are a part of the decision-making process. A combination of appropriate communication, support, and professional incentives will be required to overcome barriers and facilitate any future proposed changes to primary care based (state funded) scaling and polishing provision.

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Drafting: Nadia Inayat
Data Analysis: Tazeen Zehra
Revisiting Critically: Muhammad Nadeem, Nadia Inayat
Final Approval of version: Muhammad Nadeem

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
A Randomized Controlled Trial on the Efficacy of Topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% for the Relief of Symptoms of Vernal Keratoconjunctivitis

Zulfiqar Ali¹, Nadia Nazir¹, Soufia Farrukh², Imran Nazir³, Muhammad Javaid Iqbal⁴ and Zunaira Alvi³

ABSTRACT

Objective: This study was aimed at comparing efficacy of topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% for the symptomatic relief of VKC related symptoms at Bahawal Victoria Hospital, Bahawalpur.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the out-patient department (OPD) of ophthalmology, Bahawal Victoria Hospital, Bahawalpur from October 2019 to March 2020.

Materials and Methods: A total of 186 patients of both gender with VKC were enrolled. Through computer generated numbers, patients were randomly divided into 2 equal groups (93 cases in each group). In Group A, topical olopatadine HCL 0.1% was advised 6 hourly whereas patients of Group-B were advised topical ketotifen fumarate 0.025% 6 hourly. All patients were advised a follow up on 7th and 28th day while final outcome was noted on 28th days following the start of treatment. Efficacy among both treatment groups were noted in the form of relief from VKC related symptoms (itching, watering, foreign body sensation, photophobia).

Results: Out of a total of 186 patients, there were 111 (59.7%) boys 75 (40.3%) girls. Overall, mean age was 9.47±3.46 years (ranging from 5 to 19 years). Majority of the patients, 104 (55.9%) were below or equal to 10 years of age. At the end of the study period, significantly more number of patients in Group-A had relief in itching, watering and foreign body sensation in comparison to patients in Group B (p<0.05). Overall compliance with treatment in both study groups was excellent and no adverse effects were reported in both study groups

Conclusion: Compared to ketotifen fumarate 0.025%, efficacy of olopatadine HCL 0.1% was better in the form of relief of VKC related symptoms. Apparently, no side effects were reported among both study groups while overall compliance with both study drugs was excellent.

Key Words: Vernal keratoconjunctivitis, efficacy, olopatadine hydrochloride 0.1%, ketotifen fumarate 0.025%.

INTRODUCTION

Vernal keratoconjunctivitis (VKC) was 1st described about 150 years ago and it is known to be a chronic inflammatory disease related to ocular surface.¹

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weather while occurrence during winter is not frequent. Clinical types of VKC include palpebral, limbal and mixed types. Most commonly noted symptoms of VKC are intense itching, lacrimation, redness, foreign body sensation, photophobia and thick mucoid discharge. Most commonly endorsed treatment options for the treatment of VKC include topical steroids, anti-histamines as well as mast cell stabilizers. Ketotifen fumarate ophthalmic solution is a benzocyclohexapthiophene derivative utilized for relieving symptoms of VKC. Ketotifen fumarate inhibits histamine H1 receptors, induces mast cell stabilization and prevent eosinophil buildup. Olopatadine hydrochloride 0.1% is a dibenzoxepin derivative that acts via a selective antagonistic reaction on the H1 histamine receptor at the end organ and stabilize conjunctival mast cells to result in inhibition of the release of pro-inflammatory mediators.

In 2013, a study comparing olopatadine 0.1% with ketotifen fumarate 0.025% noted relief of itching and redness as 100% vs. 83.3% and 96.7% vs. 85.0% respectively in both the study groups. Topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% are freely available and affordable therapeutic options for the treatment of VKC but in the past 5 years, no study comparing Topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% has been done in Pakistan to note the symptomatic relief provided by these drugs in patients with VKC. This study was aimed at comparing efficacy of topical Olopatadine Hydrochloride 0.1% and Ketotifen Fumarate 0.025% for the symptomatic relief of VKC at Bahawal Victoria Hospital, Bahawalpur. The results of this study will help us deciding better options aiming symptomatic relief of VKC related symptoms.

MATERIALS AND METHODS

Approval from Institutional Ethical Review Committee was taken for this randomized controlled trial. The study was conducted between 1st October 2019 to 31st March 2020 at out-patient department (OPD) of ophthalmology, Bahawal Victoria Hospital, Bahawalpur.

A sample size of 186 cases (93 cases in each group) considering 2-sided significance level as 95%, power 80% and efficacy of olopatadine HCL 0.1% as 96.7% and ketotifen fumarate 0.025% as 85.0% for the relief of redness.

During the study period, a total of 186 patients with VKC were enrolled. VKC was labeled as presence of conjunctival papillae of >1 mm diameter over the upper tarsal plate along with limbal papillae with or without Trantas dots. Patients coming with seasonal allergic conjunctivitis and perennial allergic conjunctivitis were excluded. Patients missing follow up or not completing the treatment as per advice were also excluded from this study. Written consent was taken from all the study participants or parents/guardians. Through computer generated numbers, patients were randomly divided into 2 equal groups (93 cases in each group). In Group A, topical olopatadine HCL 0.1% was advised 6 hourly whereas patients of Group-B were advised topical ketotifen fumarate 0.025% 6 hourly. All patients were advised a follow up on 7th and 28th day while final outcome was noted on 28th days following the start of treatment. Efficacy among both treatment groups were noted in the form of relief from VKC related symptoms (itching, watering, foreign body sensation, photophobia).

Data analysis was done using computer software SPSS version 26.0. Age was represented in terms of mean and standard deviation and comparison in between study groups was made employing independent sample t-test. Qualitative variables like gender and relief in symptoms were highlighted as frequencies and percentages while chi square test was applied to compare these. P value less than or equal to 0.05 was considered as significant.

RESULTS

Out of a total of 186 patients, there were 111 (59.7%) boys 75 (40.3%) girls showing a male to female ratio of 1.3:1. Overall, mean age was 9.47±3.46 years (ranging from 5 to 19 years). Majority of the patients, 104 (55.9%) were below or equal to 10 years of age. In terms of disease pattern of VKC, most of the patients, 99 (53.2%) were palpebral, 50 (26.9%) bulbar and remaining 47 (25.3%) mixed. Table No.1 showing that there was no significant difference between characteristics of patients in the both study groups (p>0.05).

Table No.1: Characteristics of Patients with VKC among both study groups (n=186)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group-A (n=93)</th>
<th>Group-B (n=93)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>58 (62.4%)</td>
<td>53 (57.0%)</td>
<td>0.4548</td>
</tr>
<tr>
<td>Girls</td>
<td>35 (37.6%)</td>
<td>40 (43.0%)</td>
<td></td>
</tr>
<tr>
<td>Age Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10</td>
<td>56 (60.2%)</td>
<td>48 (51.6%)</td>
<td>0.2374</td>
</tr>
<tr>
<td>&gt;10</td>
<td>37 (39.8%)</td>
<td>45 (48.4%)</td>
<td></td>
</tr>
<tr>
<td>Disease Pattern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palpebral</td>
<td>48 (51.6%)</td>
<td>51 (54.8%)</td>
<td>0.5903</td>
</tr>
<tr>
<td>Bulbar</td>
<td>28 (30.1%)</td>
<td>22 (23.7%)</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>17 (18.3%)</td>
<td>20 (21.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Table number 2 is showing the comparison of relief of symptoms among patients of VKS in both study groups at the end of study period after 28 days of treatment. Significantly more number of patients in Group-A had relief in itching in comparison to patients in Group B (98.9% vs. 90.3%, p=0.0093). In terms of watering, significantly more number of patients in Group-A reported relief when compared to patients in Group-B (98.9% vs. 87.1%, p=0.0016). Foreign body sensation was significantly more relieved among study participants.
in Group-A when compared to Group-B (96.8% vs. 88.2%, p=0.0262). In terms of redness and photophobia, no significant difference in terms of relief among study groups was noted (p>0.05). Overall compliance with treatment in both study groups was excellent and no adverse effects were reported in both study groups.

Table No.2: Comparison of Relief of Symptoms among Patients of VKS in both study groups at the end of study period (n=186)

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Relief</th>
<th>Group-A (n=93)</th>
<th>Group-B (n=93)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Itching</td>
<td>Yes</td>
<td>92 (98.9%)</td>
<td>84 (90.3%)</td>
<td>0.0093</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1 (1.1%)</td>
<td>9 (9.7%)</td>
<td></td>
</tr>
<tr>
<td>Redness</td>
<td>Yes</td>
<td>91 (97.8%)</td>
<td>86 (92.5%)</td>
<td>0.0875</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2 (2.2%)</td>
<td>7 (7.5%)</td>
<td></td>
</tr>
<tr>
<td>Watering</td>
<td>Yes</td>
<td>92 (98.9%)</td>
<td>81 (87.1%)</td>
<td>0.0016</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1 (1.1%)</td>
<td>12 (12.9%)</td>
<td></td>
</tr>
<tr>
<td>Foreign Body Sensation</td>
<td>Yes</td>
<td>90 (96.8%)</td>
<td>82 (88.2%)</td>
<td>0.0262</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3 (3.2%)</td>
<td>11 (11.8%)</td>
<td></td>
</tr>
<tr>
<td>Photophobia</td>
<td>Yes</td>
<td>59 (63.4%)</td>
<td>56 (60.2%)</td>
<td>0.6507</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>34 (36.6%)</td>
<td>37 (39.8%)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

VKC is known to be a frequent and common disorder in South Asian Region. Treatment of VKC has evolved in the last few decades whereas conventional treatment options like antihistamines, mast-cell suppressors as well as steroids are still considered valuable. Clinicians handling VKC around the world have always been interested in addressing exacerbations, reduction of symptoms and avoidance of drugs related complications. In recent decades, improved understanding of the pathogenesis of VKC and researches conducted around the world has led to better management of VKC. Among patients of VKC, mast cells are thought to play an important role to cause signs and symptoms as raised levels of histamine, tryptase, Prostaglandin D2 and leukotriene C4 in the tears of cases having VKC following conjunctival allergen exposure. Drugs having numerous mechanisms of action are now accessible like olopatadine HCL and ketotifen fumarate. As both these drugs are in our use to treat VKC and researchers from around the world have indicated acceptable efficacy of these therapeutic options in multiple findings. Yet, dilemma exists that which option is better than the other as not much local work has been done in this regard.

In the present study, both study drugs provided good overall relief of symptoms but olopatadine HCL proved significantly superior in terms of relieving VKC related symptoms when compared with ketotifen fumarate. A local study comparing olopatadine HCL 0.1% with ketotifen fumarate 0.025% found significantly better efficacy of tolerability among patients using olopatadine HCL 0.01%. Ketaralis CH also noted olopatadine HCL 0.1% to impart better efficacy in comparison to ketotifen fumarate among allergic conjunctivitis cases. Auguilier AJ in his study also noted olopatadine HCL 0.1% to have better efficacy and tolerability against seasonal allergic conjunctivitis when compared to ketotifen fumarate 0.05%. Olopatadine HCL is known for its dual mode of action in terms of H1-antihistamine/mast cell stabilization effects. In other trials, olopatadine has also been found superior when compared to sodium cromoglycate for the treatment of VKC. Leonardi A and Zafirakis P in their double-masked trial reported olopatadine HCL 0.1% to have better efficacy when compared with ketotifen fumarate.

More studies involving multiple study centers and different sets of treatment with prospective interventional design will further add to the findings of this study.

Acknowledgement: The authors would like thank Muhammad Aamir (Research Consultant, Bahawalpur) for his volunteer support in statistical analysis of this research.

CONCLUSION

Compared to ketotifen fumarate 0.025%, efficacy of olopatadine HCL 0.1% was better in the form of relief of VKC related symptoms. Apparently, no side effects were reported among both study groups while overall compliance with both study drugs was excellent.

Author’s Contribution:
Concept & Design of Study: Zulfiqar Ali
Drafting: Nadia Nazir, Soufia Farrukh
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Revisiting Critically: Zulfiqar Ali, Nadia Nazir
Final Approval of version: Zulfiqar Ali

Conflict of Interest: The study has no conflict of interest to declare by any author.
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10. Ahmad I, Rehman M, Khan J, Tahir Z. Comparison of efficacy of olopatadine hydrochloride 0.1% & ketotifen fumarate 0.025% in vernal keratoconjunctivitis. Ophthalmol Update 2015;13(4):254-257.
Case Base Learning an Optimal Teaching Method Among the Undergraduate Students of Surgery and Allied Sciences

Hina Khan¹, Umer Kazi², Asad Raza Jiskani³, Bushra Zulfiqar⁴, Farheen Hameed⁵ and Israr Ahmed Bhutto²

ABSTRACT

Objective: To evaluate the perception of the students about CBL in clinical subjects.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Al-Tibri Medical College and Hospital, between January 2019 and October 2019.

Materials and Methods: A total of 150 numbers of students, 50 from different disciplines like Gynae & Obstetrics, Ophthalmology, and ENT, were included on the bases of convenient sampling. After taking ethical approval, the data was collected through a well-designed questionnaire with the students’ verbal consent. At the end of the clinical posting, the questionnaire was filled, and data was presented in the form of frequency and percentage. Chi-square test was applied to evaluate the qualitative data through SPSS. The level of significance was taken P=<0.05.

Results: Both genders participated. The study results showed no significant difference among the students of Gynae & Obstetrics. Ophthalmology and ENT about the acceptance of CBL is an optimal learning strategy and a well-adopted component of self-directed Learning, particularly in clinical reasoning and case solving.

Conclusion: CBL (Case-Based Learning) is a widely accepted learning strategy and helps develop essential skills required to be an excellent clinician in the future. It is considered the gold standard for Learning and implementing in clinical sciences in the field of medicine early on in students’ medical careers. The educationist should incorporate the CBL in their medical sciences curriculum for the development of clinical reasoning and problem-solving skills.

Key Words: CBL, Self-directed Learning, Ophthalmology, ENT, Gynae & Obstetric.


INTRODUCTION

Undergraduate medical Learning is often difficult and requires teachers to be innovative in teaching methods to deliver medical education to the students effectively. Only through active Learning will students be able to assess different medical situations and will be able to apply their learning in their professional careers. Educators have come to realize that there needs to be a relevance to the learners so that they may be actively engaged in the topic they are studying¹.

These medical schools have now started to understand the importance of early clinical work being implemented early on in the students’ medical education and have opted to mix basic and clinical sciences as vertical integration². This has led to an adaption of a more active based learning in medical colleges. One of these methods is called Case-Based Learning (CBL). In CBL, a written case history is given to undergraduate medical students who study and then discuss the case between their peers in a small group³.⁴. Case-Based Learning was first introduced in the University of Edinburgh by their pathology professor, James Lorrain Smith, initially calling it a case method of teaching pathology⁵. This method aimed to develop a level of thinking in students that will help them link science with clinical practice, by seeing the history of the patient, including symptoms and signs, and other findings at post mortem. CBL is sometimes often compared to another clinical integration method referred to as Problem Based Learning (PBL); however, it is still distinct. CBL and PBL were analyzed, and it was noted that in PBL, students lacked preparation and had minimal guidance when it came to case discussion⁶. However, when it came to CBL, both the students and faculty had the opportunity to prepare in advance along

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with additional guidance throughout the discussion allowing imported points to be learned during the session. It is important to assess that all types of clinical rotations equally benefit from CBL or not. Therefore, a study was conducted to evaluate the effectiveness of CBL in students of Ophthalmology, ENT, and Gynecology.

MATERIALS AND METHODS
The cross-sectional study was designed at Al-Tibri Medical College and Hospital after taken approval from the ethical committee. The data was collected between the duration of January 2019 to October 2019. The students of the 4th year of MBBS were included based on convenient sampling after taking verbal consent from the students. A total of hundred students were involved in the study; in clinical posting, 25 numbers of students were rotated in different departments for a particular duration, and each of the students should cover all the discipline accordingly. According to the curriculum, students have to cover the clinical course of ENT, Ophthalmology, Gynae & Obs, and pediatrics. The students from surgery and allied sciences were included in the study. Total 50 numbers of the participants those were completed their course work and clinical posting in ENT, Ophthalmology, and Gynae and obstetrics included in the study while the students from other disciplines were excluded. The participants filled Self-designed questionnaires; those were attended the CBL session during their clinical rotation. Data was presented in the form of frequency and percentage, and the Chi-square test was applied to analyze the qualitative data through SPSS. The level of significance was considered P=<0.05.

RESULTS
Figure 1: Shows the frequency and percentage of Male and Female Students that filled the questionnaire.

Table 1: Shows the frequency and percentage of responses (Agree, Neutral, Disagree) that the students of Gynae & Obstetrics, Ophthalmology, and ENT There was no significant difference (P > 0.05, Chi-Square Test) between Gynae & Obstetrics, Ophthalmology, and ENT when it came to the importance and effectiveness of Case-Based Learning during their medical education.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Ophthalmology</th>
<th>ENT</th>
<th>Gynae and obstetrics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness of CBL in clinical sciences</td>
<td>Agree 48(96%)</td>
<td>Neutral 2(4%)</td>
<td>Disagree 0(0%)</td>
<td>Agree 47(94%)</td>
</tr>
<tr>
<td>CBL is an effective learning strategy</td>
<td>Agree 48(96%)</td>
<td>Neutral 2(4%)</td>
<td>Disagree 0(0%)</td>
<td>Agree 46(92%)</td>
</tr>
<tr>
<td>CBL helps to develop the learning abilities</td>
<td>Agree 44(88%)</td>
<td>Neutral 4(8%)</td>
<td>Disagree 2(4%)</td>
<td>Agree 45(90%)</td>
</tr>
<tr>
<td>It can mark as a best method of self-directed learning</td>
<td>Agree 45(90%)</td>
<td>Neutral 5(10%)</td>
<td>Disagree 0(0%)</td>
<td>Agree 47(94%)</td>
</tr>
<tr>
<td>CBL makes learner an autonomous</td>
<td>Agree 50(100%)</td>
<td>Neutral 0(0%)</td>
<td>Disagree 0(0%)</td>
<td>Agree 50(100%)</td>
</tr>
<tr>
<td>CBL is an optimal method, that improve the learning skills</td>
<td>Agree 41(82%)</td>
<td>Neutral 5(10%)</td>
<td>Disagree 4(8%)</td>
<td>Agree 40(80%)</td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Yes (%)</td>
<td>No (%)</td>
<td>Chi-Square</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>7</td>
<td>CBL specifically helps to build the skill of critical thinker</td>
<td>41(82%)</td>
<td>8(16%)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CBL is an appropriate method for learning clinical relevant courses</td>
<td>50(100%)</td>
<td>0(0%)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>CBL is an effective learning approach among others</td>
<td>41(82%)</td>
<td>5(10%)</td>
<td>4(8%)</td>
</tr>
<tr>
<td>10</td>
<td>It helps in retaining of relevant facts and clinical information</td>
<td>50(100%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>11</td>
<td>A best way to organize the study habits</td>
<td>45(90%)</td>
<td>5(10%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>12</td>
<td>CBL boost up the communication skills</td>
<td>43(86%)</td>
<td>6(12%)</td>
<td>1(2%)</td>
</tr>
<tr>
<td>13</td>
<td>CBL helps to learn that how to use the different resources to solve the cases</td>
<td>44(88%)</td>
<td>6(12%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>14</td>
<td>CBL makes more comfortable to understand the difficult elements</td>
<td>47(94%)</td>
<td>3(6%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>15</td>
<td>It helps to understand the context through discussion with classmates</td>
<td>50(100%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>16</td>
<td>CBL helps to generate the questions and directed towards the analysis of the given problem</td>
<td>45(19%)</td>
<td>4(8%)</td>
<td>1(2%)</td>
</tr>
<tr>
<td>17</td>
<td>CBL produces strong collaborators</td>
<td>45(90%)</td>
<td>5(10%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>18</td>
<td>CBL makes stress-free preparation of examination</td>
<td>47(94%)</td>
<td>3(6%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>19</td>
<td>It makes easier to solve particularly one best question</td>
<td>46(92%)</td>
<td>4(8%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>20</td>
<td>Facilitator having significant role in the session</td>
<td>50(100%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
</tr>
</tbody>
</table>

Chi-square test applied: P=<0.05 level of significance

**DISCUSSION**

CBL is being used worldwide in medical schools to develop students’ clinical skills and implement both the learning of basic and clinical sciences early on in their medical education. Active and engaging learning is crucial for students. A study on first-year MBBS student in the University of the West Indies, Cave Hill, Barbados highlighted that active and engaging Learning could be used as an effective tool for students. The students of respective surgical department mostly agreed that CBL is an effective learning strategy with...
48 (96%) Ophthalmology students, 47 (94%) ENT, and 47 (94%) Gynecology students responding with agreed on their respective questionnaire. That can demonstrate how CBL is an effective way of learning among the students, helping them develop an active and engaging learning strategy. The students also agreed that CBL helps in solving questions, particularly one best question with 46 (92%) Ophthalmology, 47 (94%) ENT, and 47 (94%) Gynecology students were agreed in their response. Another study conducted on 190 newly graduated nurses in Korea showed a statistically significant difference in those in CBL groups than those in a lecture-based group when it came to problem-solving ability. This study, along with our findings shows that CBL is relevant when it comes to developing clinical problem-solving ability. Learning through CBL also boosted communication skills among medical students. 44 (88%) Ophthalmology, 44 (88%) ENT, 45 (90%) Gynecology students responded with agreeing on the questionnaire when it came to the point that did CBL boost up their communication skills or not. These communication skills are essential for physicians and surgeons to deliver clear and accurate information to their patients and attendees and their other colleagues and staff members to deliver the best total care. A study carried out on 150 MBBS students in NKP Salva Institute of Medical Sciences and Research Center (Nagpur, India) also showed that 79.2% of the students were in view that, small group discussion in CBL helped them in improving their communication skills (soft skills). It can be demonstrated that CBL can help develop communication skills among students that most of them might be lacking and that improvement in these skills will help them to become better clinicians. Students also responded confidently when asked if CBL helped in developing their learning abilities with 48 (96%) Ophthalmology, 46 (92%) ENT, and 46 (92%) Gynecology students were agreed. Furthermore, students were also in agreement when asked if the method is best for self-directed Learning, with 44 (88%) Ophthalmology, 45 (90%) ENT, and 45 (90%) gynecology students responding with agree. Similarly, another study carried out on 166 the second-year medical students showed that 125 (75.30%) students were in the opinion that CBL helped in improving their learning skills, and 135 (81.9%) students also agreed that it helped in promoting independent learning traits. This shows us that CBL helps in developing not just learning abilities, but also promotes self-directed Learning. Self-directed Learning was found to be significantly different in another study that showed a difference in self-directed learning ability (F=4.75, P=0.32) between two groups of nurses, one who attended normal lessons along with CBL program (intervention group), and the other group that only continued normal lessons (Control group) Another study on sports science undergraduate students also saw that the CBL learning model improved the analytical thinking skills of sports sciences. These traits are necessary during the rigorous course of MBBS as without these qualities, and students will find it hard to learn old and new things in the already long and exhausting medical curriculum. CBL helps to enhance these traits among students providing them with invaluable qualities required to succeed in medical school. CBL also proved to be an effective learning approach among other forms of Learning, with 41 (82%) Ophthalmology, 42 (84%) ENT, and 44 (88%) Gynecology students were showed major response towards agrees. A study was done in the department of biochemistry, Maulana Azad Medical College, New Delhi, India, in which 126 first-year students were divided into two groups. One group attended a class of PBL (group 1), whereas the other attended the class of CBL. An evaluation test showed that the marks obtained between the CBL and PBL groups were significantly different from those attending the CBL class and obtained a higher percentage of marks. Some studies have shown that a combination of PBL and CBL learning is effective. However, CBL is the more preferred choice of learning for students and is more preferred over other forms such as Lecture-based, PBL, and Task-Based Learning (TBL). One of the studies was conducted among resident of Ophthalmology at Shanghai Jiao Tong University Affiliated Sixth People's hospital, showed a statistical difference between lecture-based learned (LBL) and Case-Based Learning (CBL) method and students being more satisfied with the teaching combination along with paper review teaching method. This result is very much in line with the results obtained in our study.

CONCLUSION

Case-Based Learning is a widely accepted form of learning in medical schools for students. It has helped develop critical thinking, self-directed learning, problem-solving skills, communication skills, and much more among students of medicine, which has allowed them to become much more comfortable with their field. That will help medical students become better clinicians in the future. Students prefer this method more than other forms of teaching, meaning that other institutes should solely focus more on CBL as it is the gold standard for students allowing the implementation of both basic and clinical sciences early on in their careers. Improvements can still be made in CBL to enhance students’ learning ability, making it a much more powerful tool for students.

Author’s Contribution:
Concept & Design of Study: Hina Khan
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REFERENCES

Comparison between Primary Repair Versus Loop ileostomy in ileal Perforation

Rab Nawaz Malik¹, Abdul Quddus¹, Shabbir Ahmad¹, Hafeez Ullah², Asim Shafi¹ and Imran Asim²

ABSTRACT

Objective: Objective: to compare the outcomes primary repair and loop ileostomy in ileal perforated patients.  
Study Design: Randomized controlled trial study.  
Place and Duration of Study: This study was conducted at the General Surgery department of Bakhtawar Amin Medical and Dental College, Multan and Ghazi Medical College Dera Ghazi Khan. Study was completed in one-year duration from January 2019 to January 2020.  
Materials and Methods: Fifty proven patients of ileal perforation were enrolled in study and divided into two (group A, B) groups by lottery method. Group A managed with primary repair and B with loop ileostomy. SPSS version 23 was used for data analysis.  
Results: Clinical presentations such as pain abdomen, vomiting, fever, constipation, abdomen distension and trauma of Group A was noted as n=5 (20%), n=6 (24%), n=4 (16%), n=3 (12%), n=5 (20%) and n=2 (8%), respectively. While, clinical presentations such as pain abdomen, vomiting, fever, obstruction, abdomen distension and trauma of Group B was noted as n=4 (16%), n=4 (16%), n=8 (32%), n=2 (8%), n=4 (16%) and n=3 (12%), respectively. The difference was statistically insignificant.  
Conclusion: Loop ileostomy is a better choice in management of ileal perforation as compare to primary repair. It is associated with less postoperative complications and this also helpful in reducing mortality in perforated cases.  
Key Words: ileal perforation, Primary repair, Loop ileostomy, surgical management.

INTRODUCTION

In medical profession surgical problem that need to urgent care is gastrointestinal perforation. In Egyptian era gastrointestinal perforations were found documented¹. Perforation was documented when peritoneal contamination occurs due to intraliminal contents and extends through the full thickness of hollow viscous². There is no specific place of perforation it can occur throughout the gastrointestinal tract involving rectum or esophagus. In tropical countries and subcontinent ileal perforation after peritonitis is a usual surgical emergency³. Due to high incidence of tuberculosis and enteric fever of this region it is labelled as fifth common emergency of abdomen.

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This disease has an abrupt onset cover and sharp downhill course that is responsible for high mortality rate although latest and advance diagnostic accuracy and treatment regimes⁴. Other than traumatic perforation of ileum includes viral infection (human immune deficiency virus, cytomegalovirus), bacterial infection (Hesperia, tuberculosis, salmonella) fungal infection, lumbricoids, parasitic infection and others⁵. Drug related also documented like use of NSAIDs (paracetamol, ibuprofen, mefanimic acid and aspirin). Non-specific ileal perforation also found in some cases³⁶. Treatment of this emergency recommended by different authors in favor of different procedures like simple primary repair³, primary ileostomy, repair with ileotransverse colostomy, resection and anastomosis and single layer repair with Omental patch⁷. In this we compare the outcomes of primary repair with loop ileostomy in ileal perforated cases.

MATERIALS AND METHODS

This controlled trial was conducted in general surgery department of Bakhtawar Amin Medical and Dental College, Multan and Ghazi Medical college Dera ghazi Khan. Study was completed in one-year duration from 5th January 2019 to 4th January 2020. Ethical approval was taken from Hospital ethical board and informed written consent was obtained from patients. Non probability consecutive sampling technique was used.
Patients presented at surgical emergency unit with acute abdomen were included in the study. Preoperative selection criteria were not defined. Patients who were suspected for perforation peritonitis on the basis of clinical examination and laboratory investigation and diagnosed as ileal perforation were enrolled. After resuscitation patients were taken for emergency laparotomy. Patients were divided into two groups (group A, B) by lottery method. Antibiotic therapy was given in both groups with Ceftazidim, Ceftriaxone, Cefotaxime and metronidazole. Patients in group A were surgically managed with primary repair and in group B patients were treated with loop ileostomy. Surgeries were performed by senior surgeon having at least 5 years experienced in general surgery. Hand sewn method was used in all patients. Primary closure in group A was done with two-layer method. Vicryl 3/0 was used for closure of inner layer and silk 3/0 was used for closure of outer layer. Loop ileostomy was performed in group B. Post-operative complications like dehiscence, wound infection, fecal fistula, intra-abdominal abscess, septicemia, peritonitis and ileostomy associated complication like paralytic ileus, obstruction of intestine and mortality was noted. SPSS version 23 was used for data analysis. Mean and standard deviation was calculated for quantitative data like age and frequency percentages were calculated for categorical data like gender and complications. P value less than or equal to 0.05 was considered as significant.

RESULTS

Fifty patients were included in this study. The patients were equally divided into two groups as Group A, n=25 (50%) and Group B, n=25 (50%). The mean age of Group A was 31.81±4.86 years. There were n=11 (44%) patients between 18-30 years and n=14 (56%) between 31-65 years. The mean age of Group B was 32.56±5.74 years. There were n=13 (52%) patients between 18-30 years and n=12 (48%) between 31-65 years. The difference was statistically insignificant. (Table. 1). Clinical presentations such as pain abdomen, vomiting, fever, obstipation, abdomen distension and trauma of Group A was noted as n=5 (20%), n=6 (24%), n=4 (16%), n=3 (12%), n=5 (20%) and n=2 (8%), respectively. While, clinical presentations such as pain abdomen, vomiting, fever, obstruction, abdomen distension and trauma of Group B was noted as n=4 (16%), n=4 (16%), n=8 (32%), n=2 (8%), n=4 (16%) and n=3 (12%), respectively. The difference was statistically insignificant. (Table. 2).

Complications in primary repair, ileostomy, and ileostomy closure were shown in table III. The difference was statistically significant for systemic complications (p=0.034), Intra-abdominal collections (p=0.004) and Anastomotic leak (p=0.013). (Table. 3).

Table No.1: Demographic characteristics of the patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A n=25 (50%)</th>
<th>Group B n=25 (50%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>31.81±4.86</td>
<td>32.56±5.74</td>
<td>0.895</td>
</tr>
<tr>
<td>18-30 years</td>
<td>n=11 (44%)</td>
<td>n=13 (52%)</td>
<td>0.571</td>
</tr>
<tr>
<td>31-65 years</td>
<td>n=14 (56%)</td>
<td>n=12 (48%)</td>
<td></td>
</tr>
</tbody>
</table>

Table No.2: Clinical presentations of both the groups

<table>
<thead>
<tr>
<th>Clinical presentations</th>
<th>Group A n=25 (50%)</th>
<th>Group B n=25 (50%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain abdomen</td>
<td>n=5 (20%)</td>
<td>n=4 (16%)</td>
<td>0.798</td>
</tr>
<tr>
<td>Vomiting</td>
<td>n=6 (24%)</td>
<td>n=4 (16%)</td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td>n=4 (16%)</td>
<td>n=8 (32%)</td>
<td></td>
</tr>
<tr>
<td>Obstruction</td>
<td>n=3 (12%)</td>
<td>n=2 (8%)</td>
<td></td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>n=5 (20%)</td>
<td>n=4 (16%)</td>
<td></td>
</tr>
<tr>
<td>Trauma</td>
<td>n=2 (8%)</td>
<td>n=3 (12%)</td>
<td></td>
</tr>
</tbody>
</table>

Table No.3: Complications in primary repair, ileostomy, and ileostomy closure among the groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A n=25 (50%)</th>
<th>Group B n=25 (50%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary repair</td>
<td>n=13 (52%)</td>
<td>n=10 (40%)</td>
<td>0.477</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>n=6 (24%)</td>
<td>n=5 (20%)</td>
<td></td>
</tr>
<tr>
<td>Ileostomy closure</td>
<td>n=6 (24%)</td>
<td>n=10 (40%)</td>
<td></td>
</tr>
<tr>
<td>Wound dehiscence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary repair</td>
<td>n=11 (44%)</td>
<td>n=7 (28%)</td>
<td>0.487</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>n=8 (32%)</td>
<td>n=11 (44%)</td>
<td></td>
</tr>
<tr>
<td>Ileostomy closure</td>
<td>n=6 (24%)</td>
<td>n=7 (28%)</td>
<td></td>
</tr>
<tr>
<td>Intra-abdominal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>complications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary repair</td>
<td>n=10 (40%)</td>
<td>n=4 (16%)</td>
<td>0.034</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>n=11 (44%)</td>
<td>n=9 (36%)</td>
<td></td>
</tr>
<tr>
<td>Ileostomy closure</td>
<td>n=4 (16%)</td>
<td>n=12 (48%)</td>
<td></td>
</tr>
<tr>
<td>Anastomotic leak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary repair</td>
<td>n=17 (68%)</td>
<td>n=10 (40%)</td>
<td>0.004</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>n=7 (28%)</td>
<td>n=4 (16%)</td>
<td></td>
</tr>
<tr>
<td>Ileostomy closure</td>
<td>n=1 (4%)</td>
<td>n=11 (44%)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Ileal perforation peritonitis is serious emergency that needs urgent attention and care at emergency department. Time of symptoms onset and presentation at hospital are two main contributing factors in prognosis. Primary repair of perforation also has good outcomes and prognosis if case is presented in earlier times. Unfortunately, in developing countries presentation is late or sometimes fully blown peritonitis. Septicemia and multiorgan failure are also observed in such type of cases.
Wani et al. conducted a study on this topic and reported tuberculosis in 4% of patients, obstruction in 6% and radiation enteritis in 1% of cases main cause of perforation was found enteric fever, patients were managed end to side ileotransverse anastomosis (42%) and simple closure (49%). Another study was conducted by Adesunkanni et al. in 2005 and reported morbidity rate between 8.8 to 71.3% and mortality rate was 17.5%. In our study we observed obstruction 12% in primary repair and 8% in loop ileostomy group.

A study was conducted by Mittal S et al. and reported high rate of complications in primary repair group. Patients with primary repair have 20% peritonitis secondary to leakage and in loop ileostomy group it was found in 6.67% of patients. Hospital stay ratio was 1 : 1.51 in primary repair to ileostomy group. Another study was conducted by Talwar S et al. and reported 79.1% wound infection and 10% fecal fistula when treated with primary repair of surgical management. In our study wound infection in primary repair was 52% wound infection in primary repair group.

Beniwal et al. conducted a study and reported postoperative complications, fecal fistula (16.5%), bleeding (5.5%), wound infection (23%) and skin excoriation around ileostomy (5.7%). Bakx et al. conducted a study on this topic and managed all cases with loop ileostomy and reported a high incidence of ileostomy related complications.

Ashraf et al. conducted a study at Mayo hospital Lahore and compare complications between primary repair and loop ileostomy in perforated cases of enteric fever. Postoperative complications were found wound dehiscence in 14% primary repair patients and 40% in loop ileostomy, wound infection 86% in group of loop ileostomy and 28% in primary repair. In our study wound dehiscence was found in 44% in primary repair and 28% in loop ileostomy.

Another study by Rehman et al. reported similar finding that postoperative complications were found mostly in primary repair group 32.14% and then in loop ileostomy group 17.85%. Mortality rate was also high in primary group 21.4% than loop ileostomy 7.14%.

CONCLUSION

Loop ileostomy is a better choice in management of ileal perforation as compare to primary repair. It is associated with less postoperative complications and this also helpful in reducing mortality in perforated cases.

Author’s Contribution:
Concept & Design of Study: Rab Nawaz Malik
Drafting: Abdul Quddus, Shabbir Ahmad
Data Analysis: Hafeez Ullah, Asim Shafi, Imran Asim

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES


Comparison of Treatment of Fracture Shaft of Femur in Children with Titanium Elastic Nail VS Hip Spica Casting

Muhammad Iqbal Buzdar¹, Zulfiqar Ahmad¹, Muhammad Imran Haider¹ and Muhammad Ishfaq²

ABSTRACT

Objective: Evaluate the validity of titanium elastic nailing technique in treatment of femoral shaft fracture in children and comparison to hip spica casting.

Study Design: Randomized control trial study.

Place and Duration of Study: This study was conducted at the Orthopedics department of QAMC/BV hospital Bahawalpur in one-year duration from January 2019 to January 2020.

Materials and Methods: Fifty children of age 5-15 year presented with femoral shaft fracture at emergency department were included and the study patients were allocated in two groups by lottery method. Supracondylar femur Subtrochanteric fractures were excluded. Data analysis was done by using SPSS version 23. Mean and standard deviation was calculated for numerical data and frequency percentages were calculated for categorical data.

Results: Mean coronal plane angulation, sagittal plane angulation, rotational malalignment, LLD at 1 year follow-up, union, non-weight-bearing, full weight-bearing and schooling lost, of TEN Group was 2.76±1.64°, 5.41±2.36°, 6.02±1.32°, 0.52±0.11 cm, 6.71±2.28 weeks, 4.66±1.81 weeks, 6.39±3.96 weeks, 7.43±0.99 weeks.

Conclusion: Titanium elastic nailing is the treatment of choice for femoral shaft fracture between ages 5 to 15 years. Titanium elastic nailing reduces the malunion, shortening of length and enhances the union, early recovery and return to school.

Key Words: Hip Spica casting, Pediatric femur fracture, Titanium elastic nailing, Union, Coronal angulation.

INTRODUCTION

Among pediatric injuries and fractures femoral shaft fractures are the most common fractures treated by orthopedic surgeon¹. These fractures result by high traumatic incidents, most common cause of these injuries are high energy trauma². Multiple treatment options are available for its management like hip Spica casting with and without traction and closed reduction, other options include Intramedullary gadejets, plates and fixations³,⁴.

Most of children age less than 6 years can effectively managed with Spica casting and skeletally mature children/teenagers are so best managed with nailing technique (antigrade inter looked)⁵.

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Among these all options best and effective technique for 6-16 years of age is still under debate⁶. Few years before this age group was managed with Spica casting after some time of traction application but this method of treatment have multiple complications like social, psychological, economics⁷.

Spica casting is a non-invasive procedure which not required time for wound healing and no risk of wound infection that why this procedure was recommended for children in previous years⁸. Latest technique of TEN and is property of non-infectious material replace the spica casting method⁹. From last two decade advantages of internal fixation and mobilization were highlighted day by day. External fixation and intramedullary nailing is a normal technique among surgical management¹⁰. This study was conducted to make the recognition about valid treatment of Pediatric femoral fracture like titanium elastic nailing or else.

MATERIALS AND METHODS

This study was started after ethical approval from board of hospital at orthopedic department of QAMC/BV hospital Bahawalpur. Study was completed in one-year duration from 2nd January 2019 to 1st January 2020. Patients were explained about purpose of study and written consent was obtained. Twenty patients of age 5-15 years were related for study and included, gastilo
type I compound fracture of femoral shaft were included. Patients were divided into two groups (group TEN and group Spica) by lottery method. Patients in group TEN were treated with retrograde elastic nailing (equal sized titanium nails). Patients in group Spica were treated with Spica casting. Patients of age more than 15 years and segmental and comminuted fracture were excluded from study. Pathological fractures were also excluded. Standard method of elastic nailing was used and ends of nail were not bent. Fractures of instability and doubtful were done with long leg walking cast after one month of management. Stable fractures were fixed with support of Plaster of Paris Thigh corest. Some exercises for quadriceps strengthening were advised without non-weight-bearing. In Spica group under general anesthesia one and half hip Spica was applied 20-30-degree flexion was given at hip and 10-15 degree at limb on external rotation. Full weight bearing was started after 1-2 weeks of casting and Spica casting was continued till union.

Collected data like age, gender, pattern of fracture, type of surgery, detail of fracture union rehabilitation milestones and complications were noted on SPSS version 23. Mean and standard deviation was calculated for numerical variables. Frequencies (percentages) were calculated for categorical data. Student t test and chi square test were applied to see association among variables. P value less than or equal to 0.05 was considered as significant.

RESULTS

Fifty patients were included in this study, both gender. The patients were divided into two groups i.e. TEN n=25 (50%) and Spica n=25 (50%). There were n=16 (64%) males and n=9 (36%) females, in TEN Group. While, in Spica, there were n=13 (52%) males and n=12 (48%) females. The mean age of Group TEN and Group Spica was 13.71±3.86 years and 12.36±2.78 years, respectively. (Table. 1).

<table>
<thead>
<tr>
<th>Table No.1: Demographic characteristics of both the groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>

The mean coronal plane angulation, sagittal plane angulation, rotational malalignment, LLD at 1 year follow-up, union, non-weight-bearing, full weight-bearing and schooling lost, of TEN Group was 2.76±1.64°, 5.41±2.36°, 6.02±1.32°, 0.52±0.11 cm, 6.71±2.28 weeks, 4.66±1.81 weeks, 6.39±3.96 weeks, 7.43±0.99 weeks, respectively. While, the mean coronal plane angulation, sagittal plane angulation, rotational malalignment, LLD at 1 year follow-up, union, non-weight-bearing, full weight-bearing and schooling lost, of Spica Group was 10.21±2.55, 7.91±2.29, 14.22±3.37, 1.47±0.32 cm, 8.99±1.26 weeks, 8.01±3.02 weeks, 11.32±2.82 weeks and 14.32±3.18 weeks, respectively. (Table. 2).

| Variable | **Ten** | **Spica** | **P-value** |
|------------------------------------------------|
| Coronal plane angulation (°) | 2.76±1.64 | 10.21±2.55 | 0.000 |
| Sagittal plane angulation (°) | 5.41±2.36 | 7.91±2.29 | 0.028 |
| Rotational malalignment (°) | 6.02±1.32 | 14.22±3.37 | 0.000 |
| LLD at 1 year follow-up (cm) | 0.52±0.11 | 1.47±0.32 | 0.000 |
| Union (weeks) | 6.71±2.28 | 8.99±1.26 | 0.013 |
| Non-weight-bearing (weeks) | 4.66±1.81 | 8.01±3.02 | 0.008 |
| Full weight-bearing (weeks) | 6.39±3.96 | 11.32±2.82 | 0.005 |
| Schooling lost (weeks) | 7.43±0.99 | 14.32±3.18 | 0.000 |

DISCUSSION

Femoral fractures are common in children and treated with Spica casting and traction after Spica casting. This procedure also resulted in number of complications. In a study Martinez et al13 reported joint stiffness, malunion and delay in functional outcome. In another study conducted by Thompsen et al12 reported that complications occurred in both groups but Spica group have higher complications. Our study also reported similar findings that Spica group have higher complications rate as compared to titanium elastic nailing.

In a study conducted by Saseendar et al13 reported that higher coronal plane angulation was present in Spica casting group, rotational malalignment and limb length discrepancy also higher in Spica casting. Similar finding was reported in a study by Flynn et al14. Another study was conducted by Pollak et al15 in 1994 and reported higher incidence of loss of reduction and malunion in Spica casting group.

In angulation following titanium nailing is due to miss match of nails and loss of diameter at fracture site. This finding was reported by Saikia et al16 and Navayanan et al17. Both of these studies recommended that protocols and standards of procedure must be followed.
Lee et al. reported higher incidence of shortening and angulation that unacceptable is high in Spica casting group as compared elastic nailing treatment modality. Another study by Singh et al. also reported similar findings angulation shortening is an undesired complication. His study compared these results with elastic nailing in which group this complication is less found. All actions before concluded that early union and weight bearing is the key to early recovery to routine work and school. Similar milestones were recognized by Griesberg et al. Hedin et al. also conducted a study and reported that Spica casting have greater complications rate as compared to elastic nailing technique, malaligament and angulation miss match are two main outcomes that are essential to identify in both techniques.

CONCLUSION

This study reveals that Titanium elastic nailing is the treatment of choice for femoral shaft fracture between ages 5 to 15 years. Titanium elastic nailing reduces the malunion, shortening of length and enhances the union, early recovery and return to school.

Author’s Contribution

Concept & Design of Study: Muhammad Iqbal Buzdar
Drafting: Zulfiqar Ahmad, Muhammad Imran Haider
Data Analysis: Muhammad Ishfaq
Revisiting Critically: Muhammad Iqbal Buzdar, Zulfiqar Ahmad
Final Approval of version: Muhammad Iqbal Buzdar

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES


Efficacy of Endoscopic Third Ventriculostomy in Posterior Fossa Tumors Associated Hydrocephalus
Syed Zahid Hussain Shah1, Shoaib Saleem Khan2 and Muhammad Aamir1

ABSTRACT

Objective: To assess the efficacy of ETV in hydrocephalus related to the posterior fossa tumors in children.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the department of Neurosurgery Nishtar Hospital Multan from January 2018 to March 2020.

Materials and Methods: A total of 45 patients were included in this study. Among the Group 1 was divided into Group 1a including 10 patients who underwent endoscopic third ventriculostomy (ETV) and Group 1b including 7 patients who underwent ventriculo-peritoneal (VP) shunt insertion for relieving intracranial hypertension, depending upon personal preference of neurosurgeons attending those patients. CT scan was done on all of these 45 patients after posterior fossa surgery and it was done repeatedly afterwards depending upon clinical conditions.

Results: Later on, 8 (80 %) patients of group 1a, 2 (28.6 %) patients of group 1b, 13 (86.7%) patients of group 2, and 12 (92.3%) patients of group 3 were shunt free, and the difference among these groups was statistically significant.

Conclusion: As the nature of postoperative hydrocephalus is obstructive, ETV should be regarded as a possible treatment procedure in all cases.

Key Words: Endoscopic Third ventriculostomy, Posterior Fossa Tumors, Efficacy, Corticosteroids, Hydrocephalus.

Citation of article: Shah SZH, Khan SS, Aamir M. Efficacy of Endoscopic Third Ventriculostomy in Posterior Fossa Tumors Associated Hydrocephalus. Med Forum 2020;31(8):54-57.

INTRODUCTION

There is no common opinion found among neurosurgeons regarding the best approach for management and treatment of obstructive hydrocephalus and its complications secondary to posterior fossa tumors and its subtypes. According to some studies it was suggested by the authors that following the surgical approach to the tumor, preoperative indwelling cerebrospinal fluid shunt are most beneficial technique1.2. On the other hand, some of them suggested use of corticosteroids as pretreatment, direct approach to the external ventricular drainage and posterior fossa pathology is required for better management3. Studies have been made on the management of hydrocephalus associated with posterior fossa tumors4.5. Advantage of immediate tumor removal in normalizing cerebrospinal fluid (CSF) dynamics has been underlined by many past studies. In one third of the cases clinical practices revealed presence of hydrocephalus even in any small lesion6. The endoscopic third ventriculostomy (ETV) before surgical procedure includes following advantages: need of emergency procedures is reduced, control of the intracranial pressure (ICP), provide adequate scheduling for operation for removal of tumor, and reduction in risk in case of external drainage along with the reduction in the chances of postoperative hydrocephalus7. Another obvious advantage of this procedure according to neurosurgeons is that it allows the removal of lesion in case of relaxed brain and normal ICP which is difficult to weight. In patients only underwent removal of the tumor and those with filled preoperative ETV due to intraventricular bleeding with secondary closure of the stoma, ETV is done postoperatively in case of persisting hydrocephalus8. ETV is very advantageous when carried out postoperatively for persisting hydrocephalus9 and is more selective to use than preoperatively. If it is used in external CSF drainage which is used for controlling the pressure as well as in excluding the cases in which spontaneous cure of the hydrocephalus has reached it has been reported to be disadvantageous in first few days after operation. A number of studies have been conducted over the use of ETV in patients with posterior fossa tumors but the findings have not shown

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Printed: August, 2020
any significant results. In this study we are going to assess the efficacy of ETV in pediatric patients with hydrocephalus related to the posterior fossa tumors.

MATERIALS AND METHODS

This is a randomized controlled trial conducted in the department of neurosurgery Nishtar Hospital Multan from January 2018 to March 2020. The ethical approval for this study was obtained from ethical board of the hospital. Sample size for the study was calculated using the reference study by Ruggiero et al [10]. A total of 45 patients were included in this study. A non-probability consecutive sampling technique was used. Patients unwilling to participate in the study and with any contraindication to anesthesia induction, any severe systematic disease such as CKD, CLD and IHD were excluded from the study. CT scan was done on all the 45 patients in the study and among those Group 1 including 17 patients showed severe hydrocephalus and symptoms of intracranial hypertension. Among the Group 1 was divided into Group 1a including 10 patients who underwent endoscopic third ventriculostomy (ETV) and Group 1b including 7 patients who underwent ventriculoperitoneal (VP) shunt insertion for relieving intracranial hypertension, depending upon personal preference of neurosurgeons attending those patients. MRI images were attained for 26 patients and schedule for tumor resection was made under non-emergency conditions. Fifteen patients of Group 2 were suffering from mild hydrocephalus and were managed with corticosteroid drugs, diuretics and posterior fossa surgery was done in these patients after MRI examination. Group 3 included 13 patients without hydrocephalus after MRI imaging undergone posterior fossa surgery. CT scan was done on all of these 45 patients after posterior fossa surgery and it was done repeatedly afterwards depending upon clinical conditions. There were 4 children in which endoscopic third ventriculostomy (ETV) was done. In two of these children, ETV was performed when shunts implanted before tumor removal were malfunctioned and in other two children after 3-7 days of tumor surgery shunt was malfunctioned. Statistical analysis was done using the computer software SPSS version 23. Frequency and percentage was calculated for categorical variables.

RESULTS

Group 1a included 10 patients in which ETV was performed. Tumor was present in midline in 6 patients, in cerebellar hemisphere in 2 patients, in brainstem in one patient, and in cerebellopontine angle in one patient. On tumor type, 5 patients had medulloblastoma, 2 were diagnosed of Ependymoma, one had PNET, one had ganglioglioma and one patient has abscess. Total resection was performed in 6 patients; subtotal resection was performed in 3 patients; and no resection was done in one patient. Group 1b included 7 patients in which ETV was performed. Tumor was present in midline in 6 patients, and in brainstem in one patient. On tumor type, 3 patients had medulloblastoma, 2 patients had Ependymoma, one had PNET, one had ganglioglioma and one patient has plessopapilloma. Total resection and subtotal resection was performed in 6 and one patients respectively.

Table No.1: Localization, type and resection extent of tumor

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Group 1a (n=10)</th>
<th>Group 1b (n=7)</th>
<th>Group 2 (n=15)</th>
<th>Group 3 (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tumor localization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midline</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Cerebellar hemisphere</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Brainstem</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Cerebellopontine angle</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Type of Tumor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medulloplasmoma</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>PNET</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ependymoma</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Astrocytoma</td>
<td>0</td>
<td>0</td>
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<td>2</td>
</tr>
<tr>
<td>Ganglioglioma</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Plessopapilloma</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Abscess</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Resection Extent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>6</td>
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<td>Biopsy</td>
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<tr>
<td>None</td>
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</table>
Group 2 included 15 patients in which ETV was performed. Tumor was present in midline in 9 patients, in cerebellar hemisphere in 3 patients, in brainstem in one patient, and in cerebellopontine angle in 2 patients. On tumor type, medulloblastoma was diagnosed in 4 patients; Ependymoma and PNET were diagnosed in 3 patients each; abscess was diagnosed in 2 patients; and ganglioglioma, astrocytoma and Plessopapilloma were diagnosed in one patient each. Total resection, subtotal resection and partial resection was performed in nine, five and in one patients respectively.

Group 3 included 13 patients in which ETV was performed. Tumor was present in midline in 10 patients, in cerebellar hemisphere in 1 patient, and in brainstem in 2 patients. On tumor type, medulloblastoma was diagnosed in 5 patients; PNET, ganglioglioma and astrocytoma were diagnosed in 2 patients each; and Plessopapilloma and abscess were diagnosed in one patient each. Total resection was performed in 8 patients; subtotal resection was performed in 3 patients; partial resection was done in one patient; and biopsy was performed in one patient.

Table-1
Later on, 8 (80 %) patients of group 1a, 2 (28.6 %) patients of group 1b, 13 (86.7%) patients of group 2, and 12 (92.3%) patients of group 3 were shunt free, and the difference among these groups was statistically significant. Table-2.

Table No.2: Shunt-free patients percentage

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>8</td>
<td>80.0</td>
</tr>
<tr>
<td>1b</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>86.7</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>92.3</td>
</tr>
<tr>
<td>P value</td>
<td>0.007</td>
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</table>

DISCUSSION
In children, association between the lethal condition posterior fossa tumors with hydrocephalus, need urgent surgical treatment. Rate of morbidity and mortality rate was reduced by shunt placement preoperatively. Quick normalization and postoperative prevention of intracranial pressure (ICP) elevation, risk of infection was reduced which occurred due to continuous extraventricular drainage (EVD), betterm of general conditions of patients, and execution of diagnostic and therapeutic procedures via reservoir may also be possible as reported as few advantages of preliminary shunting reported in a study by Bhm et al11. However, there have been a lots of arguments against use of systematic shunting preoperatively. In another study done by Richard, when compared to EVD, the risk of morbidity was reported with 2.2% complication rate for less than 5 days12. In patients with posterior fossa tumors with systematic shunting preoperatively, cases of upward herniation (10%) were reported by Epstein and Murali13. There were also cases of medulloblastomas spreading through ventriculo-peritoneal shunts in a study by Hoffman14 and Fiorillo et al15. The requirement of shunt placement has been questioned by neurosurgeons due to different arguments and developments in accessibility and type of neuroimaging systems. In different studies policy for treatment of posterior fossa tumor and its associated hydrocephalus is suggested like early surgery, treatment with corticosteroid, and drainage from external ventricle. Use of steroids causes reduction in posterior fossa swelling.

Patients with medulloblastomas suffering from severe hydrocephalus before surgical removal of tumor are predicted to require shunt placement16. Hydrocephalus of obstructive nature may be caused by obstruction at 4th ventricle outlet level that provides the rational basis of ETV. Purpose of ETV is to build a communication, at the level of the third ventricle floor, between the ventricular system and subarachnoid spaces. In a study done by Sainte-Rose et al. patients with severe hydrocephalus underwent ETVs before removal of tumor were reviewed in 67 cases. When ETV was compared with “conventional treatment” such as steroids, surgery, ventricular drainage etc. performed in patients with severe hydrocephalus after tumor removal and without ventricular enlargement evidence, proved that ETV had a prophylactic and curative effect on intracranial hypertension. Achievement of normal CSF hydrodynamics preoperatively leads to permanent decrease in the impairment of CSF circulation, postoperatively.

Success rate of ETV for management of hydrocephalus was reported to be 100% when performed in 8 patients according to a study conducted by Sainte-Rose et al.17. Inflammation of the cerebellum, reabsorption of CSF alteration due to subarachnoid hemorrhage after surgery and formation of adhesions at 4th ventricle outlet level and cisterns were some of the multifactorial causes of hydrocephalus when carried out postoperatively according to outcomes of previous studies17. As operative position plays an important role in allowing reduced intraoperative bleeding, more fine clearance of blood and other surgery related debris to the sitting adopted by Sainte-Rose’s patients. There was more perioperative bleeding, inaction of blood and debris, increased contamination risk of the subarachnoid space, and postoperative adhesions prone to position used in patients included in the past study17. Due to local recurrence of tumor or of subarachnoid space spread, it can cause occurrence of postoperative hydrocephalus after months or years17.

CONCLUSION
ETV prevents postoperative hydrocephalus due to cerebellar swelling but it does not prevent hydrocephalus in all cases. CSF infection risk is also
eliminated due to ETV that was related to external drainage and also reduces the risk of overdrainage to minimal as it presents more physiological CSF drainage compared to other procedures. As the nature of postoperative hydrocephalus is obstructive, ETV should be regarded as a possible treatment procedure in all cases.

Author's Contribution:
Concept & Design of Study: Syed Zahid Hussain Shah
Drafting: Shoaib Saleem Khan
Data Analysis: Muhammad Aamir
Revisiting Critically: Syed Zahid Hussain Shah, Shoaib Saleem Khan
Final Approval of version: Syed Zahid Hussain Shah

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
Glucose-6-Phosphate Dehydrogenase Deficiency in Icteric Neonates with indirect Hyperbilirubinemia

Nathumal Maheshwari¹, Ashok Kumar¹, Adnan Bashir³, Shakeel Ahmed⁴, Bilawal Hingorjo⁵ and Anjum Rehman²

ABSTRACT

Objective: Determining the Glucose-6-phosphate dehydrogenase (G6PD) deficiency in icteric neonates with indirect hyperbilirubinemia reporting at a tertiary care hospital of Sindh.

Study Design: Cross Sectional study.

Place and Duration of Study: This study was conducted at the Department of Paediatrics, SMBB Medical College Layari General Hospital, Karachi, Sindh from January 2017 to May 2019.

Materials and Methods: A sample of 311 icteric neonates was selected by convenient probability sampling through inclusion and exclusion criteria. Complete blood counts and reticulocyte counts were analyzed on Sysmex KX-21 hematology analyzer. Serum bilirubin and glucose-6-phosphate dehydrogenase were estimated by diazo method and color decolorization method (Sigma assay kit). Statistical analysis was performed at 95% confidence interval (P≤0.05) using SPSS software 21.0 (IBM, Inc USA).

Results: Of 311 sample size, 23 (7.39%) revealed G6PD deficiency and 288 (92.6%) neonates revealed normal G6PD concentrations. Age, Gestational age and hemoglobin were similar in both G6PD normal and deficient neonates. Anemia, reticulocyte counts, direct, indirect and total bilirubin revealed significant differences in G6PD deficient and normal neonates (P=0.0001).

Conclusion: The present study reports 7.39% frequency of Glucose-6-phosphate dehydrogenase deficiency in icteric neonates with indirect hyperbilirubinemia.

Key Words: Icteric Neonates, G6PD Deficiency, Indirect Hyperbilirubinemia.

INTRODUCTION

Glucose-6-Phosphate-Dehydrogenase (G6PD) is the most important enzyme of hexose monophosphate (HMP) pathway of glucose metabolism. It catalyzes the first biochemical reaction of HMP glucose pathway; converting glucose 6 phosphates to 6-phosphogluconate.

G6PD deficiency is the most common enzymopathy that manifests clinically.¹,² G6PD deficiency is a congenital inherited enzymopathy affecting many organs but the red blood cells (RBCs) are adversely affected at the most. HMP pathway generates NADPH from glucose that is essential for maintaining the RBC cell membrane integrity. NADPH is proton donor to the glutathione system of RBCs keeping it ready for scavenging the free radicals. Glutathione system maintains the vital functions of RBC by removing the oxygen free radicals that may alter cell structure.¹,² Current estimates show the G6PD deficiency affects 400 million people over the globe. G6PD deficiency is an X linked disorder.³,⁴ G6PD deficiency was discovered 50 years ago. G6PD deficiency is of clinical importance because of its severe effects on RBCs. One of the clinical manifestations of G6PD enzymopathy is the neonatal hyperbilirubinemia without hemolysis. Deficiency may be serious causing kernicterus leading to death. Neonatal infections are increased by G6PD deficiency.⁵,⁶ G6PD deficiency was reported in 10% of black neonates in the United States without severe neonatal jaundice. Incidence of G6PD enzymopathy varies from country to country. Its incidence is reported as 40% in Nigeria, 18.4% in Saudi Arabia, 12.2% in India, 1.62% in Singapore, 1.57% in Jamaica, 3.5% in...
Malaysia and 0.1% in Japan and Europe, 10% in Iran and 14% in Bengal in neonatal hyperbilirubinemia without hemolysis.\textsuperscript{1,2} Prevalence of G6PD deficiency is 32.5% in Africa and Arabian Peninsula. Prevalence of 62% is reported in Kurdish Jews. In Pakistan, the G6PD deficiency ranges between 3 to 6.9% similar to the Southern China and Russia.\textsuperscript{1,3} The high and low prevalence of G6PD deficiency may be due to the consanguine marriages and homozygous female add more to enzymopathy. Other studies from Pakistan revealed 16%\textsuperscript{6} and 30.1% deficiency of G6PD in neonates with hyperbilirubinemia without hemolysis. Increasing neonatal hyperbilirubinemia in many geographical areas is linked with the co-occurrence of G6PD deficiency. However, currently, few empirical studies are reported from Pakistan, hence there is need of conducting more studies. The present prospective study was conducted to determine the frequency of Glucose-6-phosphate dehydrogenase (G6PD) deficiency in icteric neonates without hemolysis at a tertiary care hospital of Sindh.

MATERIALS AND METHODS

The present cross sectional study was conducted at the Neonatology unit, Department of Paediatrics, Shaheed Muhtrama Benazir Bhutto (SMBB) Medical College Layari General Hospital, Karachi Sindh. Research protocol was applied for ethical review committee approval. The study was conducted over duration of >2 years (January 2017 to May 2019). Sample size for the research protocol was calculated by 'sampling for proportions'. Sample size was calculated to be 311 (at 5% α-level of significance, 90% Power (test) at an expected % of G6PD deficiency in neonates as 16.2%\textsuperscript{1}. A sample of 311 icteric neonates (hyperbilirubinemia) were selected by convenient probability sampling by neonates with hyperbilirubinemia without hemolysis. Increasing neonatal hyperbilirubinemia in many geographical areas is linked with the co-occurrence of G6PD deficiency. However, currently, few empirical studies are reported from Pakistan, hence there is need of conducting more studies. The present prospective study was conducted to determine the frequency of Glucose-6-phosphate dehydrogenase (G6PD) deficiency in icteric neonates without hemolysis at a tertiary care hospital of Sindh.

RESULTS

Of 311 sample size, 23 (7.39%) revealed G6PD deficiency and 288 (92.6%) neonates revealed normal G6PD concentrations (Table 1, Graph-1).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>G6PD Deficiency</th>
<th>G6PD Normal</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (days)</td>
<td>5.61±2.10</td>
<td>5.86±2.12</td>
<td>0.57</td>
</tr>
<tr>
<td>Gestational age (weeks)</td>
<td>38.73±0.41</td>
<td>38.7±0.39</td>
<td>0.79</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>16.97±1.65</td>
<td>17.47±1.54</td>
<td>0.14</td>
</tr>
<tr>
<td>Reticulocyte counts</td>
<td>2.43±0.89</td>
<td>4.06±1.17</td>
<td>0.0001</td>
</tr>
<tr>
<td>Direct Bilirubin (mg/dL)</td>
<td>2.63±0.80</td>
<td>4.09±1.18</td>
<td>0.0001</td>
</tr>
<tr>
<td>Indirect Bilirubin (mg/dL)</td>
<td>22.17±1.95</td>
<td>19.11±1.59</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total Bilirubin (mg/dL)</td>
<td>23.97±2.37</td>
<td>19.23±1.63</td>
<td>0.0001</td>
</tr>
<tr>
<td>G6PD Deficiency</td>
<td>23 (7.39%)</td>
<td>288(92.6%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Anemia</td>
<td>7 (30.4%)</td>
<td>57(19.79%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>288</td>
<td>311</td>
</tr>
</tbody>
</table>

Graph No.1: Bar graph showing frequency of normal and deficiency of Glucose 6 phosphate dehydrogenase
Of 311 sample; 215 (69%) were male and 96 (31%) were female. Male to female ratio was 2.29:1. Of 23 (7.39%) G6PD deficient neonates; 17 (73.9%) were male and 6 (26.08%) (P=0.0001). These findings are also in keeping with previous studies.1,8,11-14

Munir et al8 conducted study at the Children Hospital, PIMS, Islamabad, analyzed 160 icteric neonates and reported 6.7% frequency of G6PD deficiency and male neonates predominated. The findings of above study in line with the present study. Siddiqui et al10 reported 5.4% frequency of G6PD deficiency that is inconsistent with present study, reason is clear that the sample size of above study was small compared to the present study. Alvi et al11 reported 10% G6PD deficiency in neonates with indirect hyperbilirubinemia. Frequency of 10% G6PD deficiency is higher than the present study. However, another previous study12 reported 8.2% of neonates were G6PD deficient that approximates to our present observations of 7.39% G6PD deficiency in icteric neonates. Another previous study13 reported 8.2% of neonates were G6PD deficient. Above findings is in keeping with the present study. A previous study14 showed 12% of adults patients having G6PD enzyme deficiency. In present study, significant differences were observed in reticulocyte counts, direct, indirect and total bilirubin in G6PD deficient neonates. The findings are in agreement with previous studies.1,15-17

However, Munir et al8 reported no difference in reticulocyte counts and hemoglobin in G6PD-deficient neonates compared to G6PD normal neonates. This is inconsistent to present and other previous studies.15-17

We observed hyperbilirubinemia and icterus in >90% of neonates that is supported by a previous studies11,12 that observed similar 80%-90% neonates revealed
jaundice within first 7 days of life respectively. Daliri et al.\textsuperscript{19} analyzed 284 neonates and reported 12.1% frequency of G6PD deficiency of sample. A recent study\textsuperscript{10} published results of screening of 5652 neonates, and reported 12.4% prevalence of G6PD deficiency. Male predominated for the G6PD deficiency. The findings of above study are in support to observations of the present study. A study\textsuperscript{1} from Pakistan analyzed 400 male children. They reported overall prevalence of 10% G6PD deficiency the findings are in keeping with the present study. Another recent study\textsuperscript{20} analyzed G6PD in 100 neonates with icterus and reported 6% frequency of G6PD deficiency. Jan et al.\textsuperscript{21} analyzed 1695 neonates with jaundice and found 152(9%) deficiency of G6PD. They further added the most of the neonates presented with icterus in the first 4 days of life, this is in agreement with the present study. Evidence based findings of present prospective in light of published literature from Pakistan points towards the need of screening of glucose-6-phosphate dehydrogenase for the icteric neonates with indirect hyperbilirubinemia. This will help prevent the hemolytic crises, hyperbilirubinemia and associated complications like kernicterus in neonates. Timely measures to combat the morbidities of G6PD deficiency will help better management and outcome of neonates. One of the limitations of present study is small sample size hence results cannot be generalized to other settings. But the strength of study lays in its prospective study design and inclusion criteria of research protocol.

**CONCLUSION**

The present study reports 7.39% frequency of Glucose-6-phosphate dehydrogenase deficiency in icteric neonates with indirect hyperbilirubinemia. We recommend performing G6PD assay for all those icteric neonates presenting with indirect hyperbilirubinemia to prevent hemolytic crisis, kernicterus and other complications. Timely measures to combat the morbidities of G6PD deficiency will help better management and outcome of neonates. One of the limitations of present study is small sample size hence results cannot be generalized to other settings. But the strength of study lays in its prospective study design and inclusion criteria of research protocol.

**Author’s Contribution:**

Concept & Design of Study: Nathumal Maheshwari
Drafting: Ashok Kumar, Adnan Bashir
Data Analysis: Shakeel Ahmed, Bilal Hingorjo, Anjum Rehman
Revisiting Critically: Nathumal Maheshwari, Ashok Kumar
Final Approval of version: Nathumal Maheshwari

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

**REFERENCES**

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Impact of Acid and Fluoride Containing Mouthwash on Corrosion of Stainless Steel Orthodontic Wires: In-Vitro Study
Mehreen Wajahat¹, Faisal Moeen², Muhammad Hassan¹, Faisal Mustafa³, Muhammad Luqman Hashmi³ and Sumera Siddique³

ABSTRACT

Objective: This project aimed at selecting the least corrosive mouthwash that can be prescribed by working practitioners during the orthodontic treatment when their patient is being treated with Stainless Steel (SS) wire for longer periods.

Study Design: Comparative study.

Place and Duration of Study: This study was conducted at the Institute of Space Technology (IST) Islamabad. Standard medium for this study i.e., artificial saliva was prepared at the Interdisciplinary Research Centre in Biomedical Materials (IRCBM) Comsats University, Lahore from December 2018 to April 2019.

Materials and Methods: A comparative study was designed between acid and fluoride-containing mouthwashes for a valuable addition in the existing literature by evaluating corrosive effects on orthodontic wires. Sample wires were properly cleaned and coated with an epoxy resin. Two types of mouthwashes were used as test solutions whereas artificial saliva was considered as a standard test solution. After testing the wires, their surface morphology was explored under a Field Emission Scanning Electron Microscope (FESEM). The numeric data were then statistically analyzed by One-Way ANOVA using the SPSS version 23.0.

Results: Mouthwash containing HCl in 0.15% w/v of Benzydamine Hydrochloride showed lesser corrosion than the one having Fluoride content in 0.05% w/v of Sodium Monofluorophosphate.

Conclusion: This study suggested that in clinical practice, acid-containing mouthwash should be preferred over fluoride-containing mouthwashes when SS wires are employed for longer durations during the orthodontic treatment.

Key Words: Corrosion, Mouthwashes, Archwires, Stainless steel.


INTRODUCTION

Orthodontic treatment involves the alignment of malaligned and crowded teeth, intending to improve the function and aesthetics of the dentition. Malocclusion is a risk factor for plaque retention which is prone to gingival as well as caries. The corrosion due to chemical reactivity may lead to roughened surface and weakening of wire, leading to mechanical failure of the orthodontic device¹⁻³.

As in prolonged orthodontic treatments, fluoride and acid concentrations in the oral cavity can have negative effects on Stainless Steel (SS) wires⁴. Owing to its ionic properties, the environment of the oral cavity is encouraging to metal wire degradation causing the release of metal ions⁵. Metal ions can be released regardless of protective oxide film present on metal wires.¹ Two simultaneous chemical reactions that occur on the metal surface are:

i. Oxidation (anodic reaction): Results in the production of ferrous ions (Eq. 1).

\[
\text{Fe}^{0} \rightarrow \text{Fe}^{2+} + 2e^- \quad \text{Eq. 1}
\]

ii. Reduction (cathodic reaction): Results in the production of hydroxide ions (Eq. 2), water (Eq. 3), or hydrogen gas (Eq. 4), when electrons produced by the anodic reaction are consumed.

\[
\text{O}_2 + 2\text{H}_2\text{O}^+ + 4e^- \rightarrow 4\text{OH}^- \quad \text{Eq. 2}
\]

\[
\text{O}_2 + 4\text{H}^+ + 4e^- \rightarrow 2\text{H}_2\text{O} \quad \text{Eq. 3}
\]

\[
2\text{H}_2\text{O}^+ + 2e^- \rightarrow \text{H}_2 + \text{H}_2\text{O} \quad \text{Eq. 4}
\]

Eq. 3 and 4 are most relevant to the corrosion of wires in an oral environment.

The solution type defines the extent of corrosion. Metals in the oral cavity are challenged by different
acidic contents, due to which the cathodic and anodic reactions are enhanced leading to the dissolution (corrosion) of metal. Therefore, higher levels of acid or fluoride inside the oral cavity due to the use of acid or fluoride mouthwashes respectively can increase the process of corrosion 6.

Solutions containing fluoride and chloride could cause corrosion to orthodontic NiTi wires 7. So, it could infer that mouthwashes containing these contents can corrode SS orthodontic archwires as well 8-10. The present study was designed to compare the effects of acid-containing and fluoride-containing mouthwashes on SS archwires so that the practicing dentists could choose the least corrosive mouthwash for orthodontic patients before prescribing it.

MATERIALS AND METHODS

This study utilized 0.012 SS wires (N=30; Ortho Organizer, TM, USA) and two types of mouthwashes. 0.012 wires were preferred based on their long term use in the oral cavity during treatment. 11 Artificial saliva was employed as a standard medium. 12

Wires were cut, 2cm length was exposed for electrochemical corrosion testing and the rest of the area was coated with ‘5052 Epolam’ epoxy resin because of its high insulation and ethanol immiscible property. Coated wires were dried overnight and then cleaned using ethanol in ultrasonic probe sonicator followed by distilled water wash.

Each wire before testing was immersed in the respective test solution for about 2-3 hours to achieve a stable open circuit potential. This is important as misleading values of already existing potential are avoided when the external potential is applied. 13

Potentiodynamic testing employs a euro cell containing the test solution. This euro cell connects with a potentiostat (Gamry, R-600). Uncoated part of the sample wire was immersed into 100 ml of the test solution. In the euro cell, a saturated calomel electrode was used as the reference electrode and graphite rod as the counter electrode. A potential starting from -500 mV to 1500 mV with a scan rate of 1 mV/s was applied. The potentiodynamic polarization curves obtained were analyzed using Echem analyst software to calculate the corrosion rate of wires in different test solutions.

The surfaces of SS wires after the corrosion testing were observed using FESEM (MIRA3 TESCAN). One-way ANOVA using SPSS-23 was conducted to compare the mean corrosion rates of SS wires.

RESULTS

Polarization curves were obtained as a result of potentiodynamic corrosion testing. For the assessment of corrosion susceptibility of metal wires, these polarization curves were used as they provided information on passivity, corrosion rate and pitting susceptibility. The potentiodynamic polarization curves of SS wires in three test solutions are given in Fig. 1.

Fig. 1 represents a series of potentiodynamic polarization curves, the cathodic section (passive region i.e, from 0.5V to 0.4 V, for standard solution) of these polarization curves have shown no vertical stage and consisted only of one smooth slope. Afterward, the cathodic stage anodic stage (active region i.e, from 0.4V to 1.3 V) starts. The corrosion potentials of sample wires in three test solutions were close to each other with small peaks in the anodic current. So, the polarization behavior of acid-containing mouthwash showed nobler performance than that of fluoride-containing mouthwash because they exhibited lower values of current density i.e, better corrosion resistance. SEM analysis showed less corrosion in acid and more in fluoride mouthwash. This surface characterization of tested wires support the results that were obtained from corrosion rates (Table 2). Fig. 3 clearly shows increased surface roughness as compared to Fig. 2

Statistical analysis showed that there was a significant difference in the corrosion rates of SS wires immersed in three solutions (p<0.001).

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Test solution</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Enziclore a</td>
<td>Chlorhexidine gluconate (0.2% w/v) Benzydamine hydrochloride (0.15% w/v)</td>
</tr>
<tr>
<td>2.</td>
<td>Secure a</td>
<td>Sodium monofluorophosphate (0.05% w/v)</td>
</tr>
<tr>
<td>3.</td>
<td>Artificial saliva b</td>
<td>NaCl, KCl, KSCN, KH₂PO₄, CO(NH₂)₂, CaCl₂.2H₂O, Na₂SO₄,10H₂O, NH₄Cl, NaHCO₃</td>
</tr>
</tbody>
</table>

a Platinum Pharmaceuticals  

b Courtesy: IRCBM

Figure No.1: Polarization curves
Table No.2: Corrosion parameters

<table>
<thead>
<tr>
<th>Sample</th>
<th>Solutions</th>
<th>$E_{corr}$ (mV)</th>
<th>$I_{corr}$ (nA/cm²)</th>
<th>Corrosion rate (MPY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Artificial saliva</td>
<td>-123</td>
<td>3.950</td>
<td>$1.836 \times 10^{-3}$ (0.001836)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-120</td>
<td>7.200</td>
<td>$3.50 \times 10^{-3}$ (0.00335)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-140</td>
<td>4.810</td>
<td>$2.237 \times 10^{-3}$ (0.002237)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ND</td>
<td>ND</td>
<td>$2.792 \times 10^{-3}$ (0.002792)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ND</td>
<td>ND</td>
<td>$6.8 \times 10^{-3}$ (0.0068)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-159</td>
<td>27.60</td>
<td>$12.83 \times 10^{-3}$ (0.01283)</td>
</tr>
<tr>
<td></td>
<td>Acid mouthwash (Enziclor™)</td>
<td>-118</td>
<td>63</td>
<td>$29.30 \times 10^{-3}$ (0.0293)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-131</td>
<td>115</td>
<td>$53.5 \times 10^{-3}$ (0.0535)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-114</td>
<td>132</td>
<td>$61.28 \times 10^{-3}$ (0.06128)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-62.40</td>
<td>36.80</td>
<td>$34.25 \times 10^{-3}$ (0.03425)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>407</td>
<td>22.10</td>
<td>$20.57 \times 10^{-3}$ (0.02057)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44.10</td>
<td>74.10</td>
<td>$34.47 \times 10^{-3}$ (0.03447)</td>
</tr>
<tr>
<td></td>
<td>Fluoride mouthwash (Secure™)</td>
<td>-97.6</td>
<td>651</td>
<td>$302 \times 10^{-3}$ (0.302)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-93.3</td>
<td>643</td>
<td>$299 \times 10^{-3}$ (0.299)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>51.20</td>
<td>337</td>
<td>$313 \times 10^{-3}$ (0.313)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-44.80</td>
<td>312</td>
<td>$290 \times 10^{-3}$ (0.29)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-154</td>
<td>334</td>
<td>$310.8 \times 10^{-3}$ (0.3108)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-152</td>
<td>328</td>
<td>$304.7 \times 10^{-3}$ (0.3047)</td>
</tr>
</tbody>
</table>

* $E_{corr}$=Corrosion potential, $I_{corr}$=Current density, MPY=Mills Per Year

Table No.3: Post Hoc Tukey Analysis.

<table>
<thead>
<tr>
<th>(I) Immersion Media</th>
<th>(J) Immersion Media</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artifical Saliva</td>
<td>Enziclorel</td>
<td>-.034</td>
<td>.006</td>
<td>.000</td>
<td>-.049 - .018</td>
</tr>
<tr>
<td></td>
<td>Secure</td>
<td>-2.98</td>
<td>.006</td>
<td>.000</td>
<td>-.314 - .283</td>
</tr>
<tr>
<td>Enziclorel</td>
<td>Artificial Saliva</td>
<td>.034</td>
<td>.006</td>
<td>.000</td>
<td>.018 - .049</td>
</tr>
<tr>
<td></td>
<td>Secure</td>
<td>-2.64</td>
<td>.006</td>
<td>.000</td>
<td>-2.79 - .249</td>
</tr>
<tr>
<td>Secure</td>
<td>Artificial Saliva</td>
<td>.298</td>
<td>.006</td>
<td>.000</td>
<td>.283 - .314</td>
</tr>
<tr>
<td></td>
<td>Enziclorel</td>
<td>.264</td>
<td>.006</td>
<td>.000</td>
<td>.249 - .279</td>
</tr>
</tbody>
</table>

*The mean difference is significant at the 0.05 level.

Figure No.2: SEM analysis of SS wire after potentiodynamic test in acid mouthwash

Figure No.3: SEM analysis of SS wire after potentiodynamic test in fluoride mouthwash
The comparison obtained by using Post Hoc test revealed that there was a significant difference between the corrosion of the SS wire in artificial saliva, acid-containing mouthwash and fluoride-containing mouthwash with a negative value which indicated that corrosion was less in artificial saliva as compared to both types of mouthwashes. Furthermore, acid-containing mouthwashes were found to be less corrosive in nature as compared to fluoride-containing mouthwashes with a significance level of 0.001, as mentioned in Table 3.

DISCUSSION

Results showed that the value of current density was found to be lowest in artificial saliva i.e. 3.950 nA/cm² among the values of all the immersion media. Between acid and fluoride-containing mouthwashes, the lowest current density was found in acid-containing mouthwash i.e. 22.10 nA/cm². The lowest value of current density represents the lowest corrosion rate. Highest value of current density was found in fluoride containing mouthwash i.e. 651 nA/cm² depicting fluoride medium as the most corrosive of all the three media used. The curve having more fluctuations in the anodic section has more pitting effect e.g. the curve of fluoride mouthwash test has more fluctuations as compared to the curve of the test in acid mouthwash which has lower fluctuations. Test in artificial saliva showed lowest fluctuations of potentiodynamic curve thus giving lower values of corrosion current i.e., representing the lowest corrosion rate.

The mean corrosion rate of fluoride-containing mouthwash was found to be greatest i.e., 0.30325 MPY whereas the corrosion rate of SS wires in acid-containing mouthwash was calculated as 0.038895 MPY. This difference in corrosion rate states the safety of acid-containing mouthwashes against fluoride ones while the patient is being treated with SS wire for longer periods of time. Due to the complex morphologies of orthodontic appliances, plaque retention increases during orthodontic treatment. Therefore, it is of utmost importance to maintain oral hygiene during the long period of the treatment. Although fluoride mouthwashes are found to be more corrosive but rinsing with fluoride mouthwashes on daily basis is essential for caries prevention because of the ability of fluoride ions in promoting the formation of calcium fluoride globules which are helpful in stimulating remineralization. Hence to avoid corrosion and take benefits of fluoride mouthwash as well, time is an important factor to be considered. The corrosion rate obtained here is in Mills per Year i.e., corrosion in one year. For short term treatment with SS wire, fluoride mouthwashes can be used.

Ide et al. reported that bacteria in the plaque which is hoarded on the appliance surfaces during the course of orthodontic treatment leads to the corrosion of metal surfaces. Literature established that adding to this oral environment, corrosion is enhanced through the release of ions from the surface of the metal as a result of mouthwash use. The SS wires in sodium monofluorophosphate group had significantly greater corrosion than the other mouthwash (p < 0.001). The composition of a passive layer of SS wires is Cr₂O₃/Fe₃O₄. Corrosion starts when this corrosion resistant barrier is compromised. Chemical constituents of mouthwashes play an important role in the disruption of the corrosion resistant barrier. However, Enziclor™ contains chloride ions, while Secure™ contains fluoride ions. SS wires exposed to fluoride ions display a much higher corrosion rate, in comparison to the wires exposed to chloride ions. According to Erdogan et al., ions were released by various mouthwashes, the study determined that the highest amount of ion release was found in mouthwashes comprising of sodium fluoride and alcohol. Higher level of ions released leads to higher corrosion.

In a study by Nalbantgila, it was shown that chlorhexidine gluconate and benzylamine hydrochloride containing mouthwashes exhibited the least corrosion. This is in accordance with the results of the present study, where acid-containing mouthwash showed the least corrosion as compared to the other mouthwash. Higher corrosion rate can lead to the loss of physical properties of SS wires. The primary role in the smooth execution of orthodontic treatment is played by the physical properties of the wires. Therefore, to maintain the properties of SS wires for longer periods of time, mouthwashes which show increased corrosion resistance should be preferred as least corrosive mouthwashes are more likely to prevent the corrosion defects on the wire surface. This will increase friction which slows down the process treatment and is detrimental to the success of treatment. The SEM images show lengthy wedges in a specific direction. Due to cold rolling, the grains are aligned along the direction of rolling. These aligned sections become more vulnerable to corrosion and lengthy wedges are formed.

CONCLUSION

Acid-containing mouthwashes have better corrosion resistance than fluoride-containing mouthwashes because the former one showed lesser fluctuations on the potentiodynamic scan and lesser corrosion rate on SS wires (MPY). The Icorr value of acid-based mouthwashes is 20% less. Hence the dentist should prefer prescribing acid-containing mouthwashes while the patient is being treated with SS wire for a longer time period i.e, more than one year. Otherwise, for short durations of treatment with SS wires, fluoride mouthwashes can be recommended.

Author’s Contribution:
Concept & Design of Study: Mehreen Wajahat
Drafting: Faisal Moeen,
Muhammad Hassan
Data Analysis: Faisal Mustafa,
Muhammad Luqman
REFERENCES


**ABSTRACT**

Objective: The objective of this study was to compare clomiphene citrate and Letrozole in patients with polycystic ovarian syndrome in terms of monomolecular development.

Study Design: Randomized control trial study.

Place and Duration of Study: This study was conducted at the Gynae Unit 1 Outpatient department, Holy Family Hospital Rawalpindi from January 2019 to December 2019.

Materials and Methods: The patients fulfilling the inclusion /exclusion criteria were divided into two groups by lottery method. Group A was given clomiphene citrate 100 mg as a single dose from day 2 to day 5 of menstrual cycle. Group B was given 5 mg letrozole as a single dose from day 2 to day 5 of menstrual cycle. The patients were followed by transvaginal scan for follicular tracking on day 11 and 13 of cycle. This ultrasound was conducted by PGT 4 or SR. Monofollicular formation was observed on TVS.

Results: In group A, PCOS was diagnosed in 30.67% patients by oligomenorrhea, 32% by weight gain, hirsuitism, 21.33% by increased LH levels and 16% by ultrasound. In group B, PCOS was diagnosed in 33.33% patients by oligomenorrhea, 32% by weight gain, hirsuitism, 18.67% by increased LH levels and 16% by ultrasound. Monofollicular formation was observed in 57.33% patients in group A and in group B Monofollicular formation was found in 78.67% patients. In group A, there were 49.33% patients in which primary infertility was detected and 50.67% patients in which secondary infertility was found. In group B, there were 54.67% patients in which primary infertility was detected and 45.33% patients in which secondary infertility was found.

By using t-test, there was no significant difference of age in both groups having p-value = 0.49. There was no significant difference found of marriage duration in both groups having p-value = 0.86. Significant difference of parity was found in both groups having p-value = 0.05.

By using chi-square test, there was significant association found between study groups and monofollicular formation. Monofollicular formation was significantly lower in group A having p-value = 0.005. There was not significant association found between age and monofollicular formation having p-value = 0.775. Marriage duration was not significantly associated with monofollicular formation having p-value = 0.085. Parity was not significantly associated with monofollicular formation having p-value = 0.475.

Conclusion: Letrozole is better as compared to Clomiphene citrate in terms of mono follicular development in patients with PCOs. Effect modifiers have not significant association with mono follicular formation.

Key Words: Polycystic Ovarian Syndrome, Clomiphene Citrate and Letrozole, Monofollicular Formation


INTRODUCTION

Polycystic ovary syndrome (PCOS), is a complex endocrine disorder with multi-system manifestations making it a therapeutic challenge for the treating team. Since its recognition first in 1935, it has been diagnosed very commonly among women all around the world\(^1\). Androgen excess, ovulatory dysfunction, and/or polycystic ovaries have been main clinical features of this complex disorder\(^2\).

Polycystic ovary syndrome (PCOS) has a variable epidemiology depending upon the type of population studies and the criteria used for diagnosis\(^3\). Even the international societies and health related organizations have different opinions regarding the type of criteria used to diagnose this disorder and parameters included in the criteria\(^4\). NIH 1990 criteria has been usually used...
for clinical diagnosis of this condition. Using this criteria, variable statistics have been generated among various populations around the globe.530

PCOS may give rise to multiple problems like oligoovulatory infertility, Obesity and/or insulin resistance, diabetes mellitus (type I, II or gestational), history of premature adrenarche, first-degree relatives with PCOS41-14. Epilepsy or anti-epileptic drugs have also been linked with this disorder. Valproate has very strong association with this disorder so should most likely be avoided among young females14. Our main focus has been the treatment options for this multi-system disorder therefore this study was planned with the rationale to compare clomiphene citrate and Letrozole in patients with polycystic ovarian syndrome in terms of monomolecular development.

MATERIALS AND METHODS

This Randomized control trial was conducted at Gynae unit 1 Outpatient department, Holy Family Hospital Rawalpindi from January 2019 to December 2019. Sample size was calculated but using the WHO calculator with Power of test =90%, Level of Significance=5%, P1 55.7% and P2 78.32%

Sample size turned out to be 75 in each group. Non-probability consecutive sampling was used to gather the sample. Patients with PCOs age ranging from 20-35 years were included in the study. Patients with tubal diseases or local cause of infertility (vaginal discharge) or cervical diseases or couples with male factor of infertility were excluded from the study.

The study was started after approval of ethical committee. The patients fulfilling the inclusion/exclusion criteria were divided into two groups by lottery method. Group A was given clomiphene citrate 100 mg as a single dose from day 2 to day 5 of menstrual cycle. Group B was given 5 mg letrozole as a single dose from day 2 to day 5 of menstrual cycle. The patients were followed by transvaginal scan for follicular tracking on day 11 and 13 of cycle. This ultrasound was conducted by PGT 4 or SR.

PCOS: The diagnosis of PCOS was made on either of the following criteria.

a) Oligomenorhea: Menstrual occurring at interval of six weeks to six months
b) Weight gain (BMI > 25kg/m2), hirsuitism (Excessive hair growth in different parts of body like upper limb, chin, breast, abdomen, arms and legs).

c) Increase Serum LH: >10 IU in mid Follicular phase of menstrual cycle.

d) Polycystic ovaries on ultrasound:12 or more follicles with a diameter of 2-9 mm or ovarian volume >10mm observed on abdominal scan or TVS (trans vaginal scan)

Clomophene citrate: I used 100 mg clomophene citrate as single dose given from day 2 to day 5 of menstrual cycle.

Letrozole: I used 5 mg letrozole as single dose given from day 2 to day 5 of menstrual cycle.

Monofollicle; Formation of 1 dominant follicle of 20 cm which was observed on day 11th and 13th on TVS.

We used SPSS version 20.0 for our data analysis. Quantitative variables like age, parity were measured as mean ± SD. Qualitative variables like monofollicular formation were measured as frequency and percentages. Chi-square test was applied to compare monofollicular formation between two groups. P value ≤ 0.05 was considered as significant. Effect modifiers like age, parity, primary, secondary infertility were controlled by stratification. Post stratification Chi-square test was applied. P value ≤ 0.05 was considered as significant.

RESULTS

In group A, the mean ± standard deviation of age was found as 28.25 + 4.43 years and 28.76 + 4.53 years in group B. The mean ± standard deviation of marriage duration was found as 4.15 + 1.87 years in group A and 4.20 + 1.84 years in group B. The mean ± standard deviation of parity was found as 0.72 + 0.89 in group A and 1.07 + 1.25 in group B.

In group A, PCOS was diagnosed in 23 (30.67%) patients by oligomenorhea, 24 (32%) by weight gain, hirsuitism, 16 (21.33%) by increased LH levels and 12 (16%) by ultrasound. In group B, PCOS was diagnosed in 25 (33.33%) patients by oligomenorhea, 24 (32%) by weight gain, hirsuitism, 14 (18.67%) by increased LH levels and 12 (16%) by ultrasound. Monofollicular formation was observed in 43 (57.33%) patients in group A and in group B Monofollicular formation was found in 59 (78.67%) patients. In group A, there were 37 (49.33%) patients in which primary infertility was detected and 38 (50.67%) patients in which secondary infertility was found. In group B, there were 41 (54.67%) patients in which primary infertility was detected and 34 (45.33%) patients in which secondary infertility was found.

By using t-test, there was no significant difference of age in both groups having p-value = 0.49. There was no significant difference found of marriage duration in both groups having p-value = 0.86. Significant difference of parity was found in both groups having p-value = 0.05.

By using chi-square test, there was significant association found between study groups and monofollicular formation. Monofollicular formation was significantly lower in group A having p-value = 0.005. There was not significant association found between age and monofollicular formation having p-value = 0.775. Marriage duration was not significantly associated with monofollicular formation having p-
value = 0.085. Parity was not significantly associated with monofollicular formation having p-value = 0.475.

Table No.1: Comparison of Age, Marriage Duration and Parity in both groups

<table>
<thead>
<tr>
<th>Variables</th>
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<th>n</th>
<th>Mean ± Std. Deviation</th>
<th>P-value</th>
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<tr>
<td>Age</td>
<td>Group A</td>
<td>75</td>
<td>28.25 + 4.43</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>75</td>
<td>28.76 + 4.53</td>
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<tr>
<td>Marriage Duration</td>
<td>Group A</td>
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<td>4.15 + 1.87</td>
<td>0.86</td>
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<tr>
<td></td>
<td>Group B</td>
<td>75</td>
<td>4.20 + 1.84</td>
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</tr>
<tr>
<td>Parity</td>
<td>Group A</td>
<td>75</td>
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<td>0.05</td>
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<td></td>
<td>Group B</td>
<td>75</td>
<td>1.07 + 1.25</td>
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Table No.2: Distribution of PCOS Group wise

<table>
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<th>Group A</th>
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<tr>
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<td>25</td>
<td>48</td>
</tr>
<tr>
<td>Weight gain, hirsutism</td>
<td>24</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Increased LH levels</td>
<td>16</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>Polycystic ovaries on ultrasound</td>
<td>12</td>
<td>12</td>
<td>24</td>
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<tr>
<td>Total</td>
<td>75</td>
<td>75</td>
<td>150</td>
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Table No.3: Crosstabulation between study groups and monofollicular formation

<table>
<thead>
<tr>
<th>Study Group</th>
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<th>Total</th>
<th>P-value</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>75</td>
</tr>
<tr>
<td>Group A</td>
<td>43</td>
<td>32</td>
<td>75</td>
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</tbody>
</table>

**DISCUSSION**

This study compared clomiphene citrate and Letrozole in patients with polycystic ovarian syndrome in terms of monomolecular development. In this regard the present randomized control trial was conducted at Gynae unit 1 Outpatient department, Holy Family Hospital Rawalpindi. So one hundred and fifty patients of polycystic ovarian syndrome were included by fulfilling the inclusion and exclusion criteria by using non probability consecutive sampling.

In group A, the mean ± standard deviation of age was found as 28.25 ± 4.43 years and 28.76 ± 4.53 years in group B. The mean ± standard deviation of marriage duration was found as 4.15 ± 1.87 years in group A and 4.20 ± 1.84 years in group B. The mean ± standard deviation of parity was found as 0.72 ± 0.89 in group A and 1.07 ± 1.25 in group B.

Razzaq S, et al (2015) described that ovulation related problems have been the most important cause of infertility among the women of child bearing age reporting in the health care facility. Another study showed that the number of follicles (1.89 ± 0.9 vs 1.18 ± 0.393) and serum estradiol levels (437.5 ± 293.7 pg/mL vs 291.82 ± 59.86 pg/mL) were higher in Group 1, while follicular diameter (20.67 ± 0.970 mm vs. 20.76 ± 0.903 mm) and endometrial thickness (8.5 mm vs.7.4 mm) were similar in both the Groups.

In group A, PCOS was diagnosed in 30.67% patients by oligomenorhea, 32% by weight gain, hirsutism, 21.33% by increased LH levels and 16% by ultrasound. In group B, PCOS was diagnosed in 33.33% patients by oligomenorhea, 32% by weight gain, hirsutism, 18.67% by increased LH levels and 16% by ultrasound. Monofollicular formation was observed in 57.33% patients in group A and in group B Monofollicular formation was found in 78.67% patients. In group A, there were 49.33% patients in which primary infertility was detected and 50.67% patients in which secondary infertility was found. In group B, there were 54.67% patients in which primary infertility was detected and 45.33% patients in which secondary infertility was found.

Previous literature showed that nine RCTs compared letrozole with clomiphene citrate (with or without adjuncts) followed by timed intercourse. The birth rate was higher in the letrozole group (OR 1.63, 95% CI 1.31 to 2.03, n=1783, P=3%).

By using t-test, there was no significant difference of age in both groups having p-value = 0.49. There was no significant difference found of marriage duration in both groups having p-value = 0.86. Significant difference of parity was found in both groups having p-value = 0.05.

In another study, the metformin+clomiphene combination compared with gonadotrophins resulted in significantly fewer ovulations and pregnancies clearly highlighting the superior efficacy of gonadotrophins in this regard.

By using chi-square test in present study, there was significant association found between study groups and monofollicular formation. Monofollicular formation was significantly lower in group A having p-value = 0.005. There was not significant association found between age and monofollicular formation having p-value = 0.775. Marriage duration was not significantly associated with monofollicular formation having p-value = 0.085. Parity was not significantly associated with monofollicular formation having p-value = 0.475.

In another research, all the pharmacological and physical treatments used for managing various problems related to ovulation among the patients suffering from PCOS were found equally effective and no treatment was found superior to other.

It was noticed in previous study that clomiphene and letrozole both may be equally effective for managing...
the ovulatory problems related to PCOS. Smaller studies have been available regarding one agent efficacious than other but large randomized controlled trials and met analysis should be conducted to reach to some conclusive results.  

CONCLUSION

Letrozole is better as compared to Clomiphene citrate in terms on mono follicular development in patients with PCOS. Effect modifiers have not significant association with mono follicular formation.

Author’s Contribution:
Concept & Design of Study: Maria Tariq
Drafting: Hira Suleman, Madiha Khadim
Data Analysis: Noreen Tahir
Revisiting Critically: Maria Tariq, Hira Suleman
Final Approval of version: Maria Tariq

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Biochemical Evaluation of Saliva in Pregnant Women, Mirpur AJK

Bushra Kant¹, Aisha Yousaf¹, Asma Hameed¹ and Asnad²

ABSTRACT

Objective: The objective of this study to evaluate saliva biochemical composition of pregnant women and non-pregnant women in Mirpur, AJK.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted in the department of Obstetrics and Gynaecology, Mohd ud din Medical College, Mirpur, AJK and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK from March 2018 to August 2019.

Materials and Methods: We take for study 200 pregnant women patients and 100 health non-pregnant women. We take saliva sample of groups, pregnant women and non-pregnant women and first of determine pH of saliva of both groups by pH meter. Biochemical composition is analyzed by automatic biochemistry analyzer of the both group pregnant women and non- pregnant women.

Results: The result showed that decreased level of calcium if found in pregnant women (0.37 ± 0.17) as compare to non –pregnant women (0.52 ± 0.29). It is also indicating high level of phosphate is found in pregnant women (5.74 ± 3.44) as compare to non-pregnant women (4.55 ± 1.84). We also found low level saliva glucose in pregnant women (0.56 ± 0.45) as compare to non-pregnant women (3.39 ± 4.37) during pregnancy. Low pH or acid environment of oral cavity of pregnant women (6.74 ± 0.28) found as compare to non-pregnant women (7.04 ± 0.27).

Conclusion: The oral pathology or biochemical composition alteration and acidic environment of oral cavity in pregnant women caused dental caries as compare to non-pregnant women. Pregnant women should control the acid environment of oral cavity during pregnancy.

Key Words: Saliva, Biochemical, Pregnant women


INTRODUCTION

Muscular and skeletal systems, hematological, respiratory and cardiovascular are reflected result of alteration of hormonal changes in pregnancy such as (human chorionic gonadotropin, estrogen and progesterone).¹ In pregnancy; the oral environment is change with alteration in physiological changes. Gingivitis in pregnancy is well known condition.², ³

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² Department of Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK

The studies show that caries rate is high in pregnant women while in non-pregnant women prevalence rate is low, it is showed that oral pathological changes are occurred in pregnant women as compare to non-pregnant women.⁴ ⁵ In another study, it is found that cariogenic activity is not increased in pregnancy, while increased normally in non-pregnant women.⁶ It show that in pregnant women, high risk factor found for babies with low birth weight and another risk factor is preterm birth, these all due to periodontal diseases in pregnant women.⁷ ⁸ If we study the biochemical reports of pregnant women, we found that buffering capacity is occurred in pregnant women as compare to non-pregnant women, and we also found biochemical composition changes in pregnant women as compare to non-pregnant women.⁹ ¹⁵ Many result showed that during pregnancy in women, many biochemical alterations occurred but our concern is oral cavity biochemical changes. The objective of this study to evaluate saliva biochemical composition of pregnant women and non-pregnant women in Mirpur AJK.
MATERIALS AND METHODS

We take for study 200 pregnant women patients and 100 health non- pregnant women. The study was conducted in the department of Obstetrics and gynaecology, Mohd ud din Medical College, Mirpur, AJK and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK. We take saliva sample of groups, pregnant women and non-pregnant women and first of determined pH of saliva of both groups by pH meter. Biochemical composition is analyzed by automatic biochemistry analyzer of the both group pregnant women and non- pregnant women.

RESULTS

The mean age and literacy did not differ significantly between pregnant and non-pregnant groups.

The result showed that decreased level of calcium if found in pregnant women (0.37 ± 0.17) as compare to non –pregnant women (0.52 ± 0.29). It is also indicating high level of phosphate is found in pregnant women (5.74 ± 3.44) as compare to non-pregnant women (4.55 ± 1.84). We also found low level saliva glucose in pregnant women (0.56 ± 0.45) as compare to non –pregnant women (3.39 ± 4.37) during pregnancy. Low pH or acid environment of oral cavity of pregnant women (6.74 ± 0.28) found as compare to non- pregnant women (7.04 ± 0.27). The results of saliometrical and sialochemical analysis show that salivary flow rate is high in pregnant women as compare to non- pregnant women, which is 1.69 ± 0.45 for pregnant women an 1.69 ± 0.45 for non-pregnant women. Salivary sodium levels were significantly reduced in pregnancy in comparison to non-pregnant women. Although α-amylase levels were double as high in pregnant women as compare to non-pregnant women. Statistically significant differences were not observed between pregnant and non-pregnant women.

Table No.1: Participant characteristics

<table>
<thead>
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<th>Age (years)</th>
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<th>Non-pregnant women (n=100)</th>
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<tbody>
<tr>
<td>Education</td>
<td>Basic</td>
<td>Secondary University</td>
</tr>
<tr>
<td>B-50%, S-30%, U-20%</td>
<td>B-49%, S-32%, U-19%</td>
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</tr>
<tr>
<td>Body weight</td>
<td>68.1 ± 11.4</td>
<td>69.4 ± 11.5</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>24.3 ± 2.6</td>
<td>24.4 ± 2.7</td>
</tr>
<tr>
<td>B: Basic , S: Secondary , U:University</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| pH          | 6.74 ± 0.28            | 7.04 ± 0.27                |

Table No.2: Saliva biochemical composition of pregnant women and Non-pregnant women

| Glucose (mg/dl) | 0.56 ± 0.45 | 3.39 ± 4.37 |
| Calcium (mmol/L) | 0.37 ± 0.17 | 0.52 ± 0.29 |
| Phosphate (mmol/L) | 5.74 ± 3.44 | 4.55 ± 1.84 |
| Sodium (mmol/L) | 12.18 ± 10.65 | 11.77 ± 11.90 |
| pH | 6.74 ± 0.28 | 7.04 ± 0.27 |

DISCUSSION

In the result we found in that the saliva of pregnant women showed acidic non-stimulated environment and we found in saliva decreased level calcium and increases level of phosphate. Result also showed decreased level of glucose during pregnancy. Many result showed that during pregnancy inwomen, many biochemical alteration occurred but our concern is oral cavity biochemical changes. We take for study 200 pregnant women patients and 100 health non-pregnant women. The study was conducted in the department of Obstetrics and gynaecology, Mohdud din Medical College, Mirpur, AJK and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK. We take saliva sample of groups, pregnant women and non-pregnant women and first of determined pH of saliva of both groups by pH meter. Biochemical composition is analyzed by automatic biochemistry analyzer of the both group pregnant women and non- pregnant women. Muscular and skeletal systems, hematological, respiratory and cardiovascular are reflected result of alteration of hormonal changes in pregnancy such as (human chorionic gonadotropin, estrogen and progesterone). In pregnancy; the oral environment is change with alteration in physiological changes. Gingivitis in pregnancy is well known condition. The studies show that caries rate is high in pregnant women while in non-pregnant women.
–pregnant women prevalence rate is low, it is showed that oral pathological changes are occurred in pregnant women as compare to non-pregnant women. In another study, it is found that cariogenic activity is not increased in pregnancy, while increased normally in non-pregnant women. It show that in pregnant women, high risk factor found for babies with low birth weight and another risk factor is preterm birth, these all due to periodontal diseases in pregnant women. If we study the biochemical reports of pregnant women, we found that buffering capacity is occurred in pregnant women as compare to non-pregnant women, and we also found biochemical composition changes in pregnant women as compare to non-pregnant women. Many result showed that during pregnancy in women, many biochemical alterations occurred but our concern is oral cavity biochemical changes. The acidic environment of oral cavity or decreased pH value of pregnant women is suggested due to high intake of meal daily. It is also suggested that during pregnancy the lower pH of oral cavity if pregnant caused dental caries in pregnant women. It is said in childhood earlystages; high level of phosphate is found in children saliva which caused caries. Result showed, that low potassium level is found in pregnant women in pregnant women at third trimester as compare to non-pregnant women. In our study, we found that α-amylase levels are higher in pregnant women as compare to non-pregnant women. The result showed that decreased level of calcium if found in pregnant women (0.37 ± 0.17) as compare to non–pregnant women (0.52 ± 0.29). It is also indicating high level of phosphate is found in pregnant women (5.74 ± 3.44) as compare to non-pregnant women (4.55 ± 1.84). We also found low level saliva glucose in pregnant women (0.56 ± 0.45) as compare to non–pregnant women (3.94 ± 4.37) during pregnancy. Low pH or acid environment of oral cavity of pregnant women (6.74 ± 0.28) found as compare to non-pregnant women (7.04 ± 0.27). The study showed that in pregnant women the steroid hormone is increased which caused gingival inflammation, and it is also said that in pregnancy gingival bleeding is high and also increased flow of crevicular fluid.

CONCLUSION

The oral pathology or biochemical composition alteration and acidic environment of oral cavity in pregnant women caused dental caries as compare to non-pregnant women. Pregnant women should control the acid environment of oral cavity during pregnancy.

Author's Contribution:

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and concentrations of calcium, phosphate, and sIgA in Brazilian pregnant and non-pregnant women. Head & Face Med 2006;2:44.


Disinterment & its Medico-legal Significance in Karachi
Roohi Ehsan¹, Wasiq Ahmed¹, M. Faiz-uddin², Sabir Waheed² and Summaiya Tariq³

ABSTRACT

Objective: To study different aspects of Exhumation which were conducted and autopsied in Karachi City.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Departments of Forensic Medicine / Pathology, KMDC, Karachi and Liaquat College of Medicine & Dentistry, Karachi from January 2017 to December 2018.

Materials and Methods: Thirty-nine cases of exhumation were included which were overseen in two years study period. The data was collected with the permission of authorities. All the cases where cause of death was determined and other with undetermined cause of death were included in the study. Different variables e.g. age, sex, type of examination, manner of death, cause of death, time of burial and disinterment and condition of body were analyzed using SPSS Version 13.

Results: A total of 39 Exhumation were carried out during the study period of two years. Out of the total 20 were males (51.28%) and 19 females (48.71%), giving a male to female ratio of 1:0.95. In about 30 cases cause of death was established with certainty. Most frequent un-natural cause of death is asphyxia (46.15%) followed by hard and blunt trauma (10.25%), electrocution (7.69%), firearms (5.12%), sharp cutting-edge injury (2.56%), and poisoning (2.56%) respectively.

Conclusion: There is a need of DNA labs setup in different major cities so that the cases, especially for the identification purpose, will be declared and the results be seen on shortest possible time.

Key Words: Exhumation, Cause of death, Karachi.

INTRODUCTION

Exhumation is a Latin word “ex” -out and “humus” – ground, that means out of ground or from the grave. So, exhumation is the lawful disinterment of a buried body from grave for autopsy. Exhumation has been practiced since ancient times. Religion of Islam has its own scepticism regarding the exhumation and autopsies of dead bodies. The hadith by the Holy Prophet P.B.U.H proscribe the breaking or damaging the corpse or breaking the bones of the dead. They could not be permitted until there is certain duress directly related to any one of the five principles of the law called “Maqasid-al-shariat”. These principles encompass protection of religion, life and health, progeny, intellect and wealth.

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Exhumation can either be primary or secondary. Primary examinations are those where bodies disposed after death are labelled as natural or un-natural, but afterwards the cynicism of foul play is embossed by the aggrieved party. Secondary examinations or re-examination are those in which death investigation and autopsy exploration has been done before burial but on certain facts, the procedure of exhumation has to be carried out for an autopsy again. Exhumation is an expensive, lengthened process and requires special official endorsement from legal authorities. Hence, it is practiced only when a certain need arises.

The most common reason for exhumation globally is medico-legal, i.e. if an individual die in suspicious circumstances, the police may request for the procedure in order to determine and resolve, majorly the cause of death, but there are other reasons also based on religion, culture social circumstances. It may also be executed wholly for the identification of missing or abducted individuals. Since the exhumation of deceased body or human remains can be very emotive and a perceptive issue, particularly for the relatives and friends of the deceased, it is necessary to act lawfully to ensure the health and safety of those involved in carrying out the exhumation and to curb the public health issues.

Success regarding cause of death depends upon condition of the corpse at the time of exhumation. Results also depend on the duration of the time lapse since death, when a soft tissue has been affected adversely by advanced decomposition, no definite
opinion about the cause of injury and whether it is ante-mortem or otherwise can be revealed with certitude. Decomposition is not only a bar to successful examination, but it may also reduce the possibility of collecting and gleanin the samples and result in failure to enact the cause of death. Discrete element influencing the decomposition are time elapsed between burial and exhumation, seasonal environment, soil conditions and coffin material. This study analyzes the different aspects of the cases of exhumation or disinterment which were carried out and autopsied in Karachi during the study period.

MATERIALS AND METHODS

The study was conducted from January 2017 to December 2018. Thirty-nine cases of exhumation were included which were overseen in two years study period. The data was collected with the permission of authorities. All the cases where cause of death was determined and other with undetermined cause of death were included in the study. Different variables e.g. age, sex, type of examination, manner of death, cause of death, time of burial and disinterment and condition of body were analyzed using SPSS Version 13.

RESULTS

A total of 39 exhumations were ordered by the Judiciary during the two years study period from January 2017 to December 2018. Time between the burial and the exhumation ranged from a month to 4 years. But most of the exhumations occur within first 6 months of the burial and very few occurred in later years (Table 1, Graph 1).

Out of a total of 39 bodies exhumed, 20 (51%) were of males and 19 (49%) were of females (Table 2, Graph 2).

Table No.1: Frequency of time interval between Burial & Exhumation

<table>
<thead>
<tr>
<th>Time between burial &amp; exhumation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st month</td>
<td>6</td>
<td>15.38</td>
</tr>
<tr>
<td>2nd month</td>
<td>5</td>
<td>12.82</td>
</tr>
<tr>
<td>3rd month</td>
<td>10</td>
<td>25.64</td>
</tr>
<tr>
<td>4th month</td>
<td>4</td>
<td>10.25</td>
</tr>
<tr>
<td>5th month</td>
<td>2</td>
<td>5.12</td>
</tr>
<tr>
<td>6th month</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>6 months to 1 year</td>
<td>5</td>
<td>12.82</td>
</tr>
<tr>
<td>1-2 years</td>
<td>2</td>
<td>5.12</td>
</tr>
<tr>
<td>2-3 years</td>
<td>2</td>
<td>5.12</td>
</tr>
<tr>
<td>3-4 years</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Primary examination in the period of two years study was carried out on 27 cases. The cause of death in 21 cases was affirmed while 6 remain undetermined. However, 12 underwent secondary examination with fortitude of cause of death in 9 exhumations and unclear in 3. (Table 3A, 3B & Graph 3A, 3B).

Graph No.1: Graphical Representation of Frequency of time interval between Burial & Exhumation

Table No.2: Frequency Distribution According to Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20</td>
<td>51.28</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>48.71</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Graph No.2: Graphical Representation of Frequency According to Sex

Table No.3(A): Type of Examination

<table>
<thead>
<tr>
<th>Examination</th>
<th>Frequency 2017</th>
<th>%age 2017</th>
<th>Frequency 2018</th>
<th>%age 2018</th>
<th>Total frequency</th>
<th>Total %age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>11</td>
<td>68.75</td>
<td>16</td>
<td>69.56</td>
<td>27</td>
<td>69.23</td>
</tr>
<tr>
<td>Secondary</td>
<td>5</td>
<td>31.25</td>
<td>7</td>
<td>30.43</td>
<td>12</td>
<td>30.76</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100</td>
<td>23</td>
<td>100</td>
<td>39</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 3(B): Frequency Distribution According to Determination of Cause of Death

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Frequency 2017</th>
<th>Percentage 2017</th>
<th>Frequency 2018</th>
<th>Percentage 2018</th>
<th>Total frequency</th>
<th>Total percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Examination:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determined</td>
<td>8</td>
<td>72.73</td>
<td>13</td>
<td>81.25</td>
<td>21</td>
<td>77.7</td>
</tr>
<tr>
<td>Undetermined</td>
<td>3</td>
<td>27.27</td>
<td>3</td>
<td>18.75</td>
<td>6</td>
<td>22.2</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>100</td>
<td>16</td>
<td>100</td>
<td>27</td>
<td>100</td>
</tr>
<tr>
<td>Secondary Examination:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determined</td>
<td>5</td>
<td>100</td>
<td>4</td>
<td>57.14</td>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>Undetermined</td>
<td>Nil</td>
<td>3</td>
<td>42.85</td>
<td>3</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>100</td>
<td>7</td>
<td>100</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

Generally, cause of death was determined in 30 cases (76.9 %) and remained undecided in 9 cases (23.1%). The established cause of death was asphyxia 12 (46.15%) followed by trauma4 (10.75%), electrocution3 (7.69%), firearm injury2 (5.12%), sharp cutting-edge injury1 (2.56%) and poisoning only 1 (2.56%) respectively. (Table 4, Graph 4)

Age distribution showed that majority of the body belonged to the age group 11-30 years (64.1%), supplant by age group 31-50 (30.7 %) and 51 years and above (5.1%). (Table 5, Graph 5)

Amidst determined manner of death we categorized as natural only 1 case (2.56%) and un-natural 30 cases (76.91%). Most of un-natural were of homicide 29(74.3%) and one of accidental (2.56%). Yet apart from these determined, we have 8 (20.5%) undetermined cases (Table 6, Graph 6).

Table 4: Frequency Distribution According to Cause of Death

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphyxia</td>
<td>18</td>
<td>46.15</td>
</tr>
<tr>
<td>Hard &amp; blunt trauma</td>
<td>3</td>
<td>10.25</td>
</tr>
<tr>
<td>Electrocution</td>
<td>2</td>
<td>7.69</td>
</tr>
<tr>
<td>Firearm injury</td>
<td>4</td>
<td>5.12</td>
</tr>
<tr>
<td>Sharp Cutting Object</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Poisoning</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Natural</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Undetermined</td>
<td>9</td>
<td>23.07</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table No.5: Frequency Distribution According to Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency 2017</th>
<th>Percentage 2017</th>
<th>Frequency 2018</th>
<th>Percentage 2018</th>
<th>Total Frequency</th>
<th>Total Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Nil</td>
<td>0.00</td>
<td>Nil</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>11-30</td>
<td>10</td>
<td>62.5</td>
<td>15</td>
<td>65.2</td>
<td>25</td>
<td>64.1</td>
</tr>
<tr>
<td>31-50</td>
<td>5</td>
<td>31.2</td>
<td>7</td>
<td>30.4</td>
<td>12</td>
<td>30.7</td>
</tr>
<tr>
<td>51 &amp; above</td>
<td>1</td>
<td>6.2</td>
<td>1</td>
<td>4.34</td>
<td>2</td>
<td>5.1</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100</td>
<td>23</td>
<td>100</td>
<td>39</td>
<td>100</td>
</tr>
</tbody>
</table>

Table No.6: Frequency Distribution According to Manner of Death

<table>
<thead>
<tr>
<th>Manner of Death</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide</td>
<td>28</td>
<td>71.79</td>
</tr>
<tr>
<td>Suicide</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>Accidental</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Natural</td>
<td>1</td>
<td>2.56</td>
</tr>
<tr>
<td>Undetermined</td>
<td>9</td>
<td>23.07</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100.00</td>
</tr>
</tbody>
</table>

DISCUSSION

Exhumation is generally considered as degrading and culturally abhorred procedure by most civilization they bury their dead. Despite all the barriers, procedure is carried out throughout the world due to reasons, most common among is the medico-legal reason including deceased individual who were not identified or misidentified at the time of interment.

Our research reported exhumation of 39 bodies in two years period from January 2017 to December 2018 with a frequency of about 19.5% exhumation per year.

A similar exercise by Mirza et al of 7 years and 7 months from Karachi reveals frequency of 13.4 exhumation per year. A cogitation from Larkana and Sukkur districts reported 21 bodies exhumed and autopsied within a period of 3.5 years with a frequency of only six exhumations performed each year. Qazi et al reported 35 cases in two years study period of 2004 and 2005. Thus a comparison showed comparatively somewhat more exhumations in Karachi which can be due to the fact that this city has urban areas where level of education and social awareness are higher than other so concerned persons of deceased are determined to find the cause of death.

Ammani et al also proclaimed in their study that 18 cases were done in Hyderabad (India) for a period of 3 years with a frequency of about 6 exhumations per year. The international studies have also audited the different aspects of exhumed cases, a study from Ankara, Turkey reported a total of 52 cases of exhumation between 1996 and 2003.

As discussed in our study the cause of death was determined in 30 cases while remaining 9 cases stands undetermined with a significant success rate of 76.9%. This is higher than 74.3% success rate reported in Karachi by Mirza et al, but significantly higher than the 42.85% success rate reported in Larkana and Sukkur by Humayun et al. Further, the success rate of first autopsy is 77.77% and that of secondary autopsy is 75% in our study. We can accomplish success rate at high by doing exhumation in early period as in our study most of the exhumations were carried out within 1-4 months of the interval time between burial and exhumation (Table 1, Graph 1). Achievement of high accomplishment rate also seen in the exhumation study by Mirza et al done majorly within 1-6 months.

In our study we observed that partial decomposition was seen in about 9 (23.07%), advanced decomposition in 22 (56.4%) and 8 (20.5%) skeletonized body. However, no fresh body was exhumed. Negative Autopsy on exhumed body will be more when there will be delay in the Procedure.

As discussed by Awan R et al, success rate depends heavily on retrenchment, the delay between burial and disinterment. Demirel et al also reported that the probability of ascertainment of cause highly depends on the time interval between burial and exhumation. During Putrefaction the possibility of the recognition of soft tissue injuries like abrasion, contusion and burns is relatively less.

Among the 30 determined cause of death in our study we found 28 cases (71.7%) of homicide, only one (2.5%) of accidental but none of suicide and one (2.5%) of natural. (Table 6, Graph 6)

Ammani et al showed 8 (44.44%) homicidal and 3 (16.66%) accidental cases and 1 (5.55%) suicidal case in determined cause of death and 6 (33.33%) were undetermined.

As showed in our study period, frequency distribution among determined cause of death were; asphyxia, hard and blunt trauma, electrocution, firearm injury, sharp cutting injury, poisoning and natural as 46.15%, 10.25%, 7.69%, 5.12%, 2.56%, 2.56% & 2.56% respectively. (Table 4, Graph 4)

Mirza et al reported male to female ratio of about 3:2 comprise the major fraction cases with the male (62.4%)². Humayun et al reported male exhumation to be 4.25 times more prominent than females in Larkana and Sukkur. Qazi et al reported a similar 2.5:1 male female ratio of exhumed bodies in interior Sindh. In our study we have seen that male to female ratio is 1:0.95 (Male=51.28% and female=48.71%) (Table 2, Graph 2). Males are mostly involved in minor and major conflicts so generally more liable to get involved in medico-legal issues leading to death especially by un-natural means.

Majority of the exhumed bodies by frequency distribution according to age of deceased in our study is 11-30 years (64.1%) followed by 31-50 years (30.7%) and 51 years and above (5.1%) (Table 5, Graph 5). This is concurrence with the study Mirza et al. where 16-29 years (43.6%) followed by age group 30-49 years.
Exhumation is one of the important means of forensic investigation and should remain.
Delayed exhumation due to lengthy legal formalities in carrying out the proceedings leading to putrefaction/decomposition results in a negative outcome. Legal Procedures may be simplified and abridged where possible so that exhumation can be performed as early as possible to evade putrefactive changes. Decomposition due to climate, water logging, salinity and improper drainage of graveyard are the elements that can give a bar to ascertain the cause of death. So steps should be taken for the betterment to avoid these factors. Samples for analysis where necessary should be sent as early as possible in order to avoid putrefactive changes and specimen sent for analysis should follow up accordingly and results given by the labs should be speedy. There is a need of DNA labs setup in different major cities so that the cases, especially for the identification purpose, will be declared and the results be seen on shortest possible time.

Author’s Contribution:
Concept & Design of Study: Roohi Ehsan
Drafting: Wasiq Ahmed, M. Faiz-uddin
Data Analysis: Sabir Waheed, Summaiya Tariq
Revisiting Critically: Roohi Ehsan, Wasiq Ahmed
Final Approval of version: Roohi Ehsan

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
Efficacy of Topical Tranexamic Acid on Reducing Blood Loss in Primary Total Knee Arthroplasty

Naveed Ali Shair¹, Muhammad Abubakar², Khurram Shehzad¹, Muhammad Shakeel¹, Ejaz Ahmad¹ and Abdullah Tariq³

ABSTRACT

Objective: The aim of this study was to evaluate the efficacy of intra-articular TA injection in patients of primary TKA.

Study Design: Experimental study

Place and Duration of Study: This study was conducted at the Department of Orthopedics Surgery, Lahore General Hospital, Lahore, from October 2018 to March 2020.

Materials and Methods: A total of 92 patients undergoing primary cemented TKA were enrolled. Since June 2019 and onwards, we adopted topical TA (n=52) while controls were all those cases (n=40) undergoing TKA between October 2018 to May 2019. Standard medial parapatellar approach with tourniquet were done among all the patients. Patients of topical TA group were given intraarticular 1.5 gram TA diluted to 50 ml normal saline. Transfusion rate, highest hemoglobin drop (preoperative to postoperative lowest levels), highest hematocrit drop (preoperative to postoperative lowest levels), duration of hospitalization along with drainage output and thromboembolic complications were recorded.

Results: Out of a total of 92 patients, 35 (38.0%) were male and 57 (62.0%) female. No statistically significant difference was noted in terms of characteristic of study participants among both study groups (P>0.05). When compared to topical TA group, significantly higher drop between preoperative and postoperative hemoglobin levels and hematocrit levels were recorded among controls (p<0.05). Transfusion rate was also high among controls (25.0% vs. 5.8%, p=0.0087). Duration of hospitalization was significantly short among topical TA group (p=0.0181). No significant difference in terms of post-operative complications was seen among both study groups (p>0.05).

Conclusion: Topical TA in reducing postoperative blood loss for primary TKA was found to be effective. We consider this technique to be safe and efficient to our patients undergoing TKA.

Key Words: Efficacy, topical Tranexamic acid, blood loss, total knee arthroplasty.

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INTRODUCTION

Total knee arthroplasty (TKA) is linked with noteworthy perioperative blood loss and high rates of transfusion ranging between 11 to 21%.¹ Allogenic blood transfusion is considered to have risks of associated adverse effects like transfusion reactions, volume over-load as well as disease transfer. Blood transfusion is also found to raise risk of postoperative infections especially because of effects on immunosuppression. Preoperative autologous transfusion, hypotensive anesthesia, drain clamping, application of fibrin tissue adhesive, compressive bandage or cryotherapy are some of the tactics used to lower blood transfusion rates around the world.²,³ Tranexamic Acid (TA) is known be an anti-fibrinolytic drug used for the control of bleeding during a variety of surgical situations. Many researchers around the world have noted excellent efficacy as well as safety regarding lessening the blood loss in total joint replacement procedures.⁴,⁵ Although various routes and dosage regimens exist for TA but usage of topical TA have not yet been fully explored.

Topical TA provides luxury of administration, nominal systemic adverse effects along with little systemic absorption and highest local concentration.⁶,⁷ Effectiveness of topical TA has been compared with intravenous TA in recent studies and the researchers have found no increase in the risk of thromboembolic
events. Wind T et al from USA noted that topical TA was excellent in reducing rates of post-surgery blood transfusion and it was noted that none (0/130) of the patients undergoing TKA required blood transfusion.\(^8\) As efficacy of TA is well established in various medical conditions, still there are no studies conducted evaluating the efficacy of topical TA among patients of primary TKA in Pakistan. The aim of this study was to evaluate the efficacy of intra-articular TA injection in patients of primary TKA.

**MATERIALS AND METHODS**

This experimental study was done at The Department of Orthopedics Surgery, Lahore General Hospital, Lahore, from October 2018 to March 2020. Approval from Institutional Ethical Committee was sought for this study. Informed consent was gained from all the study participants.

A total of 92 patients undergoing primary cemented TKA were enrolled. Since June 2019 and onwards, we adopted topical TA (n=52) while controls were all those cases (n=40) undergoing TKA between October 2018 to May 2019. Patients having allergy to TA or those who had severe ischemic cardiopathy or all those who had known coagulopathy were not enrolled. Patients having severe pulmonary or renal impairments, any hematological disorders or those having past history of arterial or venous thromboembolic disorders were also excluded.

Standard medial parapatellar approach with tourniquet were done among all the patients. Intramedullary guidance was employed regarding femoral cutting. Extramedullary or toffset 15mm intramedullary guidance was employed regarding tibial cutting. Sealing of femoral canal was done using autologous bone plug following the usage of intramedullary alignment. Following cementation of all the elements and placement of the implant, hemostasis was done using tourniquet release. Patients of TA group were given intraarticular 1.5 gram TA which was diluted to 50 ml using normal saline following closure of arthrotomy. The injection was administered through incisional would targeting the suprapatellar pouch. Drainage bottle having suction pressure of 200 mmHg was clamped for a period of 2 hours whereas release was done after 2 hours. Drain output were recorded and all the drainages were detached between 24-48 hours. Hemoglobin levels of all the study participants were checked right after the procedure as well as on the 1\(^{st}\) and 5\(^{th}\) post-operative days. Among patients who were found to hemoglobin levels below 7.0 g/dl, transfusion was done as per institutional guidelines. Same standards of post-operative thromboembolic prophylaxis were done among all study participants. Foot pumps as well as anti-embolic stocking were given to all the study participants until they started mobilization. Physiotherapy along with occupational therapy was done in all patients. Patients got discharged when ambulated at their own.

A specially designed template was used for recording all the study information. Transfusion rate, highest hemoglobin drop (preoperative to postoperative lowest levels), highest hematocrit drop (preoperative to postoperative lowest levels), duration of hospitalization along with drainage output and thromboembolic complications were recorded. SPSS version 26.0 was used for data analysis. Quantitative variables were compared using independent sample t test while chi square test was applied to compare qualitative variables considering p value<0.05 as significant.

**RESULTS**

Out of a total of 92 patients, 35 (38.0%) were male and 57 (62.0%) female. Overall, mean age, BMI, preoperative haemoglobin, preoperative hematocrit and operation time were recorded to be 68.98±5.62 years, 28.64±4.68 kg/m\(^2\), 13.3±1.4 g/dl, 0.406±0.035 and 97±25 minutes respectively. Table number 1 compares characteristics of patients while no statistically significant difference was noted among both study groups (P>0.05).

<table>
<thead>
<tr>
<th>Table No.1: Characteristics of Study Participants among both Study Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
</tr>
<tr>
<td>Age in Years (Mean±SD)</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>BMI in kg/m(^2) (Mean±SD)</td>
</tr>
<tr>
<td>Preoperative Hemoglobin in g/dl (Mean±SD)</td>
</tr>
<tr>
<td>Preoperative Hematocrit (Mean±SD)</td>
</tr>
<tr>
<td>Operation Time in minutes (Mean±SD)</td>
</tr>
</tbody>
</table>

Table number 2 shows comparison of post-operative outcome variables between both study groups. When compared to topical TA group, significantly higher drop between preoperative and postoperative hemoglobin levels were recorded among controls (p=0.0001). Likewise, significantly higher drop in postoperative hematocrit levels among were recorded when compared to topical TA group (p=0.0002). Transfusion rate was high among controls in comparison to topical TA group (25.0% vs. 5.8%, p=0.0087). Duration of hospitalization was significantly prolonged among controls (p=0.0181). Drainage output was observed to be significantly low in topical TA group when compared to controls (185±101 vs. 262±98, p=0.0004).
No significant difference in terms of post-operative complications was seen among both study groups (p>0.05).

### Table No.2: Comparison of Post-Operative Outcome Variables between Both Study Groups

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>Topical Tranexamic Acid Group (n=52)</th>
<th>Controls (n=40)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin drop in g/dl (Mean+SD)</td>
<td>2.68+0.81</td>
<td>3.57+1.28</td>
<td>0.0001</td>
</tr>
<tr>
<td>Hematocrit drop (Mean+SD)</td>
<td>0.0851+0.031</td>
<td>0.119+0.052</td>
<td>0.0002</td>
</tr>
<tr>
<td>Transfusion Required</td>
<td>Yes</td>
<td>3 (5.8%)</td>
<td>10 (25.0%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>49 (94.2%)</td>
<td>30 (75.0%)</td>
</tr>
<tr>
<td>Duration of Hospitalization (days)</td>
<td>10.12+4.04</td>
<td>12.31+4.67</td>
<td>0.0181</td>
</tr>
<tr>
<td>Drainage Output (ml)</td>
<td>185+101</td>
<td>262+98</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

### DISCUSSION

Total knee arthroplasty is considered to be associated with a variety of post-surgery complications. Disproportionate blood loss is an important complication of TKA and is linked to prolonged duration of hospitalization along with higher hospitalization cost. TA is known to be a synthetic anti-fibrinolytic that has trans-isomers of 4-aminoacarboxylic methyl cyclohexane. TA inhibits the activation of plasminogen to plasmin and possess good affinity to sites where lysine is connecting to plasmin and plasmin. TA slows down fibrinolytic mechanism following formation of the clot and also extends the dissolution duration of fibrin, so protects clot and prevents activation of the coagulation cascades. All these characteristics make TA a very good choice to be used in procedures which have high risk of bleeding.

In the present study, topical TA significantly reduced drop between preoperative and postoperative hemoglobin levels when compared to controls. Likewise, significantly lower drop in postoperative hematocrit levels recorded among topical TA group (p=0.0002). Ishida K et al noted intraarticular TA to significantly reduce postoperative hemoglobin drop among patients undergoing TKA. They also found significantly lower amount of drain following TKA surgery after using intraarticular TA. Intraarticular TA resulted in significant reduction in blood loss following TKA. Our results are quite similar to what Pui KP et al from South China where they found intraarticular TA injection to significantly reduce drain output when compared to controls postoperatively. Drain output levels among topical TA group were actually more less to what we actually noted because TA was diluted in 50 ml normal saline which had also escaped through drainage.

In this study, transfusion rate was high among controls in comparison to topical TA group (25.0% vs. 5.8%, p=0.0087). Duration of hospitalization was significantly prolonged among controls (p=0.0181). Findings of a Chinese study also depicted similar results where transfusion rate among patients using intraarticular TA injection was significantly decreased when compared to controls (3.2% vs. 23.9%, P<0.05). Various other researches have also reported similar findings. In the present work, TA was used in a dose of 1.5g. Cid J et al found no significantly difference in the rates of blood transfusion among patients using high dose (135 to 150mg/kg) of low dose (15 to 35 mg/kg) of TA. We noted no significant difference in terms of post-operative complications was seen among both study groups (p>0.05). Our findings in terms of post-operative complications following intraarticular TA injection are also supported by other researchers as well. Pui KP et al observed 2 patients of pulmonary embolism following intraarticular injection of TA among patients undergoing TKA. Our results portrayed topical TA to be associated with lower rates of systemic absorption so it can be considered a very safe alternative choice when compared to intravenous TA.

Our study had few limitations as well. We could not compare comorbidity data among patients of both study groups so real impact of confounding variables could not be noted although characteristics compared between cases and controls were statistically similar. We did not exclude anemic patients in the current study so we are unable to find the true effect of preoperative anemia and its association with blood loss. We only recorded short term outcomes among our patients so we are not sure about long term effects and side effects of topical TA.

### CONCLUSION

Topical TA in reducing postoperative blood loss for primary TKA was found to be effective. We consider this technique to be safe and efficient to our patients undergoing TKA.

### Author’s Contribution:
- **Concept & Design of Study:** Naveed Ali Shair
- **Drafting:** Muhammad Abubakar, Khurram Shehzad
- **Data Analysis:** Muhammad Shakeel, Ejaz Ahmad, Abdullah Tariq
- **Revisiting Critically:** Naveed Ali Shair, Muhammad Abubakar
- **Final Approval of version:** Naveed Ali Shair

### Conflict of Interest:
The study has no conflict of interest to declare by any author.
REFERENCES


Determine the Frequency of Postoperative Ligasure Complications in 3rd and 4th Degree Hemorrhoids
Raja Muhammad Adeel Khan¹, Sikandar-e-Azm Yousfani², Muhammad Qasim Mallah³, Sandesh Kumar⁷ and Karim Bux Bhurgri³

ABSTRACT

Objective: To Determine the frequency of postoperative Ligasure complications in 3rd and 4th degree hemorrhoids.

Study Design:

Place and Duration of Study: This study was conducted at the Department of Surgery Unit-II, Peoples University of Medical and Health Sciences, Nawabshah, LUMHS Jamshoro and Suleman Roshan Medical College Hospital, Tando Adam, from February 2019 to January 2020.

Materials and Methods: Inclusion criteria were patients above 16 years age with diagnosed 3rd and 4th degree hemorrhoid. Patients under 16 years, anticoagulant therapy, previous anal surgery and immunosuppressed patients were excluded from the study. Take a detail history from all patients regarding bleeding per rectum or something coming out during defecation. These patients were admitted to the Surgery ward early morning of the procedure and discharged the following day, except when they had to stay longer due to postoperative complications. The data was collected on a structured proforma, analyzed statistically and the results were tabulated.

Results: During study period 144 cases were hemorrhoid, comprising 118 (82%) male and 26 (18%) female. Mean age of 29.3±3.5 years. Majority of patients were observed in 3rd and 4th decade 50 (34.72) and 55 (38.19) respectively. The clinical examination of 93 (64.58%) patients were 3rd degree hemorrhoids, followed by 4th degree hemorrhoids in 51(35.41%). The postoperative complications were observed, in which the most frequent one was the pain 36 (25%) cases, infection in 6 (4.16%) cases, anal spasm in 3(2.08%) cases and recurrence in 2 (1.38%) cases.

Conclusion: We conclude that LigaSure hemorrhoidectomy is a suture less, less intra-operative blood loss, less required post-operative pain management and higher patient satisfaction.

Key Words: LigaSure hemorrhoidectomy, 3rd and 4th degree hemorrhoid, Complications

INTRODUCTION

In general surgery hemorrhoids are common practice characterized anal cushion enlarge and distal displacement. Multiple international studies reported approximately 5% of general population are hemorrhoids symptoms, especially over 40 years of age, due to changes occurred in supporting tissues in the anal cushion were destructive changes and dilated vascular channel. According to a study on the prevalence of hemorrhoids, it is estimated that around 4.4% and 10 million people in the United States are diagnosed with the disease. Most of the patients are between 45 and 65 years old; of the largest number reported in Caucasians. It is rarely seen in young people. Based on the degree of prolapsed and appearance of the hemorrhoids, it can be graded into four degrees. There are many surgical options available to patients depending on the degree of hemorrhoids, age, severity, etc. Grade 3 and 4 symptomatic hemorrhoids require surgical intervention and Hemorrhoidectomy is one of the most common surgical procedures performed. Traditional Milligan Morgan hemorrhoidectomy techniques is widely practiced. Although effective, this method has many problems. Many surgeon accepts that by staying away from vascular pedicle ligation, the hazard of secondary bleeding can be decrease. Because it may also lead to ischemia and necrosis. Sometime additionally, applied deeply sutures, then they can also cause firm scarring at anus later on. To maintain a strategic distance from

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this issue. Recently, the presentation of LigaSure vessels fixing electrosurgical unit for the treatment of piles had gained wide acceptance and popularity. LigaSure electrosurgical unit is multifunctional tool because of its capacity of getting a handle on, fixing, blunt dissection, and at last dividing tissues. In fact, the bipolar diathermy modification, which acts as a combination of pressure and radiofrequency, sealing blood vessels up to 7 mm in diameter and providing energy tailored to the tissue impedance with a thermal injury confined to 2 mm over the operative field. The main aim of this study was to assess the frequency of complications of LigaSure hemorrhoidectomy in Peoples University of Medical and Health Sciences, Nawabshah.

MATERIALS AND METHODS

This observational study was conducted during February 2019 to January 2020, in the Department of Surgery Unit-II, Peoples University of Medical and Health Sciences, Nawabshah, LUMHS Jamsheed and Suleman Roshan Medical College Hospital, TandoAdam. The inclusion criteria were patients above 16 year age with diagnosed 3rd and 4th degree hemorrhoid. Patients under 16 years, anticoagulant therapy, previous anal surgery and immunosuppressed patients were excluded from the study. Take a detail history from all patients regarding bleeding per rectum or something coming out during defecation. Clinical examination of anal canal, DRE and proctoscopy were done. All patients underwent for base line investigation required for surgery. Before the surgical procedure, cefalosporine (1 gm) were given intravenously. These patients were admitted to the Surgery ward early morning of the procedure and discharged the following day, except when they had to stay longer due to postoperative complications. All the data was collected on a structured proforma, analyzed statistically and the results were tabulated.

RESULTS

In our study a total of 144 cases were hemorrhoid, comprising 118(82%) male and 26(18%) female. The age of patients in our series was ranged from 11 to 65 years with a mean of 29.3±3.5 years. Majority of patients were observed in 3rd and 4th decade 50(34.72) and 55(38.19) respectively (Table-I). The clinical examination of 93(64.58%) patients were 3rd degree hemorrhoids, followed by 4th degree hemorrhoids in 51(35.41%) (Figure No.1). The postoperative complications were observed, in which the most frequent one was the pain 36 (25%) cases, infection in 6(4.16%) cases, anal spasm in 3(2.08%) cases and recurrence in 2(1.38%) cases (Figure No.2).

Table No.1: Age Groups in Study Population (n=144)

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Male N=118</th>
<th>Female N=26</th>
<th>Number of patient (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-20</td>
<td>9</td>
<td>2</td>
<td>11(7.63)</td>
</tr>
<tr>
<td>21-30</td>
<td>36</td>
<td>14</td>
<td>50(34.72)</td>
</tr>
<tr>
<td>31-40</td>
<td>48</td>
<td>7</td>
<td>55(38.19)</td>
</tr>
<tr>
<td>41-50</td>
<td>14</td>
<td>1</td>
<td>15(10.41)</td>
</tr>
<tr>
<td>51-60</td>
<td>8</td>
<td>2</td>
<td>10(6.94)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>3</td>
<td>0</td>
<td>3(2.08)</td>
</tr>
<tr>
<td>Total</td>
<td>118(82%)</td>
<td>26(18%)</td>
<td>144(100)</td>
</tr>
</tbody>
</table>

Figure No.1: Clinical Examination N=144

DISCUSSION

Standard surgical treatment of symptomatic 3rd and 4th degree hemorrhoid based on principles of excision and ligation of anal cushions. Traditional Milligan Morgan hemorrhoidectomy techniques is widely practiced all over the world. Although effective, this method has many problems. In recent years new tools and devices are being used to overcome these complications such as LigaSure sealing system. Hemorrhoid more commonly observed in male 118(82%) cases than female 26(18%) cases. While in the study of Al Sayed A Hamdy reported 60% male cases and 40% female cases. The mean age in our
study was 29.3±3.5 years, commonly patients were observed in 3rd and 4th decade 50(34.72) and 55(38.19) respectively. After 3rd decade some changes occurred in supporting tissues in the anal cushion like dilated vascular channel due to constipation, eating a low-fiber diet, regular heavy lifting etc. However, the study of Ko-Chao Lee\textsuperscript{17} reported means was 48.5 ± 14.0 years. In our study the postoperative pain was observed 36 (25%) cases in early period and less required postoperative analgesic. However, in the international meta-analysis were conducted on 12 studies by Nienhuijs\textsuperscript{18} on "LigaSure use in hemmorhoids surgery and reported less painful and without adverse effect or any other complication. Some other local study conducted by Khanna R et al\textsuperscript{19} observed anal spasm in 3(2.08%) cases, while compare continuous irritation by fecal matters external sphincter is usually weak and temporary; due to the exposure of its fibers after surgery with continuous irritation by fecal matters\textsuperscript{21}. In our study observed anal spasm in 3(2.08%) cases, while compare with the study of Tareq Jawad Kadhim\textsuperscript{22} conducted haemorrhoidectomy done by ligasure and reported the postoperative complications of procedure are bleeding 34 patients (6.8 %), followed by anal spasm 15 patients (3%), recurrence 12 patients (2.4%).

CONCLUSION

We conclude that LigaSure hemorrhoidectomy is a sutureless, less intra-operative blood loss, less required post-operative pain management, early return to daily work and higher patient satisfaction.

Author's Contribution:

Concept & Design of Study: Raja Muhammad Adeel Khan
Drafting: Sikandar-e-Azam Yousfani, Muhammad Qasim Mallah
Data Analysis: Sandesh Kumar and Karim Bux Bhurgri
Revisiting Critically: Raja Muhammad Adeel Khan, Sikandar-e-Azam Khan
Final Approval of version: Raja Muhammad Adeel Khan

Conflict of Interest: The study has no conflict of interest to declare by any author.

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2. Lohsiriwat V. Treatment of hemorrhoids: A coloproctologist’s view. World J Gastroenterol 2015;21(31):
9245-52.
13. Ho YH, Buettner PG. Open compared with closed haemorrhoidectomy: Meta-analysis of randomized
Objective: To evaluate the role of surgery in the management of abdominal tuberculosis.

Study Design: Abdominal tuberculosis study.

Place and Duration of Study: This study was conducted at the Department of Surgery Unit-II, Peoples University of Medical and Health Sciences, Nawabshah, and Department of Surgery, Suleman Roshan Medical College Hospital, TandoAdam, from January 2017 to December 2019.

Materials and Methods: Cases were analyzed in terms of demography, clinical features, investigations, operative treatment, and outcome. The data was collected on a structured proforma, analyzed statistically and the results were tabulated.

Results: During study period 39 cases of abdominal tuberculosis were operated, comprising 22 (56.4%) male and 17 (43.6%) female, majority 14 (35.9%) patients were in age group ranged between 12-20 years, 79.5% of population was belonging to low socioeconomic status. The clinical presentation of 69.2% patients was revealing features of peritonitis, followed by acute intestinal obstruction in 30.8% cases; ileal perforation was the commonest intra-operative finding in 43% of cases followed by multiple small bowel perforations in 20.5% of cases. The most frequent surgical procedure applied was ileostomy in 41% of cases followed by resection anastomosis in 17.4% of cases. The complications were observed in 7 cases, in which the most frequent one was the surgical site infection which was observed in 5 cases. The overall hospital stay observed was 7 to 38 days with a mean of 17 days. 38 patients were discharged after recovery on anti-tubercular therapy, and one patient was expired during immediate post-operative management period. The follow up was observed in 22 cases for a period of 12 weeks to 48 weeks.

Conclusion: Early "diagnosis is the important factor to prevent systemic and local complications of intestinal tuberculosis. In emergency cases, without delay surgical exploration and attentive care is met with good recovery. Resection-anastomosis in the form of right hemicolectomy or segmental resection has largely been adopted instead of simple bypass of obstructive lesions with good result".

Key Words: Intestinal tuberculosis, Peritonitis, Intestinal stricture, Bowel perforation, Resection anastomosis, Ileostomy.


INTRODUCTION

In developing countries, the tuberculous infection is a major health concern causing eminent morbidity and mortality. In these countries the ignored population has major issues of malnutrition, overcrowding, poor sanitation and poverty. The tuberculosis of the gastrointestinal tract is the sixth most common form of extra pulmonary tuberculosis, which is about 10%-30% of cases having pulmonary tuberculosis. It is among the top ten mortality causes worldwide, and in the year 2017 it was estimated that the tuberculosis will affect ten millions of peoples globally with about 1.3 million deaths. It was also expected that the underlying dormant infection is present in about world’s 25% of population. The male population is slightly more affected than the female and especially the young adults. The diagnosis of abdominal tuberculosis is often difficult and remains one of the challenge in clinical practice, even for experienced consultants. The management of the disease is even more difficult the multi drug-resistance is inevitable. About 15% of cases of abdominal tuberculosis are treated by surgery, among which half...
of the cases the surgery is performed in emergency due to complications like; perforation, obstruction, abscess or hemorrhage, in remaining half the surgery is performed as a diagnostic measure. The disease can involve any part of the gastrointestinal tract, but most commonly ileocecum and terminal ileum are involved. The histological appearance of the lesion is similar as that in other organs, as the classic appearance of epithelioid granulomas with central caseation necrosis is not present in all parts of the gastrointestinal tract so the histological diagnosis in these cases is very difficult because of close resemblance with Chron’s disease and other inflammatory disorders. A simple cost-effective diagnostic laboratory test that can be used routinely for abdominal tuberculosis is not yet available. Currently, the diagnosis of abdominal tuberculosis should be reached by a combination of clinical, laboratory, radiographic, and pathological findings, as there is no any gold standard yet for the diagnosis so high clinical suspicion is required.

MATERIALS AND METHODS

This retrospective descriptive work was conducted during January 2017 to December 2019, in the Department of Surgery Unit –II, Peoples University of Medical and Health Sciences, Nawabshah, and Department of Surgery, Suleman Roshan Medical College Hospital, TandoAdam. The record of all the cases of abdominal tuberculosis operated during the study period was retrieved. The only inclusion criteria were abdominal tuberculosis confirmed on histopathology. Cases were retrospectively analyzed with regards to demography, clinic-pathological profile, intra-operative findings, surgical intervention performed and outcome in terms of morbidity and mortality. For the purpose of follow up, we searched the Out Patient Department records and re-admission record. All the data searched was collected on a structured proforma, analyzed statistically and the results were tabulated.

RESULTS

In our study a total of 39 cases were retrieved having abdominal tuberculosis, comprising 22 (56.4%) male and 17 (43.6%) female. We divide the study population in seven groups according to decades, we observed majority 14 (35.9%) patients in group having age ranged between 12-20 years (Table-I). The age of patients in our series was ranged from 11 to 76 years with a mean of 26.8 years. Our study shows 31 (79.5%) of population was belonging to low socioeconomic status. The clinical presentation of 27 (69.2%) patients was revealing features of peritonitis, followed by acute intestinal obstruction in 12 (30.8%) cases, the other associated symptoms were of low grade fever, abdominal mass, pain in abdomen, tenderness, anorexia, malaise, weight loss, disturbed bowel habits, malabsorption, and anemia. We observed the ileal perforation as commonest intra-operative finding in 17 (43.6%) cases followed by multiple small bowel perforations in 08 (20.5%) cases, the other intra-operative findings are listed in table-II, more than one operative finding were observed in 6 cases. The most frequent surgical procedure applied was ileostomy in 16 (41%) cases followed by resection anastomosis in 07 (17.4%) cases, the other surgical procedures are mentioned in table-III. The complications were observed in 07 (17.4%) cases, in which the most frequent one was the surgical site infection, which was observed in 05 cases, the leakage from the primary intestinal repair was not observed and there was no any case of post-operative fistula formation. The other complications are mentioned in table- IV. The overall hospital stay observed was 7 to 38 days with a mean of 17 days, majority of cases were discharged in 7-10 days but the patients who developed complication were stayed longer.

Table No.1 Age Groups in Study Population (n=39)

<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Male</th>
<th>Female</th>
<th>No. of Patient (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-20</td>
<td>10</td>
<td>04</td>
<td>14 (35.9)</td>
</tr>
<tr>
<td>21-30</td>
<td>02</td>
<td>07</td>
<td>09 (23.1)</td>
</tr>
<tr>
<td>31-40</td>
<td>03</td>
<td>02</td>
<td>05 (12.8)</td>
</tr>
<tr>
<td>41-50</td>
<td>03</td>
<td>02</td>
<td>05 (12.8)</td>
</tr>
<tr>
<td>51-60</td>
<td>02</td>
<td>01</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>61-70</td>
<td>01</td>
<td>01</td>
<td>02 (5.1)</td>
</tr>
<tr>
<td>&gt;70</td>
<td>01</td>
<td>00</td>
<td>01 (2.6)</td>
</tr>
<tr>
<td>Total</td>
<td>22 (56.4%)</td>
<td>17(43.6%)</td>
<td>39 (100)</td>
</tr>
</tbody>
</table>

Table No.2: Intra-Operative Findings in Study Population (n=39)

<table>
<thead>
<tr>
<th>Intra-Operative Findings</th>
<th>No. of Patient (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ileal Perforation</td>
<td>17 (43.6)</td>
</tr>
<tr>
<td>Multiple Small Bowel Perforations</td>
<td>08 (20.5)</td>
</tr>
<tr>
<td>Solitary Stricture with Perforation</td>
<td>05 (12.8)</td>
</tr>
<tr>
<td>Ileoceacal Mass and Mesenteric Thickening</td>
<td>04 (10.3)</td>
</tr>
<tr>
<td>Bands and Adhesion</td>
<td>04 (10.3)</td>
</tr>
<tr>
<td>Single or Multiple Strictures</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>Stricture with Impending Perforation</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>Jejunal Perforation</td>
<td>02 (5.1)</td>
</tr>
<tr>
<td>Mesenenteric Lymphadenitis</td>
<td>01 (2.6)</td>
</tr>
<tr>
<td>Peritoneal Adhesions with Cocoon Formation</td>
<td>01 (2.6)</td>
</tr>
</tbody>
</table>
perforation was the most frequent intra-operative finding that we detect, followed by multiple small bowel perforations, these observations were also reported by other workers\textsuperscript{13,14,20}. The commonest surgical procedure performed in our study was ileostomy followed by resection anastomosis of the involved bowel segment, many researchers observed the similar results but some performed different other procedures in excess, depending upon the intraoperative findings and anti-tubercular therapy was given to all of the patients postoperatively\textsuperscript{13,19,22}. In our study the post-operative anastomotic leak and fistula formation was not detected, following primary intestinal repair that reveals the quality of skill of operating surgeon. We found 15 post-operative complications determined in 07 (17.9%) cases. In our series the surgical site infection was the most common post-operative complication observed in 5 (12.8%) cases, which is in consistence with other studies\textsuperscript{13,23}. Out of 39 patients 38 discharged after full recovery on anti-tubercular therapy and 01 (2.6%) patient was expired during immediate post-operative management period, similar mortality rate was observed by other workers also\textsuperscript{13,20}, but some show a high mortality rate of 30-60%, depending upon condition of patient on presentation and severity of complication\textsuperscript{24}. The hospital stay in our study was 7 to 38 days with a mean of 17 days, which comparable with other studies\textsuperscript{13,23,25}.

**CONCLUSION**

Abdominal tuberculosis has various manners of clinical presentation mostly the features of peritonitis. Abdominal tuberculosis usually has male preponderance and specially affects the younger ones of low socioeconomic class. Ileal perforation and multiple small bowel perforations are the common intra-operative findings seen. Ileostomy was the most common procedures performed followed by resection and anastomosis. Surgical site infection is the most common complication seen. The mortality is also very low (2.6%) and if no complication arise the majority of cases discharged from the hospital in 7-10 days.

**Author’s Contribution:**

Concept & Design of Study: Sikandar-e-Azam Yousfani

Drafting: Muhammad Qasim Mallah, Raja Muhammad Adeel Khan

Data Analysis: Sandesh Kumar, Karim Bux Bhurgri

Revisiting Critically: Sikandar-e-Azam Yousfani, Muhammad Qasim Mallah

Final Approval of version: Sikandar-e-Azam Yousfani

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**Table No.3: Operative Procedure Performed on Study Population (n=39)**

<table>
<thead>
<tr>
<th>Procedures Performed</th>
<th>No of Patient (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ileostomy</td>
<td>16 (41.0)</td>
</tr>
<tr>
<td>Resection and Anastomosis</td>
<td>07 (17.4)</td>
</tr>
<tr>
<td>Primary Repair of Perforation</td>
<td>05 (12.8)</td>
</tr>
<tr>
<td>Right Hemicolecotmy</td>
<td>04 (10.3)</td>
</tr>
<tr>
<td>Adhesiolysis</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>Strictureoplasty</td>
<td>02 (5.1)</td>
</tr>
<tr>
<td>Jejunostomy</td>
<td>01 (2.6)</td>
</tr>
<tr>
<td>Peritoneal and Omental Biopsy</td>
<td>01 (2.6)</td>
</tr>
</tbody>
</table>

**Table No.4: Complications Observed in Study Population (n=39)**

<table>
<thead>
<tr>
<th>Complication</th>
<th>No of cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Site Infection</td>
<td>05 (12.8)</td>
</tr>
<tr>
<td>Paralytic Ileus</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>Sepsis</td>
<td>03 (7.7)</td>
</tr>
<tr>
<td>Intra-Abdominal Abscess</td>
<td>02 (5.1)</td>
</tr>
<tr>
<td>Pulmonary Complications</td>
<td>01 (2.6)</td>
</tr>
<tr>
<td>Wound Dehiscence</td>
<td>01 (2.6)</td>
</tr>
</tbody>
</table>

The results of surgical intervention were good in these cases and 38 patients were discharged after recovery on anti-tubercular therapy, and one patient was expired during immediate post-operative management period. The follow up was observed in 22 cases for a period of 12 weeks to 48 weeks.

**DISCUSSION**

We retrieved 39 cases for study including 22 (56.4%) male and 17 (43.6%) female. The dominance of male population is also mentioned by other workers\textsuperscript{13-15}, but some studies show female dominance\textsuperscript{16}, the reason for the gender dominance is not stated in the literature. The mean age in our study was 26.8 years, different studies had demonstrated different mean ages and the differences are mainly due to differences in sample size\textsuperscript{13,14}. The majority 14 (35.9%) of cases in our study lies in the age group having age ranged between 12-20 years, which is also stated by the other workers\textsuperscript{17}. We reported 79.5% of cases from low socioeconomic status group, which was in consistence with the findings of other studies\textsuperscript{13,14,18}. This is due to fact that the current study was commenced in rural area where poverty and illiteracy plays an important role in the propagation of the disease. Most of the patients in our study came with the presentation of peritonitis and intestinal obstruction, the literature also revealing the similar findings\textsuperscript{3,19}, the diagnosis in these cases was delayed because the poverty, low literacy rate, poor health care facilities in remote areas, lake of disease knowledge and vague initial symptoms, all are collectively contributing factors resulting in cunctation of diagnosis\textsuperscript{13,14,19}.

The follow up was observed in 22 cases for a period of 12 weeks to 48 weeks. We reported 79.5% of cases from low socioeconomic status group, which was in consistence with the findings of other studies\textsuperscript{13,14,18}. This is due to fact that the current study was commenced in rural area where poverty and illiteracy plays an important role in the propagation of the disease. Most of the patients in our study came with the presentation of peritonitis and intestinal obstruction, the literature also revealing the similar findings\textsuperscript{3,19}, the diagnosis in these cases was delayed because the poverty, low literacy rate, poor health care facilities in remote areas, lake of disease knowledge and vague initial symptoms, all are collectively contributing factors resulting in cunctation of diagnosis\textsuperscript{13,14,19}.
Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
Analysis of Recurrence Time and Its Patterns in Triple Negative Breast Cancer

Sarah Khan, Ahmed Ijaz Masood and Zil-e-Huma

ABSTRACT

Objective: To evaluate the pattern and time of recurrence of triple negative breast cancer among patients treated in a tertiary care hospital.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Department of Radiotherapy & Oncology, Nishtar Hospital Multan January 2014 to December 2018.

Materials and Methods: Forty females who presented with recurrence of triple negative breast cancer were included. Data of baseline variables at the time of first diagnosis, treatment required, and time of first recurrence was noted for each patient.

Results: There were 30 (75%) having age 35-60 years who presented with recurrence. Invasive ductal carcinoma was commonest in patients of recurrence with prevalence rate of 85%. Recurrence occurred within first 06 months in 08 (20%) patients and in 24 (60%) within 06 to 12 months. Regional recurrence occurred in 14 patients, out of which 08 (57.1%) were having axillary involvement. All of the 40 patients were having distant meta-stasis.

Conclusion: Recurrence is very common within first 12 months after primary treatment in patients with triple negative breast cancer. In present study, recurrence occurred in 80% patients after primary treatment. Loco-regional recurrence occurred in 65% patients, and all of the patients developed subsequent metastasis.

Key Words: Triple negative breast cancer, Recurrence, Pattern

INTRODUCTION

Breast cancer is the common cancer in female gender. Worldwide about 1.67 million cases of new breast cancer were diagnosed in 2012, which accounted for 25% of all cancers.\(^1\) In Pakistan, the incidence of breast cancer is highest among Asian nations.\(^2\) According to reports 1 in 9 females suffer from breast cancer at some stage of life.\(^3\) Mortality from breast cancer has reduced remarkably in the last 3 decades, Like in Australia the mortality rate reduced from 50/100,000 females to 38/100,000 in 2000.\(^4\) The reduction in mortality in patients of breast cancer is due to multiple factors such as availability of early screening tools and management in early stage and availability of modern treatment methods.\(^5\)

Triple negative breast cancer (TNBC) first classified by Brenton et al in 2005, is a type of carcinoma in which there is absence of progesterone receptors (PR) and estrogen receptors (ER) and deficiency of over-expression of HER2 gene.\(^6\) About 15% to 20% of all cases of breast cancer are diagnosed as TNBC.\(^7\) TNBC has more aggressive clinical progression with highest risk of metastasis especially central nervous and visceral system. Prevalence is much higher in Afro-American females.\(^8\)

Regarding treatment TNBC is chemo-sensitive but its optimal treatment is a major challenge, recurrence rate is much higher, in majority reoccurrence is diagnosed in only 3-5 years of primary treatment.\(^9,10\) Average reoccurrence time is 19-40 months as compared to 35-67 months in non-TNBC patients.\(^11,12\) Prognosis is also poor in these patients with reduced long-term life expectancy.\(^13\)

MATERIALS AND METHODS

This descriptive study was carried out at Department of Radiotherapy & Oncology, Nishtar Hospital Multan 1st January 2014 to 31st December 2018 and came back with recurrence till January 2019. We included in the data of 40 female patients who were treated for primary management of TNBC. Data of all patients was retrieved from the medical record room of the patients. Patient’s of breast cancer other than TNBC was taken as exclusion criteria. Primary objectives of study were local recurrence (LR), regional recurrence (RR), site of sub-sequent meta-stasis and timing of recurrence. Local recurrence was labeled if recurrence involved chest wall. Regional recurrence was labeled if the tumor re-
appeared in ipsilateral or contra-lateral axillary, cervical or supra-clavicular lymph nodes. Distant meta-stasis was labeled if tumor had spread to bones and visceral organs including liver, lungs, or brain. Data of baseline variables at the time of first diagnosis, treatment given, and time of first recurrence was noted for each patient. The data was entered and analyzed through SPSS-20.

RESULTS

There were 30 (75%) patients having age 35-60 years who presented with recurrence, while remaining 25% were having age <35 years. Stage of TNBC at the time of initial diagnosis was II in 50% patients and III in 35% patients. Invasive ductal carcinoma was commonest in patients of recurrence with prevalence rate of 85%. During primary treatment, neoadjuvant chemotherapy was given to 24 (60%) patients and adjuvant chemotherapy was given to only 16 (40%) patients.

Table No.1: Demographic information of the patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at the time of first diagnosis of TNBC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35 Years</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>35-60 Years</td>
<td>30</td>
<td>75.0</td>
</tr>
<tr>
<td>Stage at the time of diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage I</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stage II</td>
<td>20</td>
<td>50.0</td>
</tr>
<tr>
<td>Stage III</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>Histological diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasive ductal</td>
<td>34</td>
<td>85.0</td>
</tr>
<tr>
<td>Invasive Lobular</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Poorly differentiated</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjuvant</td>
<td>16</td>
<td>40.0</td>
</tr>
<tr>
<td>Neo-adjuvant</td>
<td>24</td>
<td>60.0</td>
</tr>
<tr>
<td>Drugs used for chemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthracyclines</td>
<td>28</td>
<td>70.0</td>
</tr>
<tr>
<td>Anthracyclines plus Taxanes</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Surgery type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastectomy</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Modified radical mastectomy</td>
<td>32</td>
<td>80.0</td>
</tr>
<tr>
<td>Lumpectomy</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Treatment given after recurrence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systemic Chemotherapy</td>
<td>40</td>
<td>100.0</td>
</tr>
<tr>
<td>Type of systemic chemotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclophosphamide methotrexate fluorouracil (CMF)</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Gemcitabine and cisplatin</td>
<td>18</td>
<td>45.0</td>
</tr>
<tr>
<td>Capecitabine</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Adjuvant radiation</td>
<td>35</td>
<td>87.5</td>
</tr>
<tr>
<td>Lines of chemotherapy after metastasis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Table No.2: Frequency of site of recurrence

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loco-regional Recurrence</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>Local recurrence (Chest wall)</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Regional recurrence</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Supra-clavicle</td>
<td>2</td>
<td>14.28</td>
</tr>
<tr>
<td>Cervical</td>
<td>4</td>
<td>28.5</td>
</tr>
<tr>
<td>Axillary</td>
<td>8</td>
<td>57.1</td>
</tr>
</tbody>
</table>

Site of subsequent meta-stasis

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Lung</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Bone</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Brain</td>
<td>16</td>
<td>40.0</td>
</tr>
</tbody>
</table>

Figure No. 1: Time of recurrence of TNBC

After chemotherapy, modified radical mastectomy was done in 32 (80%) patients, simple mastectomy in 4 (10%) and lumpectomy in 4 (10%) patients. After recurrence, systemic chemotherapy was given to all patients. Gemcitabine and cisplatin chemotherapy was given to 18 (45%) patients, Cyclophosphamide Methotrexate Fluorouracil (CMF) to 8 (20%) while capecitabine chemotherapy was given to 14 (35%) patients (Table 1). Recurrence occurred within first 6 months in 8 (20%) patients and in 24 (60%) patients within 6 to 12 months (Fig. 1). Loco-regional recurrence occurred in 26 (65%) patients, while all of the 40 patients developed distant metastasis. In patients having regional recurrence, axillary involvement was found in 8 (57.1%) patients, cervical involvement in 4 (28.5%) and supraclavicular involvement in 2 (14.28%) patients (Table 2). After reoccurrence, contralateral breast was involved in 04 (10%) patients. Secondary malignancies developed in 3 patients, Ca ovary in 2 (5%) and colorectal cancer in 01 (2.5%) patients.

DISCUSSION

In last 25 years, significant improvements have occurred in cancer treatment particularly due to development of hormone therapy. The second major achievement is development of specific HER2 receptor targeting treatments. The 3rd evolution is the recognition of hormone receptor status such as PR and ER receptors. This recognition gave rise to the
identification of TNBC. Triple negative breast cancer is more chemo-sensitive as compared to the other cancers. Therefore, chemotherapy is still the mainstay treatment for TNBC.

In present study, we reported the clinical pattern of recurrence of TNBC. Out of 40 patients who presented to us with recurrence, 26 (65%) patients were with loco-regional recurrence (12 (30%) with local recurrence and 14 (35%) with regional recurrence) while metastasis was found in all patients. A study done by Steward et al17, on follow-up of 414 patients of TNBC patients reported recurrence in 110 patients in a mean follow-up period of 68 months. Out of these 110 patients there were 19 (17.27%) patients who presented with loco-regional meta-stasis, 70 (63.63%) with distant meta-stasis and 21 (19.09%) with loco-regional plus distant meta-stasis. In their study, the patients who presented with recurrence, neo-adjuvant therapy was given to only 36.4% patients. Regarding surgical treatment, partial mastectomy was done in 57.5% patients, simple mastectomy in 14% and radical mastectomy in 28.5% patients. While in our study, neo-adjuvant chemotherapy was given to 60% patients. Regarding surgical management, simple mastectomy was done in 10% patients, modified radical mastectomy in 80% patients, and lumpectomy in 10% patients. A study conducted by Khanna et al8 reported recurrence in 26 patients, out of these 17 (60.71%) presented with loco-regional recurrence and 11 (39.3%) patients were having distant metastasis. The most common site of metastasis was visceral, there was no patient who had bone metastasis. Another study by Radosa et al19 local recurrence occurred in 17 (6%) patients, chest wall recurrence in 24% patients and breast recurrence in 76% patients. Regional recurrence occurred in 5 (2.0%) patients, out of which axilla was involved in 3 (60%) patients and intra-memory lymph nodes (LN) in 2 (40%) patients. In patients with distant metastasis, brain involvement was found in 16% cases, bones in 14%, and multiple sites in 36% patients. In our study, regional recurrence occurred in 14 patients, out of which 08 (57.1%) were having axillary involvement, 04 (28.5%) cervical and 02 (14.28%) supra-clavicular involvement. While our all patients were having distant metastasis, 08 (20%) patients were having liver involvement, 14 (35%) lung, 2 (5.0%) bone and 16 (40%) brain metastasis.

In present study, 08 (20%) patients presented with recurrence within first 06 months, 24 (60%) within 1 year, there were only 2 (5.0%) patients who presented after 5 years of follow-up. Steward et al. reported that 80% of patients of TNBC after primary treatment present with recurrence within 3 years. A study by Gonçalves et al20 on disease free survival of TNBC and non-TNBC, reported that the patient who develop recurrence, out of them 67.5% present within first 24 months of treatment, 16.2% within 2-3 years, and 16.2% from 3-6 years of primary treatment.

**CONCLUSION**

Recurrence is very common within first 12 months after primary treatment in patients with triple negative breast cancer. In present study, recurrence occurred in 80% patients after primary treatment. Loco-regional recurrence occurred in 65% patients and all of the patients presented with distant metastasis.

**Author’s Contribution:**

Concept & Design of Study: Sarah Khan

Drafting: Ahmed Ijaz Masood

Data Analysis: Zil-e-Huma

Revisiting Critically: Sarah Khan, Ahmed Ijaz Masood

Final Approval of version: Sarah Khan

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

**REFERENCES**


Examine the Prevalence of Risk Factors and Causes of Oral Squamous Cell Carcinoma

Faiqua Yasser1, Shakila Mushtaq1, Asrar Ahmad5, Ambreen Tauseef2, Raja Yasser Shahbaz3 and Rizwana Kamran4

ABSTRACT

Objective: To examine the prevalence of clinical and histological proven cases of oral squamous cell carcinoma also examine the risk factors and challenges in diagnosis oral cancers.

Study Design: Retrospective/observational study

Place and Duration of Study: This study was conducted at the Department of Oral Pathology, Institute of Dentistry, CMH Lahore Medical College Lahore and Military Dental Centre, Lahore from July 2018 to Dec.2019.

Materials and Methods: One hundred and twenty patients of both genders with ages 20 to 70 years clinical and histologically diagnosed to have oral squamous cell carcinoma were included in this study. Patient’s demographical details including age, sex, residence and socioeconomic status were examined after taking informed consent. Incisional biopsy was taken from all the patients and sent to laboratory for examination. Prevalence and risk factors of oral squamous cell carcinoma were examined. Challenges in diagnosing were also examined.

Results: Ninety patients found to have oral squamous cell carcinoma in which 70 (77.76%) were males while 20 (22.22%) were females. 40 (44.44%) patients were ages 20 to 45 years, 38 (42.22%) patients had ages 46 to 60 years and 12 (13.33%) patients were ages above 60 years. Buccal mucosa was the most frequent site of oral squamous cell carcinoma found in 46 (51.11%) patients followed by lower alveolar and tongue. The most frequent risk factor was cigarette smoking found in 36 (40%) patients. delay due to patients unawareness found in 30 (33.33%) patients followed by misdiagnosed by expertise and lack of facility (diagnosing tools).

Conclusion: There is a high prevalence of oral cancer and smoking is the major risk factor of this malignant disease. Misdiagnosed at first visit is the major concern, Lack of diagnosis facilities and lack of awareness is also most important factor for increasing the rate of this malignant disorder.

Key Words: Oral squamous cell carcinoma (OSCC), Frequency, Risk factors, Diagnosis, Causes


INTRODUCTION

Globally, Oral cancer is considered most frequent life threatening malignant disorder and from last thirty years the incidence rate of oral cancer is going upward. Due to oral cancer the high rate of mortality is recorded and in Pakistan oral cancer contributed a great threat to public health with high rate of mortality and morbidity.1

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As per international reports oral cancer is the most common malignant disorder and in Pakistan it is the 2nd most common malignant disease that lead to increase rate of mortality.2 From all the types of tumor, oral cancer in Pakistan rated 15% and this rate is 5 times greater than the worldwide incidence rate of oral cancer 3%.2 According to the international researches, in sub-continent oral cancer incidence rate is quite high with incidence rate of 7.9% and mortality rate 3.8%.4

Many of studies reported that the patients with third to 5th decade of life has a high prevalence of oral cancer but now-a-days several studies reported early age. It is reported that majority of oral cancers are squamous cell carcinoma and accounted above 90%.3 4

Many of factors involves in raising the incidence of oral squamous cell carcinoma including genetic and environmental factors. Tobacco use, betel quid, alcohol, chewing tobacco and snuff are the most frequent risk factors.5

Worldwide, tobacco use and alcohol consumption considered the strongest risk factors and in developed countries these two factors are most common and contributed a high rate of incidence.6 2 In developing countries like Pakistan, India, Bangladesh tobacco use
Most important cause of malignancy was misdiagnosed by expertise at first visit found in 26 (28.89%), delay due to patients unawareness found in 30 (33.33%), delay in diagnosis due to lack of facility (Diagnosing Tools found in 12 [13.33%] (Table 4).

Table No.1: Demographical characteristics of all the patients

<table>
<thead>
<tr>
<th>Variable</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>70</td>
<td>77.78</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>22.22</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 – 45</td>
<td>40</td>
<td>44.44</td>
</tr>
<tr>
<td>46 – 60</td>
<td>38</td>
<td>42.23</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>12</td>
<td>13.33</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>40</td>
<td>44.44</td>
</tr>
<tr>
<td>Rural</td>
<td>50</td>
<td>55.56</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>46</td>
<td>51.11</td>
</tr>
<tr>
<td>Middle</td>
<td>44</td>
<td>48.89</td>
</tr>
</tbody>
</table>

Table No.2: According to the sites of Oral squamous cell carcinoma

<table>
<thead>
<tr>
<th>Sites</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buccal Mucosa</td>
<td>46</td>
<td>51.11</td>
</tr>
<tr>
<td>Alveolar</td>
<td>24</td>
<td>26.67</td>
</tr>
<tr>
<td>Tongue</td>
<td>8</td>
<td>8.88</td>
</tr>
<tr>
<td>Cheeks</td>
<td>6</td>
<td>6.67</td>
</tr>
<tr>
<td>Lips</td>
<td>6</td>
<td>6.67</td>
</tr>
</tbody>
</table>

Table No.3: Risk factors of oral squamous cell carcinoma

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette smoking</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td>Betel Quid</td>
<td>24</td>
<td>26.67</td>
</tr>
<tr>
<td>Alcohol</td>
<td>20</td>
<td>22.22</td>
</tr>
<tr>
<td>Smoking with tobacco chewing</td>
<td>6</td>
<td>6.67</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4.44</td>
</tr>
</tbody>
</table>

Table No.4: Causes of malignant oral tumor associated to diagnosing

<table>
<thead>
<tr>
<th>Causes</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misdiagnosed by expertise</td>
<td>26</td>
<td>28.89</td>
</tr>
<tr>
<td>Patients Unawareness</td>
<td>30</td>
<td>33.33</td>
</tr>
<tr>
<td>Lack of Diagnosing Tools</td>
<td>12</td>
<td>13.33</td>
</tr>
<tr>
<td>Others (faculty, procedure)</td>
<td>6</td>
<td>6.67</td>
</tr>
</tbody>
</table>

DISCUSSION

Oral squamous cell carcinoma is found to be more common in slightly older males all over the world but newer studies are revealing its development in younger age groups. Many of studies reported that the patients with third to 5th decade of life has a high prevalence of oral cancer but in recent years several studies reported early age. Some previous studies showed that patients with age group 50 to 60 years had a high prevalence of...
The present study was conducted aimed to examine the frequency and risk factors of oral squamous cell carcinoma also determine the causes of this malignant disorder associated to diagnosis. In our study majority of patients were males 77.78% while female patients were very low in numbers. These results showed similarity to some other studies in which male patients population was high 60 to 85% as compared to females.

In present study we found that majority of patients were ages between 30 to 60 years. A study conducted by Akram et al. regarding oral squamous cell carcinoma reported patients with ages 30 to 60 years had a high prevalence of oral tumor. We found that 50 (55.56%) patients had rural residency while 40 (44.44%) had urban residency. Forty-six (51.11%) patients had low socioeconomic status, 44 (48.89%) had middle status. These results were comparable to some other studies in which most of the patients had low socioeconomic status. As per previous studies socioeconomic status and literacy contributed a lot for increasing the rate of oral tumors.

Forty-six (51.11%) patients had buccal mucosa, 24 (26.67%) patients had lower alveolar mucosa, 8 (8.89%) patients had tongue, 6 (6.67%) had lips and 6 (6.67%) patients had cheeks according to the sites of tumor. Most of the studies demonstrated buccal mucosa was the most frequent site of oral squamous cell carcinoma followed by alveolar mucosa.

We found that smoking tobacco (cigarettes) was the most frequent risk factor for developing oral cancer 40% followed by betel quid and alcohol. These results were similar to some other studies but in contrast many of studies reported alcohol consumption, sniff and chewing tobacco were the most common risk factors. The second most important objective of this study was to examine the causes, challenges associated to diagnosing oral cancers and we found most important cause of malignancy was misdiagnosed by expertise at first visit found in at first visit found in 26 (28.89%), delay due to patients unawareness found in 30 (33.33%), delay in diagnosis due to lack of facility (diagnosing tools found in 12 (13.33%). Many of previous studies shows the problems regarding malignancy and found misdiagnosed by expertise and delay in diagnosis due to unawareness were the most important challenges for diagnosing this malignant disorder. In this study we observed that there is a need of trained professionals for diagnosing this malignant disorder also provide awareness to the people so that early diagnosis could be possible and may helps to reduce the morbidity and mortality rate in Pakistan.

CONCLUSION

Oral cancers are the world’s most common and life threatening malignant disorders. In Pakistan the rate of oral cancers is quite high as compared to developed countries. In this study, we concluded that that there is a high prevalence of oral cancer and smoking is the major risk factor of this malignant disease. Misdiagnosed at first visit is the major concern. Lack of diagnosis facilities and lacks of awareness are also most important factor for increasing the rate of this malignant disorder. Authorities should take a action for training the professionals and for providing the proper diagnosing tools so that mortality and morbidity could decrease. Also provide awareness to the people about this malignant disorder. Moreover, many of challenges contributed in raising the rate of oral cancer but importantly early diagnosis and prompt treatment are very helpful for decreasing the frequency of oral squamous cell carcinoma.

Author’s Contribution:
Concept & Design of Study: Faiqua Yasser
Drafting: Shakila Mushtaq, Asrar Ahmad
Data Analysis: Ambreen Tauseef, Raja Yasser Shabbaz, Rizwana Kamran
Revisiting Critically: Faiqua Yasser, Shakila Mushtaq
Final Approval of version: Faiqua Yasser

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

ABSTRACT

Objective: To study the Histological Pattern of Central Nervous system Neoplasms.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Section of Histopathology, Aziz Bhatti Teaching Hospital Gujrat and Idris Teaching Hospital Sialkot to check the frequency of all Central Nervous system neoplasms diagnosed here from January 2014 to December 2019.

Materials and Methods: A total of 451 Central Nervous system neoplasms were diagnosed. All samples were fixed in ten percent buffered formalin. Routinely processed under standard conditions for paraffin embedding, sectioned and finally stained with haematoxylin and eosin using standard procedures. When required, special stains such as PAS, reticulin etc. and immunohistochemistry by Papanicoulaue technique using monoclonal antibodies against Glial fibrillary acidic protein, a wooden plaque bearing a prayer, Cytokeratins, Life-cycle assessment, Pan B and T etc. were performed. The histological characterisation of Central Nervous system tumors was done according to the World Health Organization histological typing of tumors of the Central Nervous system. The grading of astrocytic neoplasms was done according to the Kernohan grading systems for astrocytomas.

Results: In case of primary Central Nervous system Neoplasms highest incidence of the Glial tumours 41.01% and minimum incidence of primary Central Nervous system Neoplasms was Miscellaneous tumours 8.98 %. In case of Glioma Neoplasms the highest incidence was of Astrocytomas 45.61% and lowest incidence was Gliosarcomas 3.50%. In case of Astrocytic Neoplasms the highest incidence of Grade 3-4 astrocytomas 49.29% and lowest incidence was Subependymal giant cell astrocytomas 1.40%. In case of Miscellaneous CNS neoplasms the highest incidence was of Hemangioblastomas 29.03% and lowest incidence was Endothelial tumours (Hemangiopericytomas)3.22%. Melanocytic Tumours (Malignant Melanoma) 3.22% and Pineal Parenchymal Tumours (Pineoblastoma) 3.22%. In case of 5 commonest categories of primary CNS Neoplasms the mean age was maximum 43.34 in age range 2-75 years and was minimum in age range 1-37 years (13.01).

Conclusion: Except for the high percentages of anaplastic recapitulate the appearance of the normal resident oligodendroglia of the brain & A type of brain tumor that begins in cells lining spinal cord central canal and the low percentage of metastatic tumours, most of our findings roughly coincide with the published data (JPMA: 1 54;2001).

Key Words: Histological Pattern, Central Nervous System, Neoplasms.

INTRODUCTION

No critical information on the recurrence of different kinds of focal sensory system neoplasms in Pakistan is accessible separated from two examinations by Irfan and Qureshi and Shah et al. We have seen in our training in the Section of Histopathology, Aziz Bhatti Teaching Hospital Gujrat and Idris Teaching Hospital to decide the recurrence of all Central Nervous system neoplasms analyzed here from first January 2016 to 31st December 2019. That Central Nervous system tumors are very regular in all age gatherings. A review study was along these lines completed to decide the histological example of all Central Nervous system neoplasms analyzed in our segment over a four-year time frame and to relate our discoveries with worldwide and Pakistani distributed information.

The yearly frequency of Central Nervous system tumors ranges as indicated by distributed Western information from ten to seventeen in one lakh people for intracranial tumors and one to two in one lakh people for inside spinal tumors; about half are essential tumors and the rest are metastatic. Tumors of the Central Nervous system represent twenty percent of all malignant growths of childhood. Harmful Central Nervous system tumors are the second commonest reason for death from malignancy in the under multiyear age bunch in the two male and females.
Seventy Percent of youth Central Nervous system tumors emerge in the back cranial fossa while a comparative level of grown-up Central Nervous system tumours emerge inside the cerebral sides of the equator supratentorially. By and large, gliomas represent forty to sixty-seven percent and tumours of meninges for nine to twenty-seven percent of essential tumors in populace based studies. Around eighty percent of mind metastases are found in the cerebrum and ten to fifteen percent in the cerebellum. With current neuron imaging strategies like Computed tomography scan and magnetic resonance imaging and progressively cautious post-mortem examination investigations of malignancy sick persons, it is turning out to be more clear that mind metastases as a gathering are really the most well-known inside brain tumors and somewhat dwarf essential cerebrum tumours in the people.

MATERIALS AND METHODS

A retrospective study was conducted in the Section of Histopathology, Aziz Bhatti Teaching Hospital Gujrat and Idris Teaching Hospital Sialkot to check the frequency of all Central Nervous system neoplasms diagnosed here from 1st January 2014 to 31st December 2019. During this six-year period, a total of four hundred and fifty-one Central Nervous system neoplasms were diagnosed. All samples were fixed in ten percent buffered formalin. Routinely processed under standard conditions for paraffin embedding, sectioned and finally stained with haematoxylin and eosin using standard procedures. When required, special stains such as PAS, reticulin etc. and immunohistochemistry by Papanicoulaue technique using monoclonal antibodies against Glial fibrillary acidic protein. A wooden plaque bearing a prayer, Cytokeratins, Life-cycle assessment, Pan B and T etc. were performed. The histological characterization of Central Nervous system tumors was done according to the World Health Organization histological typing of tumours of the Central Nervous system. The grading of astrocytic neoplasms was done according to the Kernohan grading systems for astrocytomas.

RESULTS

In case of primary CNS Neoplasms highest incidence of the Glial tumours 41.01% and minimum incidence of primary CNS Neoplasms was Miscellaneous tumours 8.98 % as shown in table 1. In case of Glial Neoplasms the highest incidence was of Astrocytomas 45.61% and lowest incidence was Gliosarcomas 3.50% as shown in table 2. In case of Astrocytic Neoplasms the highest incidence of Grade 3-4 astrocytomas 49.29% and lowest incidence was Subependymal giant cell astrocytomas 1.40% as shown in table 3.

| Table No: 1. Histological Type of Primary CNS Neoplasms |
|----------------|----------|----------------|
| Histological type | No. | Percentage % |
| Glial tumours | 73 | 41.01 % |
| Meningiomas | 37 | 20.78 % |
| Never sheath tumours | 18 | 10.11 % |
| Embryonal neuro-epithelial tumours | 17 | 9.55 % |
| Primary CNS lymphomas (PCNSL) | 17 | 9.55 % |
| Miscellaneous | 16 | 8.98 % |
| Total | 178 | 100 % |

| Table No: 2. Histological type of Glial Neoplasms |
|----------------|----------|----------------|
| Histological type | No. | Percentage % |
| Astrocytomas | 78 | 45.61 % |
| Oligodendrogiomas | 37 | 21.63 % |
| Ependymomas | 31 | 18.12 % |
| Mixed Gliomas | 11 | 6.56 % |
| Gliosarcomas | 6 | 3.50 % |
| Total | 171 | 100 % |

| Table No: 3. Histological types of Astrocytic Neoplasms. |
|----------------|----------|----------------|
| Histological type | No. | Percentage % |
| Grade 3-4 astrocytomas | 35 | 49.29 % |
| Grade 1-2 astrocytomas | 17 | 23.94 % |
| Pilocytic astrocytomas | 13 | 18.30 % |
| Pleomorphic Xanthoastrocytomas | 5 | 7.04 % |
| Subependymal giant cell astrocytomas | 1 | 1.40 % |
| Total | 71 | 100 % |

In case of Miscellaneous CNS neoplasms the highest incidence was of Hemangioblastomas 29.03% and lowest incidence was Endothelial tumours (Hemangiopericytomas)3.22%, Melanocytic Tumours (Malignant Melanoma) 3.22% and Pineal Parenchymal Tumours (Pineoblastoma) 3.22% as shown in table 4.

| Table No: 4. Miscellaneous CNS Neoplasms. |
|----------------|----------|----------------|
| Histological type | No. | Percentage % |
| Choroid plexus tumours | 3 | 9.67 % |
| Neuronal and glioneuronal tumours | 7 | 22.58 % |
| Germ Cell tumours | 4 | 12.90 % |
| Endothelial tumours (Hemangiopericytomas) | 1 | 3.22 % |
| Myogenous Tumours (Embryonal Rhabdomyosarcomas) | 5 | 16.13 % |
| Hemangioblastomas | 9 | 29.03 % |
| Melanocytic Tumours (Malignant Melanoma) | 1 | 3.22 % |
| Pineal Parenchymal Tumours (Pineoblastoma) | 1 | 3.22 % |
| Total | 31 | 100 % |
In case of 5 commonest categories of primary CNS Neoplasms the mean age was maximum 43.34 in age range 2-75 years and was minimum in age range 1-37 years (13.01) as shown in table 5.

Table No.5: Age range and mean ages for 5 commonest categories of primary CNS Neoplasms

<table>
<thead>
<tr>
<th>Histological types</th>
<th>Age range (years)</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glial tumours</td>
<td>1-90</td>
<td>42.11</td>
</tr>
<tr>
<td>Meningiomas</td>
<td>2-75</td>
<td>43.34</td>
</tr>
<tr>
<td>Never sheath tumours</td>
<td>3-74</td>
<td>37.90</td>
</tr>
<tr>
<td>Embryonal neuroepithelial tumours</td>
<td>1-37</td>
<td>13.01</td>
</tr>
<tr>
<td>Non-hodgkin lymphomas</td>
<td>1-65</td>
<td>41.30</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Minimal big information in relation to the most common or rate of Central Nervous system neoplasms in Pakistan is accessible and there are not very many findings on the repeatedly occurring of different histological types of Central Nervous system neoplasms. As per introductory outcomes from the Karachi Cancer Registry, Central Nervous system neoplasms positioned at No. Fourteen between every single threatening tumor in both male & female: while in another nearby study, they positioned ninth between every single harmful tumor in men. In both these neighborhood examines, Central Nervous system neoplasms neglected to make the best ten dangerous neoplasms in females.

The examination by Irfan and Qureshi was the main critical neighborhood information on different histological types of inside the brain space possessing injuries. Be that as it may, they included pituitary neoplasms just as non-neoplastic conditions like tuberculosis. The examination by Shah et al took a gander at absolutely neoplastic Central Nervous system sores in all age gatherings. Nonetheless, pituitary tumours like a type of non-cancerous tumor and a tumor of the brain near the pituitary gland as were prevented. We additionally prevented all non-neoplastic sores including different types of non-neoplastic growths, vascular contortions, tuberculous and contagious diseases and so forth.

Numerous tumors of the central nervous system established the commonest tumours in our arrangement containing forty-one point zero one percent of all essential Central Nervous system neoplasms, trailed by tumours of meningies which involved forty-three point thirty-four percent. These discoveries are like distributed Western information as indicated by which gliomas represent forty to sixty-seven percent and tumours of meningies for nine to twenty-seven percent of essential Central Nervous system tumours. In Irfan and Qureshi's study, gliomas represented thirty-two point one percent and tumours of meningies for thirteen point seven percent. Be that as it may, as referenced over, this investigation included pituitary tumors just as non-neoplastic conditions. Nerve sheath tumors represented ten point eleven percent of all essential Central Nervous system neoplasms in our investigation, while they involved five point four percent in the above examination. Embryonal neuroepithelial tumors involved nine point fifty-five percent of every single essential neoplasm in our examination, though they contained six point two percent in Irfan and Qureshi's Series. Among the glial tumors, astrocytomas were the biggest gathering in our investigation containing forty-five point sixty-one percent of every single numerous tumors of the central nervous system. There were three hundred one diffuse fibrillary astrocytomas (grades I-IV) which involve forty-nine point twenty-nine percent of all essential Central Nervous system neoplasms. This makes them the commonest essential Central Nervous system neoplasms. Western information bolsters this. These were trailed by a type of non-cancerous tumor involving twenty-one point six thirty-three percent and a tumor of the brain near the pituitary gland eighteen point twelve percent. As referenced in results, twenty-one point sixty-three percent a type of non-cancerous tumor and eighteen point twelve percent a tumor of the brain near the pituitary gland were anaplastic. This comprises a fundamentally high level of or specialized features as in malignant tumours sores. Because of this high rate, each case so detected was checked on basically by the senior expert of pathology in the investigation. The nearness of the accompanying rules was observed as basic for a determination of specialized features as in malignant tumours a type of non-cancerous tumor or a tumor of the brain near the pituitary gland: thick cellularity, prominent mitotic action, endothelial hyperplasia and foci of coagulative rot. As shown by Irfan and Qureshi's study, astrocytomas include around eighty percent and a type of non-cancerous tumor eight point eight percent of every numerous tumors of the central nervous system. In our finding, high-grade (III and IV) astrocytomas were prevalent over poor quality (I and II) astrocytomas containing twenty-three point seventy-four percent of the astrocytomas. However, in Irfan and Qureshi's study, poor quality astrocytomas (I % II) involve sixty-three point seven percent of all numerous tumors of the central nervous system. While glioblastomas involve just sixteen point nine percent. NKLs involved three point sixty-one percent of all essential Central Nervous system neoplasms in our arrangement, however there is no notice of lymphomas in Irfan and Qureshi's study.
In our examination, the male to female proportion was 1.6:1. Most United States libraries report a higher cerebrum tumor rate in male than in females (normal proportion 1.4)\textsuperscript{15}. In Irfan and Qureshi’s examination\textsuperscript{1}, SR was 2.

Western information likewise shows that the sex proportion (SR) shifts significantly related to histology type. Gliomas are higher in guys (SR), while meninigionlas are higher in females (SR 0.6)\textsuperscript{16}. Our examination shows comparative findings. The SR was two for numerous tumors of the central nervous system, with men involving sixty-six point seventy-two percent and females thirty-three point twenty-seven: while SR was zero point seven percent for meninigomas, with male containing forty-two point thirty percent and females fifty-seven point sixty-nine percent. As per the SEER information for the interim 1973-80, in youngsters not as much as age fifteen years at analysis, twenty-three percent were medulloblastomas, twenty-five percent second rate astrocytomas. Twelve percent cerebellar astrocytomas and eleven percent supratentorial astrocytomas\textsuperscript{17}. As shown by a neighborhood study\textsuperscript{2}, astrocytomas contained thirty-nine percent, trailed by medulloblastomas eighteen point six percent and ependymomas thirteen percent. As per that equal investigation, forty-three point five percent of children mind tumors were in the back fossa. In our examination, one hundred sixty-one sick persons (fourteen point five percent) were fifteen years or more youthful in age and in forty-nine point six percent sick persons fifteen years or more young, the tumors were situated in the back cranial fossa, which is like the discoveries appeared in the finding by Shah et al\textsuperscript{2}. Be that as it may, these figures are lower than the figures of seventy percent cited in western data\textsuperscript{7}.

The mean ages and age scopes of the significant tumor types in our study relate generally with the distributed western data\textsuperscript{18},\textsuperscript{19}.

As shown by Western studies\textsuperscript{10}, metastatic tumors are the most well-known inside the brain tumours and somewhat dwarf essential cerebrum tumors in the people. Be that as it may, in our study, they include ten point twenty-seven percent of all Central Nervous system tumors. As shown by Irfan and Qureshi’s examination\textsuperscript{1}, they contain just three point four percent of all Central Nervous system injuries. As referenced over, this finding likewise included pituitary tumors and non-neoplastic sores. The error between western and neighborhood information concerning metastatic tumors to the Central Nervous system might be because of the way that western information not just considers present day imaging strategies and samples yet additionally dissection contemplates. In our nation, in any case, a large extent of Central Nervous system tumors which are detected as metastatic by imaging procedures are not sent for biopsy.

We trust that this enormous arrangement which is, as far as we could possibly know the biggest investigation from this nation, will give a complete gauge information about the recurrence of Central Nervous system neoplasms in Pakistan and give more clear thought relating their prevalence.

As shown by our examination, numerous tumors of the central nervous system establish the commonest Central Nervous system neoplasms followed by Meningiomas between the numerous tumors of the central nervous system, astrocytomas contain the biggest gathering, and high evaluation (III and IV) astrocytomas are the prevalent tumors among astrocytomas. The occurrences of anaplastic oligodendrogliomas and ependymomas are critical when contrasted with other nearby and western examinations.

By and large, Central Nervous system tumors are progressively normal in male. In any case, meningiomas are increasingly normal in females. Practically fifty percent of all Central Nervous system tumors in sick persons fifteen years or more young are in the back fossa. Metastatic tumors are a lot of lower when contrasted with the west. Be that as it may, this might be because of the way that western information considers present day imaging strategies and biopsies just as post-mortem examination survey.

**CONCLUSION**

Except for the high percentages of anaplastic recapitulate the appearance of the normal resident oligodendroglia of the brain & A type of brain tumor that begins in cells lining the spinal cord central canal and the low percentage of metastatic tumours, most of our findings roughly coincide with the published data (JPMA: 1 54;2001).

**Author’s Contribution:**

Concept & Design of Study: Fatima Kashif
Drafting: Faisal Iqbal,
Data Analysis: Shafiq-ur-Rehman, Kamran Hamid
Revisiting Critically: Fatima Kashif, Faisal Iqbal
Final Approval of version: Fatima Kashif

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

**REFERENCES**

Radiological and Functional Outcomes of Flexible Intramedullary Nailing in Children with Open Tibial Fractures

Muhammad Bilal¹, Muhammad Sarfraz¹, Saeed Ahmad², Adil Saidullah¹, Muhammad Ayaz³ and Farid Ullah Khan Zimri³

ABSTRACT

Objective: To examine the functional outcomes of flexible intramedullary nailing in children presented with open tibial fractures.

Study Design: Retrospective study

Place and Duration of Study: This study was conducted at the Orthopaedic Department, Federal Government Polyclinic Hospital Islamabad from January 2019 to December 2019.

Materials and Methods: Thirty two patients of either gender with ages 5 to 14 years presented with open tibial fractures were enrolled in this study. Patient’s detailed demographics were recorded. All patients treated with flexible intramedullary nailing. Radiological assessment was done. Complications associated to procedure were examined. Functional outcomes were analyzed according to the Flyn’s criteria. Follow-up was taken at 6 months postoperatively.

Results: There were 24 (75%) male and 8 (25%) were females. 14 (43.75%) patients were ages 5 to 10 years and 18 (56.25%) patients were ages 11 to 14 years. RTA was the commonest etiology found in 15 (46.88%) patients followed by fall from height in 10 (31.25%) patients. None of patient had nonunion. Mean union time was 3.86±1.27 months. Complications found in 3 (9.38%) patients in which 1 patient with wound infection, 1 had shortening of leg and 1 with delayed union. 22 (68.75%) patients had excellent, 7 (21.88%) had good, 3 (9.38%) had fair and none of patient had poor functional outcomes.

Conclusion: Flexible intramedullary nailing for open tibial fractures in children is safe and effective treatment modality. Union of bone achieved all the patients and majority of patients had excellent functional outcomes.

Key Words: Open tibial fractures, Children, Flexible intramedullary nail

INTRODUCTION

The third most common childhood fracture is Tibia shaft fractures. They represent 10 to 15 per cent of pediatric fractures.¹ The key modality of treatment for pediatric tibial shaft fractures is closed reduction and cast application.

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Contact No: 03215327030
Email: saeeddh@gmail.com

Surgical treatment is seen in fractures that are unstable, collapsed, open, polytraumacent, compartmental and extreme soft tissue injuries and related neurovascular injuries.² The outcomes are the outcomes of surgical treatment. During the past, for unstable tibial shaft fracture that required surgical fixation, external fixation and plate and screw fastening were used.³-⁵ Elastic nails are devices for load sharing, and enable early mobilization. Bone healing is improved by micromotion at the fracture site. Through its prebend ‘C’ configuration, which provides stable three-point fixation and serves as an internal splint, titanium elastic nails achieve biomechanical stability.⁶ Elastic intramedullary nailing in children with long bone fractures has gained popularity due to its high effectiveness and lower complication risk. Elastic intramedular nailing fulfills all requirements of minimally invasive bone surgery: shorter operating time, limited dissection of soft tissue, smaller incisions and thus smaller wounds, less discomfort, quicker mobilization and fairly simple removal of implants.⁷,⁸
With proper instructions and good preoperative planning of an skilled surgeon with this minimally invasive treatment approach it is possible to achieve good bone position and stabilization appropriate for children. The present study was conducted aimed to examine the functional outcomes of flexible intramedullary nailing in children presented with open tibial fractures.

**MATERIALS AND METHODS**

This retrospective/observational study was conducted at Orthopaedic Department of Federal Government Polyclinic Hospital Islamabad from 1st January 2019 to 31st December 2019. A total of 32 patients of either gender with ages 5 to 14 years presented with open tibial fractures were enrolled in this study. All the fractures were classified as Gustillo Anderson classification. Patient’s detailed demographics including age, sex, etiology of fractures were recorded after taking written consent from parents/attendant. Patients with osteogenesis imperfecta, congenital pseudoarthrosis of the tibial or other skeletal dysplasias were excluded. All patients received elastic titanium nails procedure under general anesthesia. Radiological assessment was done pre and postoperatively. Functional outcomes were analyzed according to the Flyn’s criteria as excellent, good, fair and poor. Postoperative complications such as wound infection, limb shortening, delayed union and pain were examined. Patients were followed up for 6 months. Functional outcomes were examined at final follow-up. All the data was analyzed by SPSS 24.

**RESULTS**

There were 24 (75%) male patients and 8 (25%) were females. Fourteen (43.75%) patients were ages 5 to 10 years and 18 (56.25%) patients were ages 11 to 14 years. RTA was the commonest etiology found in 15 (46.88%) patients followed by fall from height in 10 (31.25%) patients, 3 (9.38%) patients had sports injury, 3 (9.38%) had simple fall and 1 (3.13%) patient had unknown cause of injury. 13 (40.62%) patients had left side fracture and 19 (59.38%) had right side (Table 1). None of patient had nonunion. Mean union time was 3.86±1.27 months. According to the Flyn’s criteria, 22 (68.75%) patients had excellent, 7 (21.88%) had good, 3 (9.38%) had fair and none of patient had poor functional outcomes (Fig. 1). Complications found in 3 (9.38%) patients in which 1 patient had wound infection, 1 had shortening of leg and 1 with delayed union while 29 (90.61%) had no complications (Table 2).

**DISCUSSION**

Tibia fractures are commonly found fractures among children of growing age and associated with high rate of disability if they presented late. Many of procedures have been applied for tibial shaft fractures but elastic titanium nailing is considered as better and safe treatment modality due to its easiness and minimal invasive surgery, also higher union rate and fewer rates of minor complications. We conducted present study to determine the functional outcomes of open tibial fractures in children treated with flexible intramedullary nailing. In this regard 32 patients were analyzed. Majority of patients in our study were male and accounted 75% while females were 25%. 14 (43.75%) patients were ages 5 to 10 years and 18 (56.25%) patients were ages 11 to 14 years. These

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
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<td></td>
</tr>
<tr>
<td>5 – 10</td>
<td>14</td>
<td>43.75</td>
</tr>
<tr>
<td>11 – 14</td>
<td>18</td>
<td>56.25</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>75.0</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>25.0</td>
</tr>
<tr>
<td>Causes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTA</td>
<td>15</td>
<td>46.88</td>
</tr>
<tr>
<td>Fall from height</td>
<td>10</td>
<td>31.25</td>
</tr>
<tr>
<td>Simple Fall</td>
<td>3</td>
<td>9.83</td>
</tr>
<tr>
<td>Sports injury</td>
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<td>9.83</td>
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<tr>
<td>Unknown</td>
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<td>3.13</td>
</tr>
<tr>
<td>Fracture side</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>13</td>
<td>40.62</td>
</tr>
<tr>
<td>Left</td>
<td>19</td>
<td>59.38</td>
</tr>
</tbody>
</table>

**Table No.2: Complications associated to procedure**

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No complication</td>
<td>29</td>
<td>90.61</td>
</tr>
<tr>
<td>Wound infection</td>
<td>1</td>
<td>3.13</td>
</tr>
<tr>
<td>Limb shortening</td>
<td>1</td>
<td>3.13</td>
</tr>
<tr>
<td>Delayed Union</td>
<td>1</td>
<td>3.13</td>
</tr>
</tbody>
</table>
results were comparable to many of previous studies in which male were predominant 65 to 80% and the average age of patients was 10 years.\textsuperscript{12,13} RTA was the commonest etiology found in 15 (46.88%) patients followed by fall from height in 10 (31.25%) patients, 3 (9.38%) patients had sports injury, 3 (9.38%) had simple fall and 1 (3.13%) patient had unknown cause of injury. A study conducted by Byanjankar et al.\textsuperscript{14} reported that fall from height was the commonest mode of injury found in 40.9% children, 31.81% had RTA and 22.72% had sports injuries.

In present study we found that none of patient had nonunion. Mean union time was 3.86±1.27 months. According to the Flyn’s criteria, 22 (68.75%) patients had excellent, 7 (21.88%) had good, 3 (9.38%) had fair and none of patient had poor functional outcomes. A study conducted by Pogorelić et al.\textsuperscript{15} regarding outcomes of elastic stable intramedullary nailing for femoral fractures and the included 103 patients, at final follow-up all the patients in their study achieved complete radiographic healing at a mean of 8.5 weeks. Another study by Alam et al.\textsuperscript{16} reported that out of 43 children treated by flexible intramedullary nailing for open tibial fractures, 36 (83.7%) patients had excellent while 16.2% patients had satisfactory functional outcomes. Some other previous studies demonstrated that majority of children who treated with elastic intramedullary nailing for tibial fractures ha showed excellent functional and radiological outcomes 75 to 85% with fewer rate of minor complications such as wound infection, limb shortening and delayed in union.\textsuperscript{17,18}

In our study complications found in 3 (9.38%) patients in which 1 patient had wound infection, 1 had shortening of leg and 1 with delayed union while 29 (90.61%) had no complications. These results were comparable to other previous studies in which elastic intramedullary nailing associated with fewer rate of complications and accounted for 5% to 10% with no major complication.\textsuperscript{19,20}

CONCLUSION

Flexible intramedullary nailing for open tibial fractures in children is safe and effective treatment modality with fewer rates of minor complications. Union of bone achieved all the patients and majority of patients had excellent functional outcomes.

Author’s Contribution:

Concept & Design of Study: Muhammad Bilal
Drafting: Muhammad Sarfraz, Saeed Ahmad
Data Analysis: Adil Saidullah, Muhammad Ayaz, Farid Ullah Khan Zimri
Revisiting Critically: Muhammad Bilal, Muhammad Sarfraz

Final Approval of version: Muhammad Bilal

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES


**ABSTRACT**

Objective: To examine the functional outcomes of titanium elastic nails procedure in patients presented with diaphyseal fracture of humerus.

Study Design: Retrospective/observational study.

Place and Duration of Study: This study was conducted at the Orthopaedic and Trauma Surgery Department, Capital Hospital Islamabad from March 2019 to October 2019.

Materials and Methods: Thirty patients of both genders with ages 18 to 60 years presented with diaphyseal fractures of humerus were included. Patients detailed were recorded after informed consent. All the fractures were treated with titanium elastic nailing. Clinical and radiological parameters were analyzed pre and postoperatively. Functional outcomes were analyzed by DASH scoring system. Post-operative complications were examined. Patients were followed for 6 months after surgery.

Results: There were 24 (80%) male patients while 6 (20%) patients were females. Mean age of patients was 32.46±8.65 years. Road traffic accident was the most common mode of injury found in 19 (63.33%) patients. No patient had non-union. Mean union time was 2.84±1.15 months. 25 (83.33%) patients had excellent, 3 (10%) had good, 2 (6.67%) had fair and 0 patient with poor functional outcomes. 4 (13.33%) patients had postoperative complications, in which 2 patients had wound infection, 1 patient delayed union and 1 patient with elbow stiffness.

Conclusion: Titanium elastic nail for diaphyseal fracture of humerus is safe and effective procedure with fewer rates of complications.

Key Words: Diaphyseal fracture of humerus, Titanium elastic nail, Union


**INTRODUCTION**

Fractures of the humerus shaft are commonly found by orthopedic surgeons, which represent 1-2% of all fractures.\(^1\,^2\) This fracture can be treated with functional braces/plasters or operatively. Intramullary and frame osteosynthesis are the two modalities of internal fixation in the fracture shaft of humerus. Nails are prone to lower bending loads and are less vulnerable to fatigue failure. It serves as a device for exchanging loads and stress control.\(^1\,^2\)

Right at the end of a tube, cortical osteopenia is rarely seen with intramedullary nails; thus, refracure is less likely after implant removal.\(^4\) Since its conception, this method of treatment has been controversial due to damage to the medullary system, possibility of fat embolism and a general lack of understanding of the biomechanical principles of intramedullary club fastening.\(^4\,^5\) Open reduction internal fixation (ORIF) of plates and screws is the current Gold standard in operative therapy. Internal fixation with intra-medullary fixing devices is an alternative to this technique. Such tools seek to decrease DMCF penetration, enhancing cosmetic quality and compatibility while reducing the risk of infection.\(^6\) Various intramedullary devices are available. Several are made of solid stainless steel while others have lightweight titanium alloys.\(^7\,\,^8\) Several earlier tests have shown that titanium elastic nails are very productive with a higher union rate and a lesser difficulty rate.\(^9\,\,^10\) We conducted present study with aimed to examine the radiological and functional outcomes titanium elastic nailing for diaphyseal fracture of humerus.

**MATERIALS AND METHODS**

This retrospective/observational study was conducted at Orthopaedics and Trauma Surgery Department, Capital
Hospital Islamabad from 1st March 2019 to 31st October 2019. A total of 30 patients of both genders with ages 18 to 60 years presented with diaphyseal fractures of humerus were included. Patient’s detailed demographics including age, sex, BMI, mode of injury, side of injury and level of fracture were recorded after informed written consent. Patients with open fracture of shaft humerus, polytrauma patients, patient not willing for surgery and patient with other injuries of the same limb were excluded. Closed reduction and internal attachment of titanium elastic nails is used to treat all patients. Titanium elastic nails may be inserted before the dot at the next section of the humerus and after the entrance at the distal end of the humerus. We used the retrograde injection procedure in the humeral shaft during our research. DASH rating systems were evaluated for clinical results such as union time, practical outcomes. Postoperative complications such as wound infection, elbow stiffness, delayed union, non-union and pain were examined. Patients were followed up for 6 months. Functional outcomes were examined at final follow-up. All the data was analyzed by SPSS 24.

RESULTS
Out of 30 patients, 24 (80%) patients were male while 6 (20%) patients were females. Mean age of patients was 32.46±8.65 years. Mean BMI was 23.28±2.44 kg/m². RTA was the commonest mode of injury found in 19 (63.33%) patients followed by fall from height in 6 (20%). Intrapersonal violence in 3 (10%) and 2 (6.67%) had unknown etiology. 16 (53.33%) patients had left side and 14 (46.67%) had right side fracture. 25 (83.33%) patients had middle third, 4 (13.33%) had upper third and 1 (3.33%) had lower third level of fractures (Table 1).

<table>
<thead>
<tr>
<th>Table No.1: Demographical details of all the patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>Etiology</td>
</tr>
<tr>
<td>RTA</td>
</tr>
<tr>
<td>Fall from height</td>
</tr>
<tr>
<td>Violent Acts</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Fracture side</td>
</tr>
<tr>
<td>Right</td>
</tr>
<tr>
<td>Left</td>
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<tr>
<td>Fracture level</td>
</tr>
<tr>
<td>Middle third</td>
</tr>
<tr>
<td>Lower third</td>
</tr>
<tr>
<td>Upper third</td>
</tr>
</tbody>
</table>

Mean union time was 2.84±1.15 months. 4 (13.33%) patients had postoperative complications, in which 2 patients had wound infection, 1 patient with delayed union and 1 patient with elbow stiffness. According to functional outcomes, 25 (83.33%) patients had excellent, 3 (10%) had good, 2 (6.67%) had fair and 0 patient with poor functional outcomes. Overall 93.33% patients had good to excellent and 6.67% had satisfactory functional outcomes with no severe disability (Table 3).

<table>
<thead>
<tr>
<th>Table No.2: Complications associated to procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Union (months)</td>
</tr>
<tr>
<td>Wound infection</td>
</tr>
<tr>
<td>Delayed union</td>
</tr>
<tr>
<td>Elbow stiffness</td>
</tr>
<tr>
<td>Non-union</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table No.3: Functional outcome at final follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
</tr>
<tr>
<td>Excellent</td>
</tr>
<tr>
<td>Good</td>
</tr>
<tr>
<td>Fair</td>
</tr>
<tr>
<td>Poor</td>
</tr>
</tbody>
</table>

DISCUSSION
The diaphyseal fractures of Humerus have always been a problem since those fractures are associated with complications, such as non-union, malunion, delayed union and reduction. Diaphysial fractures have always been a problem. For such cases surgical operation is carried out to maintain longitude in conjunction with successful joint stability, in order to reduce the proximal and distal joint rigidity. U plaster cast has been the standard way of treating the fracturing of the humerus shaft. Although this technique can have adequate outcomes, residual angulation, malrotation, joint rigidity and the unequality of the limb duration are well known. In present study majority of patients 80% were males and females were 20% with mean age 32.46±8.65 years. These results were similar to many of other studies in which male patients were high in numbers and accounted 70% to 85% and the average age of patients was 30 years. Road Traffic accident was the commonest mode of injury found in 19 (63.33%) patients followed by fall from height in 6 (20%). Intrapersonal violence in 3 (10%) and 2 (6.67%) had unknown etiology. Studies demonstrated that road traffic accident was the commonest mode of injury accounted for >50% followed by fall from height and intrapersonal violence. In our study we found that mean union time was 2.84±1.15 months. 4 (13.33%) patients had postoperative complications, in which 2 patients had wound infection, 1 patient with delayed union and 1 patient with elbow stiffness. A study conducted by Patel et al reported that 90% fractures united in 12-20 weeks patients had delayed union which ultimately
united without any intervention. Two (10%) patients developed shoulder stiffness due to nail impingement. Another study by Updhaya et al reported that 100% fractures were united with union time of 14.98 weeks in patients treated with titanium elastic nails for diaphyseal humerus fracture.

In the present study, According, to functional outcomes, 25 (83.33%) patients had excellent, 3 (10%) had good, 2 (6.67%) had fair and no patient had poor functional outcomes. Overall 93.33% patients had good to excellent and 6.67% had satisfactory functional outcomes with no severe disability. Updhaya et al reported that 88% patients had excellent, 8% had moderate and 4% had poor functional outcomes. A study by Hwaiz reported that among 15 patients treated with flexible inelastic stable intramedullary nailing for humeral shaft fractures, in their study they enrolled 41 patients and they demonstrated that ESIN is a safe and effective approach for treating femoral shaft fractures in children; it provides better functional and radiographic outcomes than spica casting and can be used in preschool-age children. Another study by Soni et al reported that among 15 patients treated with flexible intramedullary nailing for humeral shaft fractures all 100% patients achieved union and 100% patients had good to excellent functional outcomes.

CONCLUSION

Titanium elastic nail method is a good option for handling diaphyseal humerus fractures in adult populations because of the minimum invasive technique; the biological union of a fracture site can be accomplished without interfering, as well as the possibility of almost no iatrogenic radial nervous damage can be minimized. But the variety of fracture type should first be considered.

Author’s Contribution:
Concept & Design of Study: Saeed Ahmad
Drafting: Muhammad Sarfraz, Muhammad Bilal
Data Analysis: Muhammad Ayaz, Adil Saidullah, Farid Ullah Khan Zimri
Revisiting Critically: Saeed Ahmad, Muhammad Sarfraz
Final Approval of version: Saeed Ahmad

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Objective: To examine the outcomes of laparoscopic appendectomy and compare with conventional appendectomy.

Study design: Retrospective study

Place and Duration of Study: This study was conducted at the Department of Surgery, Muhammad Teaching Hospital Peshawar from October 2019 to May 2020.

Materials and Methods: One hundred and sixty patients of both genders with ages 15 to 50 years presented with acute appendicitis were enrolled. Patient’s detailed demographics were recorded after written consent. All the patients categorized in to two equal groups. Group 1 consist of 80 patients and received laparoscopic procedure, group 2 with 80 patients received open procedure. Outcomes such as time duration of surgery, hospital stay, need for analgesic, wound infection, return to routine activities and patients satisfaction were compare between both groups.

Results: No significant difference was observed regarding age, sex and BMI between both groups (p-value>0.05). Open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51±8.45 minutes Vs 46.35±8.22 minutes (p-value <0.05). Laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy with p-value <0.05. No significant difference was observed regarding patients satisfaction between both groups.

Conclusion: Laparoscopic appendectomy is safe and effective procedure for acute appendicitis as compared to open appendectomy

Key Words: Outcome, Laparoscopic appendectomy, Conventional open appendectomy

Citation of article: Sajjad B, Muhammad S, Tahirullah, Khan ID. Compare the Outcomes of Laparoscopic Appendectomy Versus Conventional Open Appendectomy. Med Forum 2020;31(8):114-117.

INTRODUCTION

The most common cause of surgical abdomen in all age groups is appendicitis.\(^1\)\(^2\) The average prevalence of acute appendicitis in the latter and third decades of life is about 7–10% of the total populations.\(^3\) Open appendectomy has been the standard for the diagnosis of patients suffering from acute appendicitis for a 100-year period, but today there is a lot of debate on the consequences and superiority of laparoscopy in comparison to open procedure.\(^4\) It has been demonstrated that limited surgical damage by laparoscopy resulted in a significant reduction of hospital residency, reduced postoperative discomfort, and an increased return to daily activity in several gastrointestinal surgery settings.\(^5\) Many observational trials, however, have provided contrasting findings, including randomized experiments and meta-analyses\(^6\)\(^-\)\(^8\) comparing laparoscopic and open appendectomy. Many of the trials indicated improved laparoscopic results, whereas other tests have shown minimal or non-clinical benefit and increased running cost.\(^9\)\(^-\)\(^11\) With this research aimed to assess every potential benefit of this laparoscopic technique, in the light of the fact that laparoscopic appendectomy has not been considered superior of open surgery for acute appendicitis.\(^11\) The present study was conducted aimed to examine the outcomes laparoscopic appendectomy and compare with open appendectomy.

MATERIALS AND METHODS

This retrospective/observational study was conducted at Muhammad Teaching Hospital Peshawar from 1st October 2019 to 31st May 2020. A total of 160 patients of both genders with ages 15 to 50 years presented with acute appendicitis were included. Patients demographic including age, sex and BMI were recorded after written consent. Complete blood picture was examined. Pregnant women, patients with history of abdominal surgery, patients with recurrence and those with no
consent were excluded. All the patients categorized in to two equal groups. Group 1 consist of 80 patients and received laparoscopic procedure, group 2 with 80 patients received open procedure. Postoperative outcomes such as time duration of surgery, hospital stay, need for analgesic, wound infection, return to routine activities and patients satisfaction were compare between both groups. All the data was analyzed SPSS 24. Chi-square test was applied to compare the outcomes between both groups with p-value <0.05 was taken as significant.

RESULTS

In group 1, 48 (60%) were male and 32 (40%) were females with mean age 26.36±6.48 years and in group 2, 43 (53.75%) were male and 37 (46.25%) were females with mean age 25.93±6.23 years. Mean BMI in group 1 and 2 were 23.02±2.45 kg/m² and 22.86±2.64 kg/m². No significant difference was observed regarding age, gender and BMI between both groups with p-value >0.05 (Table 1). According to the operative finding, 135 (84.38%) patients (70 in group 1, 65 in group 2) had inflammatory appendicitis, 15 (9.38%) patients (7 in group 1 and 8 in group 2) had perforated and 10 (6.25%) patients (5 in group 1 and 5 in group 2) had gangrenous appendicitis (Table 2). According to the postoperative outcomes, open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51±8.45 minutes vs 46.35±8.22 minutes (p-value <0.05). However, Laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy with p-value <0.05 (Table 3). No significant difference was observed regarding patients satisfaction between both groups. All the patients of both groups were satisfied with the procedure. None of the patient in both groups reported non-satisfaction.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1</th>
<th>Group 2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>226.36±6.48</td>
<td>25.93±6.23</td>
<td>N/S</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>48 (60%)</td>
<td>43 (53.75%)</td>
<td>N/S</td>
</tr>
<tr>
<td>Female</td>
<td>32 (40%)</td>
<td>37 (46.25%)</td>
<td>N/S</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.02±2.45</td>
<td>22.86±2.64</td>
<td>N/S</td>
</tr>
</tbody>
</table>

DISCUSSION

The two common surgical complications that involve immediate surgery are acute appendicitis. In the last two decades, laparoscopic surgery became a significant surgical development. Meta analyzes have confirmed a successful laparoscopic appendectomy and that there is an improved return to daily life at the cost of longer operating time and less wound complications. In present study majority of patients 56.88% were males and females accounted 43.12% with mean age 25.46±5.47 years. These results were comparable to many of previous studies in which male patients population was high 55% to 65% as compared to females and average age of patients was 24 years. We divided all the patients equally in to two groups, 80 patients in each group. One group received laparoscopic appendectomy and other received open procedure. We found no significant difference regarding age, gender and BMI between both groups. According to the operative findings, 135 (84.38%) patients (70 in group 1, 65 in group 2) had inflammatory appendicitis, 15 (9.38%) patients (7 in group 1 and 8 in group 2) had perforated and 10 (6.25%) patients (5 in group 1 and 5 in group 2) had gangrenous appendicitis. A study conducted by Biondi et al reported that 85.2% in laparoscopic group and 69% in open group had uncomplicated appendicitis, 7.7% and 4.2% in open and laparoscopic groups had gangrenous appendicitis.

In present study we found that open appendectomy had significantly shorter operative time than laparoscopic appendectomy 32.51±8.45 minutes vs 46.35±8.22 minutes (p-value <0.05). These results showed similarity to some previous studies in which conventional appendectomy had significantly shorter operative time as compared to laparoscopic appendectomy. We found that laparoscopic appendectomy had significantly shorter hospital stay, less need for analgesic doses/day, less wound infection rate, and shorter time to return to routine activities as compared to open appendectomy 1.74±0.34 vs 2.64±1.56, etc.
(1.26±0.86 Vs 2.84±0.75, (5% vs 16.25%), and (11.44±3.28 Vs 15.64±4.71) with p-value <0.05. Many of previous studies showed similarity to our findings in which patients treated with laparoscopic procedure had significantly shorter hospital stay, fewer postoperative complications and shorter time to return to daily activities as compared to open procedure.\textsuperscript{20,21} A study by Shimoda et al\textsuperscript{22} reported that laparoscopic appendectomy groups had significantly less blood loss, less rate of surgical site infection as compared to open appendectomy group with p-value <0.05. Kolhar et al\textsuperscript{23} reported in their study that patients who underwent laparoscopic appendicectomy less discomfort following surgery, less analgesic use, fewer postoperative complications such as diarrhea, ileus, wound infection, reduced hospitalization and an quicker return to daily work.

CONCLUSION

Laparoscopic appendectomy safe and effective treatment modality due to shorter hospital stay, less rate of wound infection, shorter time duration to return to normal activities and less need for oral analgesic need.

Author’s Contribution:

Concept & Design of Study: Barka Sajjad
Drafting: Shoaib Muhammad
Data Analysis: Tahirullah, Imran-ud-Din Khan
Revisiting Critically: Barka Sajjad, Shoaib Muhammad
Final Approval of version: Barka Sajjad

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Compare the Histology and Fetal Outcome in Patients with Normal Placenta and Abruptio Placenta
Atif Hussain¹, Sadia Dilawer², Saba Shafiq³ and Fatima⁴

ABSTRACT

Objective: To examine the histological examination of abruptio placenta in normal/term delivery and compare with normal placenta also compare the fetal outcomes.

Study Design: Comparative/Observational study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynaecology, Women and Children Hospital Abbottabad from April 2019 to December, 2019.

Materials and Methods: Sixty-four women with term pregnancy were included in this study. Patients categorized into two groups, group A contains 32 women with abruptio placentae and group B 32 women with normal placentae. Patients detailed demographics including age and body mass index were recorded after written consent. Histological examination was done and compares the findings between both groups. Fetal outcomes such as birth weight and Apgar score were examined and compare.

Results: Mean BMI of patients in group A was 24.22±2.86 kg/m² and group B it was 24.78±2.64 24.22±2.86 kg/m². No significant difference was observed regarding age between both groups p-value >0.05. A significant difference was found regarding fibrinoid necrosis between group A and B (10.8±1.74 Vs 5.57±1.94) with p-value <0.05. Mean syncytial knots in group A was 47.85±9.74 and in group B it was 28.89±4.85, a significant difference was observed between group A and B (p=value <0.0001). Fetal weight was significantly less in group A when compared to group B with p-value 0.001.

Conclusion: Women with abruptio placentae had significantly worst histological findings and poor fetal outcomes as compared to women with normal placentae.

Key Words: Abruptio placenta, Normal placentae, Fibrinoid necrosis, Syncytial knots, Calcification, Birth weight, Apgar score

Citation of article: Hussain A, Dilawer S, Shafiq S, Fatima. Compare the Histology and Fetal Outcome in Patients with Normal Placenta and Abruptio Placenta. Med Forum 2020;31(8): 118-121.

INTRODUCTION

Placental abruption, the untimely separation of the placenta from the uterine divider, before birth and following 20 weeks of growth, is one of the most noteworthy determinants of maternal bleakness just as perinatal misfortune and mortality.¹,² It is assessed to happen in 0.6 to 1% of pregnancies in the United States³, yet the detailed frequency is lower (0.4–0.5%) in Nordic countries⁴ and higher (3.5–3.8%) among some south Asian nations.⁵ It ordinarily presents with maternal side effects of vaginal dying, stomach agony and withdrawals, and additionally irregular fetal pulse tracings.⁶ The confusion is additionally portrayed by ceaseless placental brokenness and division from the uterine divider, which, with movement, can prompt a comparing decline in the placental surface territory accessible for oxygen trade and supplement flexibly for the embryo.⁷ This procedure can prompt a raised danger of low birth weight, rashness, and perinatal mortality. Serious instances of suddenness can quickly advance to huge maternal blood misfortune, fetal hypoxia, and fetal demise and require new cesarean conveyance.⁸ There might be intervillous thrombi with pale overlaid sores with intense parenchymal hemorrhages which are normally dull red and covered with heaps of red platelets. Because of hemorrhages and blood clumps the fundamental placental parenchymal tissues become packed and centrally necrotic. Intense irritation prompts villi dead tissue. The RBC's breakdown and hemosiderin aggregates in 4-5 days with expanded perivillous fibrin testimony.⁹ In constant unexpectedness, hemosiderinladen macrophages are
noticeable in films and chorionic plate. Thrombi can be red in intense yet in constant cases these are pale tan to white with all around delineated parenchymal injuries. At times there is development of the intervillous space by layers of fibrin and red platelets. Distal villous hypoplasia and expanded syncytial hitches (total of syncytiotrophoblastic cores on the outskirts of tertiary placental villi, shaping a gigantic multinucleated bulge from the villous surface) can likewise be visualized. Such bunches are seldom noticeable before term pregnancy. Dead tissue of placenta shows limited region of ischemic corruption of villi. The present study was conducted to examine the histological morphology of abruption placentae and compare with normal placentae in term pregnancy, also compare the fetal outcomes.

MATERIALS AND METHODS

This comparative study was conducted at Department of Obstetrics & Gynaecology, Women and Children Hospital Abbottabad during from 1" April 2019 to 31" December, 2019. A total of 64 women with term pregnancy were included. Patient’s ages were ranging from 18 to 35 years. Patients categorized into two groups, group A contains 32 women with abruptio placentae and group B 32 women with normal placentae. Patient’s detailed demographics including age and body mass index were recorded after written consent. Patients with renal failure and severe co-morbidities, and patients with no consent were excluded. After delivery, the specimen samples of placentae were taken in a jar. They were then washed in a running tap water, tagged with numbers and preserved in 10% formal in solution for 48 hours. Histological examination such as fibrinoid necrosis, calcification and syncytial knots of placentae were recorded and compare the findings between both groups. Fetal outcomes such as neonatal birth weight and Apgar score at 5 and at 7 minutes were examined and compare between both groups. All the data was analyzed by SPSS 24. Chi-square test was applied to compare the histological examination and fetal outcomes between both groups with p-value <0.05 was taken as significant.

RESULTS

Mean BMI of patients in group A was 24.22±2.86 kg/m² and group B it was 24.78±2.64 kg/m². Mean age of group A patients was 25.62±3.22 years and in group B it was 25.02±3.01 years. No significant difference was observed regarding BMI and age between both groups with p-value >0.05 (Table 1). A significant difference was found regarding fibrinoid necrosis between group A and B (10.8±1.74 Vs 5.57±1.94) with p-value <0.05. Mean syncytial knots in group A was 47.85±9.74 and in group B it was 28.89±4.85, a significant difference was observed between group A and B (p=value <0.0001). Mean area of calcification in group A was 5.98±2.85 while in group B it was 1.52±1.86 with significant difference (p=<0.001) (Table 2). According to the fetal outcomes, a significant low birth weight was observed in group A 2.01±0.62 kg as compared to group B 3.82±0.4 kg with p-value 0.002. In group A 17 (53.12%) neonates had Apgar score >7 and 15 (46.88%) had apgar score <7 and in group B 30 (93.75%) had Apgar score >7 and 2 (6.25%) had apgar score <7 at 5 minutes, a significant difference was observed between both groups (p=<0.001) (Table 3).

DISCUSSION

Abruption placentae is one of the common disorder in women and associated with high rate of morbidity and mortality. In developed countries the prevalence of abruption placenta in term pregnancy was 3 to 5% while in developing countries like Pakistan and India it reaches 7% to 10%. We conducted present study with aimed to examine the histological morphology of abruption placentae in term pregnancy and compare the findings with normal placentae pregnant women. In this regard 64 patients were enrolled and categorized into two groups, group A (abruption) and group B (normal placentae). We found that mean BMI of patients in group A was 22.28±2.86 kg/m² and group B it was 24.78±2.64 kg/m². Mean age of group A patients was 25.62±3.22 years and in group B it was 25.02±3.01 years. No significant difference was observed regarding BMI and age between both groups with p-value >0.05. These results were comparable to many of previous studies in which majority of patients with abruption placentae had ages 26 to 30 years. In present study we found significant difference regarding fibrinoid necrosis between group A and B.
(10.8±1.74 Vs 5.57±1.94) with p-value <0.05. Mean syncytial knots in group A was 47.85±9.74 and in group B it was 28.89±4.85, a significant difference was observed between group A and B (p-value <0.0001). A study conducted by Gunyelli et al regarding histological study of placental lesion and they reported that 65% patients had fibrinoid necrosis in IUGR fetuses and 53% with placentas from unexplained intrauterine deaths. Another study showed similarity to our findings in which mean area of fibrinoid necrosis was 11.4±2.2 compared to 6.1±1.2 in the controls. In the abruptio patients the mean syncytial knot was 49.6±10.2 compared to 30.7±5.6 in the controls.

In our study according to the fetal outcomes, a significant low birth weight was observed in group A 2.01±0.62 kg as compared to group B 3.82±0.4 kg with p-value 0.002. In group A 17 (53.12%) neonates had Apгар score >7 and 15 (46.88%) had Apgar score <7 and in group B 30 (93.75%) had Apgar score >7 and 2 (6.25%) had Apgar score <7 at 5 minutes, a significant difference was observed between both groups (p<0.001). These results showed similarity to many of previous studies in which women with abruptio placentae had significantly low newborn weight as compared to normal placentae women in term deliveries. 18, 19 Studies also demonstrated that patients with abruptio placentae had significantly poor fetal outcomes when compared with normal placentae patients. 20-22

CONCLUSION

Women with abruptio placenta had significantly worst histological findings and poor fetal outcomes as compared to women with normal placentae.

Author's Contribution:
Concept & Design of Study: Atif Hussain
Drafting: Sadia Dilawer, Saba Shafiq
Data Analysis: Fatima
Revisiting Critically: Atif Hussain, Sadia Dilawer
Final Approval of version: Atif Hussain

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Comparison of Serum Gamma Glutamyl Transferase and Blood Sugar Levels in Type-2 Diabetic Patients with and Without Peripheral Neuropathy

Muhammad Faisal Javaid¹, Maria Gill², Muhammad Imran Khan² and Saima Rasheed¹

ABSTRACT

Objective: To evaluate and compare the levels of serum glutamyl transferase, HbA1C, fasting blood glucose and postprandial blood glucose in diabetics with and without peripheral neuropathy.

Study Design: Cross-sectional comparative study.

Place and Duration of Study: This study was conducted at the Department of Medicine, Niazi Medical & Dental College Sargodha from March 2020 to May 2020.

Materials and Methods: This was an exploratory study comprised of 80 type-2 diabetic patients and they were divided into two groups. Group A contained 40 patients with no peripheral neuropathy while Group B consisted of 40 peripheral neuropathic patients.

Results: In Group-A, 35 (87.5%) had serum GGT up to 55 U/L while 5 (12.5%) patients had > 55 U/L and in Group-B, 9 (22.5%) had serum GGT up to 55 U/L while 31 (77.5%) patients had > 55U/L (p=0.001). The mean serum gamma glutamyl transferase of peripheral neuropathy diabetics was 30.97±7.93 U/L and 75.25±12.63 U/L in peripheral neuropathy diabetics (p=0.001).

Conclusion: Majority patients with PN had raised serum gamma glutamyl transferase while normal gamma glutamyl transferase levels were observed among most of the patients without peripheral neuropathy.

Key Words: Diabetes mellitus, Polyneuropathy, Oxidative stress, Gamma-glutamyl transferase.

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic illness caused by reduced insulin production by the pancreas, or by a failure of the body to use insulin effectively. Hyperglycemia is one of the results of uncontrolled DM and causes significant neurological and blood vessel destruction. Type-2 DM patients comprised 90% of the whole DM patients.¹ The total population of Pakistan is 207 million according to the 2017 Pakistan Census² out of which 7.1 million suffer from DM.³ Among those DM patients 0.4 million suffer further complications of DM like foot ulcers secondary to PN.⁴ Diabetes mellitus is the leading cause of PN globally and the frequency of PN ranges from 10 to 50 percent in DM patients.⁵ Pakistan has 39.6 per cent prevalence of diabetic PN.⁶ Diabetic peripheral neuropathy is usually multifactorial. One of the most important reasons for its cause is oxidative stress. In otherwise healthy people, GGT has been evidenced to be one of the initial indicators of oxidative stress. Current researchers have discovered that high hepatic enzyme levels like alanine aminotransferase and GGT, are related to DM progression.⁷,⁸ Diabetes mellitus induced oxidative stress overloads the metabolic pathways of glucose which in turn lead to excessive free radial generation and promotes the development of Diabetic PN in the peripheral nervous system.⁹ A recent study concluded that GGT has been proven as an early marker of oxidative stress in healthy individuals.⁹ There is a correlation between Diabetic PN and serum GGT concentration and in Type 2 DM patients.¹⁰ This study was carried out to evaluate and compare the levels of serum GGT, HbA1C, FBG and PPBG in diabetics with and without PN.

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Accepted: July, 2020
Printed: August, 2020
MATERIALS AND METHODS

This cross sectional comparative study was carried out at Department of Medicine, Niazi Medical & Dental College Sargodha from 1st March 2020 to 31st May 2020. This was an exploratory study comprised of 80 type-2 diabetic patients and they were divided into two groups. Group A contained 40 patients with no peripheral neuropathy while Group-B consisted of 40 peripheral neuropathic patients. All the patients included in this study were above 40 years in age. Patients with history of chronic alcohol consumption and hepatobiliary disorders, patients who had PN other than diabetic PN and patient taking drugs like phenytoin, amiodarone, hydralazine, statin, metronidazole, INH (isoniazid), cancer therapy drugs such as vincristine were excluded from study. Study variables were controlled for confounding factors i.e. age, weight, gender and body mass index (BMI). After written consent demographic data (gender, age, occupation, BMI) was collected. Five ml of venous blood was collected from each of the subject in a disposable syringe under aseptic measures. Serum was separated and preserved at –20°C for assay of biochemical marker until analyzed. FBG and PPBG levels were estimated by using PAP method. Serum GGT and HbA1C was measured using microlab 300. Data analysis was conducted using Statistical Package for Social Sciences software version 25. A chi-square test was used to assess relation between serum markers FBG, PPBG, HbA1C and GGT levels in PN and non PN patients. Independent sample t-test was used to assess the mean difference of the two groups for serum levels of FBG, PPBG & HbA1C and GGT. Statistical significance was accepted at p < 0.05.

RESULTS

Group-A included 40 patients without PN while group B comprises of 40 patients of PN. In group A 28 (70%) patients were from 41-50 years, 9 (22.5%) from 51-60 years and 3 (7.5%) were above 60 years of age. In group B 20 (50%) patients were from 41-50 years, 17 (42.5%) from 51-60 years and 3 (7.5%) were above 60 years of age. Male to female ratio was 3:1 and 1.5:1 in groups A & B respectively. In group A 11 (27.5%) patients were from BMI range 18.5-24.5, 18 (45%) from 25-29.9 years and 11 (27.5%) were from above 30 kg/m2 of BMI. In group B, 10 (25%) patients were from BMI range 18.5-24.5, 15 (37.5%) from 25-29.9 years and 15 (37.5%) were from above 30 kg/m2 of BMI. In group A 17(42.5%) patients were on Government jobs, 0% in private organizations, 1(2.5%) businessmen, 10(25.0%) labourer, 2(5%) retired from job and 10(25%) housewives. In group B 13(32.5%) patients were on Government jobs, 4(10%) in private organizations, 2(5%) businessmen, 4(10.0%) labourer, 2(5%) retired from job and 15(37.5%) housewives. There is significant association of frequency of patients with and without PN who have abnormal levels of GGT (>55IU/L) in their blood (p=0.001). This association is not significant with levels of HbA1C, FBG and PPBG levels (Table1). There are statistically significant differences of HbA1C, FBG, PPBG and GGT levels in type-2 diabetic patients with PN and without PN (p=0.001) (Table2).

<p>| Table No.1: Frequency and percentages of DM type-2 patients with and without PN according to different levels of HbA1C, FBG, PPBG and GGT |</p>
<table>
<thead>
<tr>
<th>Group</th>
<th>HbA1c</th>
<th>FBG (mg/dl)</th>
<th>PPBG (mg/dl)</th>
<th>GGT (U/L)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients without PN (n=40)</td>
<td>≤5.7%</td>
<td>5.8-6.4%</td>
<td>&gt;6.5%</td>
<td>80-110 mg/dL</td>
<td>&gt;110 mg/dL</td>
</tr>
<tr>
<td>5 (12.5%)</td>
<td>3 (7.5%)</td>
<td>32 (80%)</td>
<td>2 (5%)</td>
<td>38 (95%)</td>
<td>-</td>
</tr>
<tr>
<td>Patients with PN (n=40)</td>
<td>2 (5%)</td>
<td>38 (95%)</td>
<td>-</td>
<td>40 (100%)</td>
<td>-</td>
</tr>
<tr>
<td>P-value</td>
<td>1.024</td>
<td>0.001*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Table No.2: Comparison of HbA1C, FBG, PPBG and GGT in DM type-2 patients with &amp; without PN |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Patients without PN</th>
<th>Patients with PN</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>7.2±1.34</td>
<td>8.7±1.57</td>
<td>0.001*</td>
</tr>
<tr>
<td>FBG</td>
<td>123±5.23</td>
<td>147±7.34</td>
<td>0.001*</td>
</tr>
<tr>
<td>PPBG</td>
<td>170±12.17</td>
<td>207±14.19</td>
<td>0.001*</td>
</tr>
<tr>
<td>GGT</td>
<td>30.97±2.59</td>
<td>75.24±8.64</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

DISCUSSION

In the current study 80 patients with DM were recruited according to the criteria of inclusion and exclusion. This study results showed that 75.0 percent of group A subjects and 60.0 percent of group B subjects were male, which reflects male dominance in both groups. In 2010 Cho conducted a study to determine the relationship between serum GGT level and peripheral diabetic PN in patients with type 2 diabetes. Results
revealed that 61.1% of PN patients were male while the 39.9% of non-PN patients were female. Analysis of data obtained during the study indicated that 42.5 percent of patients were on government/private jobs while the remaining patients in both classes were traders, labourer and housewives. Body mass index is an important indicator of physical health not only in healthy people but in diabetic patients as well. The BMI of both groups was measured and findings stated that the average BMI of PN patients was 28.7±4.88 kg/m² and was 27.5±3.52 kg/m² without PN, i.e., both groups were overweight. The Mørkrid study stated that mean BMI in patients with PN was 24.7±3.6 and 24.5±3.3 kg/m² without PN showed that both groups had normal weight according to their measured BMI.

Results of this research showed a considerable difference between the two groups' means of GGT levels. The mean serum GGT levels in PN patients were 75.2±48.64 U/L while in patients without PN GGT levels were 30.97±2.59 U/L. These results are close to the findings reported in 2012 by Jyothirmayi and colleagues who found out that PN and non-PN diabetic patients have substantial differences between their mean GGT serum levels. In their research patients with PN had a mean value of 57.4±42.4 U/L while the mean value was 20.60±5.87 U/L for patients without PN.

Results of this study revealed that all patients in both groups had PPBG greater than 140 mg/dL. However, a significant difference was noted between the means of PPBG levels of the two groups. The mean levels PPBG were 207±14.19 and 170±12.17 mg/dL of patient with and without PN respectively. These results are similar with the conclusions of the study conducted by Jyothirmayi et al in 2012 disclosed that patients had mean PPBG 295.95±83.01 mg/dL and 215.80±75.19 mg/dL in patient of PN and without PN respectively. HbA1c levels are used to track patients’ regulation of blood sugar, with various studies indicated that the majority of patients in both groups have increased values. In the current analysis, mean HbA1c was 8.7±1.57 % in patients with PN while mean was 7.2±1.34% in patients with no PN. A previous study by Janghorbani and colleagues in 2006 showing that mean HbA1c levels were 11.2±2.5% and 10.5±2.2% in patients with and without PN respectively.

Our study analysis indicated a significant association between serum GGT levels and HbA1c in Type-II diabetic patient’s frequency in DM patients with and without PN (p-value=0.001). Thirty-one out of 40 PN patients had increased serum GGT levels above 55 U/L, whereas 35 out of 40 patients without PN had normal levels of serum GGT. Study also presented significant association between serum GGT levels in both DM patients’ groups with and without PN (p-value=0.001). Current results indicated that majority of PN patients had elevated serum GGT whereas patients without PN had serum GGT levels within normal range. Study showed that most patients with PN had elevated PPBG and GGT serum while most patients without PN had elevated PPBG but normal GGT levels. This demonstrates the importance of uncontrolled blood sugar levels in PN, and future use of serum GGT as a predictive biomarker for diagnosis of PN.

CONCLUSION

Current study showed that most PN patients had elevated serum GGT while normal GGT levels were observed in most patients with no PN. Study showed important association between PPBG and GGT and highlighted the significance of serum GGT levels for PN early detection.

Author’s Contribution:

Concept & Design of Study: Muhammad Faisal Javaid
Drafting: Maria Gill, Muhammad Imran Khan
Data Analysis: Saima Rasheed
Revisiting Critically: Muhammad Faisal Javaid, Maria Gill
Final Approval of version: Muhammad Faisal Javaid

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Frequency of Common Bacterial Isolates and Antibiotic Sensitivities in Patients with Community Acquired Bed Sores
Siraj-ud-Din¹, Arif Mumtaz¹, Mehreen Khan¹, Gul Mehnaz² and Umair-ul-Islam¹

ABSTRACT

Objective: To determine the frequency of common bacterial isolates and antibiotic sensitivities in patients with community acquired bed sores.

Study Design: Cross-sectional study

Place and Duration of Study: Department of Medicine, DHQ Teaching Hospital, KDA Kohat from July 2018 to July 2019.

Methodology: 220 patients were enrolled from both genders. Patient’s comprehensive histories and clinical review carried out and regular inquiries followed. Within 48 hours of admission / referral, bed sores were examined with a cotton swab from all patients. After the bacteria were found, susceptibility was tested to widely used antibiotics.

Results: Male to female ratio was 2.55:1. Average age was 37.15±10.91. Escherichia Coli was found in majority of cases which were 57.27%.

Conclusion: Culture and sensitivity were practiced in patients with bed sores acquired from the culture. This will not only allow patients to seek adequate care, but also deter the indiscriminate use of antibiotics and avoid further production of bacterial drug resistance.

Key words: Community acquired bed sores, Antibiotics, Common bacteria


INTRODUCTION

Bedsores (pressure sores) have skin ulcers. They occur over osseous areas, caused by a prolonged strain on the skin, by limiting nutrients and oxygen to the tissue, the sluggish of tissue cells in order to induce death, microbial invasions of weakened skin, causing infection. This takes place in four stages reddening of field, redness with may be included the upper skin layers blistering or degradation Dermis and subcutaneous layers breakdown Which contains deeper tissue, including fascia muscles. Pressure injury is 10% in hospitalized patients and its influence in the society is roughly 5% Boxes ordered. These ulcers primarily affect Injury to the spinal cord to using a wheelchair, are lining to cannot travel, due to inadequate nutrition or hygienic conditions or Diabetics. Level pressure ulcer incidence in the United Kingdom is 2.2% to 66%, 0% to 65.6% in the United States and Canada. Those figures are determined from the environment and condition of the patient population (hospital relative to community setting, general care patients relative to those with broken femur neck). Pressure ulcers occurred among the 2.5 million hospitalized Americans and the annual cost of decubitus ulcer prevention and treatment is around $10 billion.

Different microorganisms which include normal microflora Gram-positive cocci, e.g. Epidermidis Staphylococcus and Gram-negative pathogen e.g. Pseudomonas aeruginosa, known to cause nosocomial infections, may infect wounds and may result in limited antibiotic treatment options and life-threatening effects. Resident skin microflora may be considered largely commensal in nature, but it is known that nonpathogenic microbes often become opportunistic pathogenic when the skin barrier becomes impaired. Infection by bacteria in pressure sore is a big cause that hampers pressure sore healing. Pathogenic bacteria in pressure sore can help us treat the condition and yet antibiotic resistance of the organism is another common problem. Antiseptics and disinfectants will reduce contamination; these include simple liquid soap, betadine, and iodine. Pseudomonas was the leading bacteria found in bed sores in a study reported by Hossain et al (34.6 percent) followed by E coli (28.4%), Staphylococcus Aureus (12.34%) and Proteus (11.1%). Ceftazidime, Amikacin, Ciprofloxacin, and Gentamycin displayed a higher percentage of sensitivity (77.63%, 71.05%, 72.33%, and 56.58%, respectively).
Organisms are largely resistant to Ampicillin (94.74%), Amoxicillin (90.78%), Co Trimoxazole (73.68%), Flucloxacillin (85.53%), and Ceftriaxone (56.58%), respectively. In another Ghaly et al study, the most prevalent pathogen isolated from pressure sores is Staphylococcus Epidermidis (31.4%), followed by Proteus vulgaris (28.6%), Pseudomonas aeruginosa (22.8%), and E. Coli, K. (8.6%). A pneumoniae (5.8%). Antibiotic susceptibility check for Gram-positive and negative bacteria found that ofloxacin is the most effective antibiotic against clinical bacterial isolates (68.6%), followed by norfloxacin (62.8%), chloramphenicol and amikacin (51.4%), erythromycin (25.7%), ampicillin (20.0%), cephalixin (5.8%), and penicillin (0%).

This research aims to investigate the bacteria involved in contaminated bed sores and to assess their susceptibility to antibiotics. Such pressure ulcers affected not only the patient’s family financially but also hospitals.

MATERIALS AND METHODS

This study was conducted at Department of Medicine, DHQ Teaching Hospital, KDA Kohat 1st July 2018 to 31st July 2019. A total of 220 patients were observed by using 3.7% proportion of community acquired Bed sores 1, 95% confidence level and 2.5% margin of error, using WHO software. More over all the patients with bed sores, age range 18-60 years and both the gender were included while patients having wounds other than bed sores, Bed sores developed during hospitalization were excluded. All patients meeting the inclusion criteria i.e. all Patients with persistent bed sores were included in the OPD report and met the inclusion criteria. The purpose and the benefit of the research were clarified and written informed consent was given. The guardian / relative. Clinical history and clinical examinations were carried out of all cases and regular testing was conducted. Bed sores were obtained from all patients with cotton swab within 48 hours of receipt / reference. In order to take samples using wound swabs in strict aseptic conditions, Sore has been swept in according to Gloucestershire Protocol for cultivation in hospitals for the identification of specific bacteria such as E. Coli, staphylococcus aureus, proteus, and pseudomonas. The susceptibility of commonly-used antibiotics such as cefazidime, amikacin, gentamicin, ampicillin, ceftriaxone, amoxicillin, ciprofloxacin, co trimaxazole, cephrine and doxycycline was tested when bacteria were detected. To control confusers and prejudice in the study results, strict exclusion criteria were followed. All laboratory experiments were performed under the supervision of an experienced pathologist with at least five years’ experience. Data was analyzed in SPSS version 20. Chi Square test to see effect modification keeping P value ≤0.05 were significant.

RESULTS

In this study, 220 patients with community acquired bed sores were observed, in which 158 (71.82%) were male and 62 (28.18%) were female patients. Male to female ratio was 2.55:1 (Fig. 1). There were 61 (27.7%) patients presented having age less than or equal to 30 years while 109 (49.5%) patients were in the age range of 31-45 years and 50 (22.7%) were of age range of more than 45 years of age with mean age was 37.1±10.91 years (Table 1). Distribution of common bacteria shows that E Coli was found in majority of cases which were 57.27%, followed by Staphylococcus Aureus 55% and Proteus in 42.73% and klebsiella in 42.73% patients (Fig. 2).

Age wise distribution of common bacteria shows that Escherichia coli was found in majority of the patients having age less than or equal to 30 years which was 60.7% followed by 56.9% patients having age 31-45 years and more than 45 years of age with 54%, while almost all the other organisms show in majority of patients having age less than or equal to 30 years of age (Table 2). The majority of females i.e. 40 (64.5%) presented with community acquired bed sores have Escherichia coli while 86 (54.4%) Escherichia coli were found in male patients. Similarly 87 (55.1%) Staphylococcus Aureus found in male and 34 (54.8%) were found in female. There were 72 (45.6%) Klebsiella have found in male and 22 (35.5%) have found in female patients. There were 66 (41.8%) Campylobacter Jejuni have found in male and 22 (35.5%) have found in female patients. The rest of micro organisms are shown in Table 3. The antibiotic sensitivity of common bacteria shows that Amikacin was more sensitive. The rest of antibiotics sensitivity and resistant has given in Table 4.

![Graph showing gender wise distribution of the patients](image)

**Table No.1: Age-wise distribution of the patients**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤30</td>
<td>61</td>
<td>27.7</td>
</tr>
<tr>
<td>31-45</td>
<td>109</td>
<td>49.5</td>
</tr>
<tr>
<td>≥46</td>
<td>50</td>
<td>22.7</td>
</tr>
</tbody>
</table>
DISCUSSION

Treatment for home patients, 1.2 percent – 11.3 percent in stage II or higher pressure ulcers. 5. 17% of the people admitted to nursing homes reported pressure trauma at the time of admission. 13% of citizens did not have pressures at the time of enrollment in the first year and 21% in the second year 6. According to the analysis of Canada, the incidence of new pressure ulcers was widely differed in installations from one installation to the next and ranged from 0 to 10.9% over a 6-month period 8-10. Patients without pressure ulcers admitted to care facilities, ranked 11.2% of patients between 70–79 years, and 34% of 190 years of age finally developed a pressure ulcer 11.

Pressure sore is the main cause of fatigue in admitted patients in hospitals. We have researched the bacteriological status of 220 patients admitted to Medical Station, Khyber Professional Hospital. The majority of patients were in the middle age group in my study. Patients’ average age was 47.4±13.30. The pressure sore patients included 72% of the males and 28% of the females. Males were predominant in our sample group. The ratio of men to women was 2.57: 1. In 2009, the Wound Electronic Medical Record checked Scifmen et al’s, 2060 patients in the wound healing hospital unit: the mean patient age was 73.1 years, and the men 45%. In comparison, in our sample group, average age is lower.
In 2005, Matthias investigated the management in 48 percent of Pseudomonas aeruginosa 10.8 percent Enterococcus Sp of complicated skin and soft tissue infection and Staphylococcus aureus isolated. 7.0% Entereobacter spp. 8.2% Escherichia coli Klebsiella spp. 5.8 percent. 5.1%. In a study of 23 patients, aerobic as well as anaerobic cultivation methods and advanced transport of specimens were tested as the bacteriological findings for clinically contaminated pressure ulcers. An average of four isolates (3 aerobic and 1 anaerobic) were recovered. Among those patients with sepsis symptoms, bacteremia is highly prevalent (79 percent). Aerobes were more often ulcers isolated than anaerobacteria but twice as many blood samples obtained from 19 patients with bacteremia were recovered. Proteus mirabilis, Escherichia coli, enterococci, staphylococci, and Pseudomonas were isolates recovered from the ulcer. Anaerobic isolates included the species of Peptostreptococcus, Bacteroides fragilis, and Clostridium perferential bacteria. B isolates were primarily B. Peptostreptococcus, fragilis and Staphylococcus aureus. P. mirabilis. Bacteremia is polymicrobial in 41 percent of cases. Mudere al. stated that the second leading cause of bacteremia (the main cause is urinary tract infections) and the most likely cause of polymicrobial bakaremia was caused by bacterial pressure ulcers in a 5-year prospective study by residents of a long-term treatment facility. In order to conduct initial microbiological examination of all suspected patients with pressure ulcers, therefore, blood cultures are clearly very important.

CONCLUSION

Pressure sores are definitely a medical condition which is underestimated. The implications of their creation are medical and economical. The most complicated treatment of pressure sore is for patients. Wound debridement is a main concept along with other operations. The most frequent bacterial isolation of Pseudomonas species was followed by E.Coli. Staph was the second most common isolated bacteria. Aureus

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### Table No.4: Antibiotic sensitivity of common bacteria

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>E Coli</th>
<th>Staphylococcus aureus</th>
<th>Klebsiella</th>
<th>Campylobacter Jejuni</th>
<th>Pseudomonas</th>
<th>Proteus</th>
<th>Others (S. Epidermidis &amp; Bacteroids)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceftazidime</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>44 (34)</td>
<td>44 (36.4)</td>
<td>32 (34)</td>
<td>37 (42)</td>
<td>34 (40)</td>
<td>35 (35)</td>
<td>34 (40)</td>
</tr>
<tr>
<td>Resistance</td>
<td>82 (65)</td>
<td>77 (63.6)</td>
<td>62 (66)</td>
<td>51 (58)</td>
<td>51 (60)</td>
<td>65 (65)</td>
<td>51 (60)</td>
</tr>
<tr>
<td><strong>Amikacin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>91 (72)</td>
<td>84 (69.4)</td>
<td>62 (66)</td>
<td>58 (65.9)</td>
<td>64 (75.3)</td>
<td>74 (74)</td>
<td>64 (75.3)</td>
</tr>
<tr>
<td>Resistance</td>
<td>35 (27)</td>
<td>37 (30.6)</td>
<td>32 (34)</td>
<td>30 (34.1)</td>
<td>21 (24.7)</td>
<td>26 (26)</td>
<td>21 (24.7)</td>
</tr>
<tr>
<td><strong>Gentamicin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>67 (53)</td>
<td>74 (61.2)</td>
<td>58 (61.7)</td>
<td>53 (60.2)</td>
<td>56 (65.9)</td>
<td>64 (64)</td>
<td>56 (65.9)</td>
</tr>
<tr>
<td>Resistance</td>
<td>59 (46)</td>
<td>47 (38.8)</td>
<td>36 (38.3)</td>
<td>35 (39.8)</td>
<td>29 (34.1)</td>
<td>36 (36)</td>
<td>29 (34.1)</td>
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<tr>
<td><strong>Ampicillin</strong></td>
<td></td>
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<tr>
<td>Sensitivity</td>
<td>84 (66)</td>
<td>76 (62.8)</td>
<td>55 (58.5)</td>
<td>56 (63.6)</td>
<td>65 (76.5)</td>
<td>72 (72)</td>
<td>65 (76.5)</td>
</tr>
<tr>
<td>Resistance</td>
<td>42 (33)</td>
<td>45 (37.2)</td>
<td>39 (41.5)</td>
<td>32 (36.4)</td>
<td>20 (23.5)</td>
<td>28 (28)</td>
<td>20 (23.5)</td>
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<tr>
<td><strong>Ceftriaxone</strong></td>
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<tr>
<td>Sensitivity</td>
<td>73 (57)</td>
<td>75 (62)</td>
<td>57 (60.6)</td>
<td>72 (61.8)</td>
<td>53 (62.4)</td>
<td>62 (62)</td>
<td>53 (62.4)</td>
</tr>
<tr>
<td>Resistance</td>
<td>53 (42)</td>
<td>46 (38)</td>
<td>37 (39.4)</td>
<td>16 (18.2)</td>
<td>32 (37.6)</td>
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<td>32 (37.6)</td>
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<tr>
<td><strong>Amoxicillin</strong></td>
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<tr>
<td>Sensitivity</td>
<td>104 (82)</td>
<td>67 (55.4)</td>
<td>57 (60.6)</td>
<td>64 (72.7)</td>
<td>46 (54.1)</td>
<td>55 (55)</td>
<td>46 (54.1)</td>
</tr>
<tr>
<td>Resistance</td>
<td>22 (17)</td>
<td>54 (44.6)</td>
<td>37 (39.4)</td>
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<td><strong>Ciprofloxacin</strong></td>
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<tr>
<td>Sensitivity</td>
<td>100 (79)</td>
<td>65 (53.7)</td>
<td>56 (59.6)</td>
<td>61 (69.3)</td>
<td>46 (54.1)</td>
<td>55 (55)</td>
<td>46 (54.1)</td>
</tr>
<tr>
<td>Resistance</td>
<td>26 (20)</td>
<td>56 (46.3)</td>
<td>38 (40.4)</td>
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<td>39 (45.9)</td>
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<td><strong>Cotrimaxazole</strong></td>
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<tr>
<td>Sensitivity</td>
<td>95 (75)</td>
<td>64 (52.9)</td>
<td>54 (57.4)</td>
<td>59 (67.0)</td>
<td>42 (49.4)</td>
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<td>Resistance</td>
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<td>57 (47.1)</td>
<td>40 (42.6)</td>
<td>29 (33.0)</td>
<td>43 (50.6)</td>
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<td>43 (50.6)</td>
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<td><strong>Cephidine</strong></td>
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<tr>
<td>Sensitivity</td>
<td>100 (79)</td>
<td>66 (54.5)</td>
<td>55 (58.5)</td>
<td>61 (69.3)</td>
<td>45 (52.9)</td>
<td>54 (54)</td>
<td>45 (52.9)</td>
</tr>
<tr>
<td>Resistance</td>
<td>26 (20)</td>
<td>55 (45.5)</td>
<td>39 (41.5)</td>
<td>27 (30.7)</td>
<td>40 (47.1)</td>
<td>46 (46)</td>
<td>40 (47.1)</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
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</tr>
<tr>
<td>Sensitivity</td>
<td>101 (80)</td>
<td>66 (54.5)</td>
<td>56 (59.6)</td>
<td>61 (69.3)</td>
<td>44 (51.8)</td>
<td>53 (53)</td>
<td>44 (51.8)</td>
</tr>
<tr>
<td>Resistance</td>
<td>25 (19)</td>
<td>55 (45.5)</td>
<td>38 (40.4)</td>
<td>27 (30.7)</td>
<td>41 (48.2)</td>
<td>47 (47)</td>
<td>41 (48.2)</td>
</tr>
</tbody>
</table>
and Proteus. Aureus and Proteus. Some sores showed candida and bacteroid anaerobic development. It indicates greater sensitivity in ceftazidim, amikacin, ciprofloxacin and gentamycin. Ampicillin, Amoxicillin, Co Trimoxazole, Ceftriaxone were mainly resistant species isolated from pressure sore.

Author’s Contribution:
Concept & Design of Study: Siraj-ud-Din
Drafting: Arif Mumtaz, Mehreen Khan
Data Analysis: Gul Mehnaz, Umair-ul-Islam
Revisiting Critically: Siraj-ud-Din, Arif Mumtaz
Final Approval of version: Siraj-ud-Din

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Comparison of Bupivacaine Alone Versus Bupivacaine Plus Fentanyl During Labour in Terms of Mean Pain Score

Syed Imran-ul-Hassan¹, Salman Athar Qureshi², Faiqa Qurban², Kanwal Awan¹, Maryam Liaquat¹ and Yasir Ijaz¹

ABSTRACT

Objective: To compare bupivacaine alone versus bupivacaine plus fentanyl during labour in terms of mean pain score.

Study Design: Double Blind Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the Department of Anesthesia, PIC, Lahore and GMC, Gujranwala from July 2018 to December 2018.

Materials and Methods: Before conduct of study informed consent from patient and permission from institutional review committee was taken. On the basis of random numbers patients were divided into two different groups. The study group designated as group- A received bupivacaine 0.1%±2 mcg/ml fentanyl in 10 ml normal saline while the control group designated as Group-II received bupivacaine 0.125% alone. Visual Analogue Scale was used to assess the pain score during labour, where score of 10-30 was taken as mild whereas 30-60 and 60-100 were considered as moderate and severe pain respectively.

Results: A total of 80 patients divided into two equal groups were included in this study. The study results showed that in Group-I total of 31 patients (77.5%) were 20-28 years of age and 9 (22.5%) 29-35 years of age as compared to group B where 29 patients (72.5%) were 20-28 years of age and 11 patients (27.5%) of age 29-35 years. In Group-I mean ± standard deviation was 28.73±2.88 years whereas Group-II it was 29.35±3.00 years. Mean of gestational age in Group-I and mean parity was calculated as 39.48±1.09 weeks and 2.68±1.16 paras respectively. Comparison of bupivacaine alone versus bupivacaine plus fentanyl during labour in terms of mean pain score was recorded in Group-I as 1.32±0.47 and in Group-II as 18.22±2.32. A significant difference was shown by a P value of 0.00.

Conclusion: We concluded that mean pain score is significantly reduced in bupivacaine plus fentanyl when compared with bupivacaine alone during labour in terms of mean pain score.

Key Words: Labour pain, bupivacaine alone, bupivacaine plus fentanyl, mean pain score.

Citation of article: Hassan SI, Qureshi SA, Qurban F, Awan K, Liaqat M, Ijaz Y. Comparison of Bupivacaine Alone Versus Bupivacaine Plus Fentanyl During Labour in Terms of Mean Pain Score. Med Forum 2020;31(8):131-134.

INTRODUCTION

Majority of women experience the painful agonizing experience of labour which may be harmful to both mother and fetus.¹² This painful process results in an increased maternal stress, oxygen demand and mechanical workload which increases catecholamine release leading to fetal acidosis, fetal hypoxia, deceased placental perfusion and increased uterine contractility.³

Labour pain can be effectively treated by epidural analgesia.⁴ Two third of American women receive epidural analgesia by epidural catheters which is the most effective method of pain relief during labour.⁵

Because of greater affinity for plasma proteins, bupivacaine is preferred agent for labour analgesia. Although it has cardiotoxic properties, bupivacaine is far from cardiotoxic effects in low concentration.⁶

There is increased maternal satisfaction and less incidence of side effects like drug toxicity and hypotension when administering local anesthetic combined with opioids in low concentration.⁷

In a previous study Bupivacaine at 0.125% was administered and pain at 90 minutes pain on VAS was recorded as 1.0±0.5⁸ while another study who added fentanyl adjunct to Bupivacaine recorded pain as 19.0±13.8, which shows no additional benefit for controlling the pain during labour.⁷

The rationale of the study is to analyze the effect of adding fentanyl in addition to bupivacaine low dose
(0.1%) in terms of pain score during labour. If we find any significant difference of pain by adding fentanyl in low dose bupivacaine, then we may continue in future in our patients. According to best of our knowledge, no local study is done to compare these findings while international data is also scared. Our results will be primary and helpful for doctors dealing labour of the patients.

MATERIALS AND METHODS

This study was conducted at the Department of Anesthesia, PIC, Lahore and GMC, Gujranwala from July 2018 to December 2018. Patient of age 25-35 Years, all booked for active labor, ASA I-II and at term pregnant were included in this study. Exclusion group was of patients having history of stativity to amide local anesthetic, nulliparity, previous history of intravenous opioid agonist or antagonist and contraindication to regional anesthesia. A total of 80 patients were equally distributed in two groups. Sample size was calculated with confidence level of 95%, power of test 80%. Mean pain score was taken at 90 minutes as 1.0±0.5 in patients using bupivacaine alone and 19±13.8 in patients taking bupivacaine plus fentanyl undergoing active labour. Before conduct of study informed consent from patient and permission from institutional ethical review committee was taken. On the basis of random numbers patients were divided into two different groups. The study group designated as group-A received bupivacaine 0.1%±2 mcg/ml fentanyl in 10 ml normal saline while the control group designated as Group-II received bupivacaine 0.125% alone. Visual Analogue Scale was used to assess the pain score during labour, where score of 10-30 was taken as mild whereas 30-60 and 60-100 were considered as moderate and severe pain respectively.

The data was analyzed using SPSS version 10. Demographic information was recorded. Frequency and percentage were calculated as for ASA status. Mean and Standard Deviation was calculated for parity, gestational age and pain score at 90 minutes of administration of drugs. Pain score in both groups was compared using P test. Independent sample t-test was applied post stratification and P value less than 0.05 was considered significant.

RESULTS

A total of 80 cases (40 in each group) fulfilling the inclusion/exclusion criteria were enrolled to compare bupivacaine alone versus bupivacaine plus fentanyl during labour in terms of mean pain score.

Age distribution shows that 77.5%(n=31) in Group-I and 72.5%(n=29) in Group-II were between 20-28 years of age while 22.5%(n=9) in Group-I and 27.5%(n=11) in Group-II were between 29-35 years of age, mean+sd was calculated as 28.73±2.88 years in Group-I and 29.35±3.00 years in Group-II. (Table 1)

Gestational age distribution shows that 52.5%(n=21) in Group-I and 67.5%(n=27) in Group-II were between 37-39 weeks of gestational age while 47.5%(n=19) in Group-I and 32.5%(n=13) in Group-II were between 39-41 weeks of gestational age, mean+sd was calculated as 39.48±1.09 weeks in Group-I and 39.18±1.08 weeks in Group-II. (Table No. 2)

Distribution of parity shows that 72.5%(n=29) in Group-I and 85%(n=34) in Group-II were between 1-3 paras while 27.5%(n=11) in Group-I and 15%(n=6) in Group-II had >3 paras, mean+sd as 2.68±1.16 paras in Group-I and 2.45±0.96 paras in Group-II. (Table No. 3)

Frequency of ASA status shows that 37.5%(n=15) in Group-I and 42.5%(n=17) in Group-II had ASA status I while 62.5%(n=25) in Group-I and 57.5%(n=23) in Group-II had ASA status II. (Table No. 4)

Comparison of bupivacaine alone versus bupivacaine plus fentanyl during labour in terms of mean pain score was recorded as 1.32±0.47 in Group-I and 18.22±2.32 in Group-II, p value was 0.000 showing a significant difference. (Table No. 5)

The data was stratified to control the effect modifiers i.e. age of the patients, ASA, gestational age and parity. P value <0.05 was taken as significant. (Table No. 6-9).

### Table No.1: Age Distribution (N=80)

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Group-I (No. of patients 40)</th>
<th>Group-II (No. of patients 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total patients</td>
<td>%</td>
</tr>
<tr>
<td>20-28</td>
<td>31</td>
<td>77.5</td>
</tr>
<tr>
<td>29-35</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Mean+SD</td>
<td>28.73±2.88</td>
<td></td>
</tr>
</tbody>
</table>

### Table No. 2: Gestational Age (N=80)

<table>
<thead>
<tr>
<th>Gestational age (weeks)</th>
<th>Group-I (No. of patients 40)</th>
<th>Group-II (No. of patients 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total patients</td>
<td>%</td>
</tr>
<tr>
<td>37-39</td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>39-41</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Mean+SD</td>
<td>39.48±1.09</td>
<td></td>
</tr>
</tbody>
</table>

### Table No. 3: Parity Distribution (N=80)

<table>
<thead>
<tr>
<th>Parity</th>
<th>Group-I (No. of patients 40)</th>
<th>Group-II (No. of patients 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total patients</td>
<td>%</td>
</tr>
<tr>
<td>1-3</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>&gt;3</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Mean+SD</td>
<td>2.68±1.16</td>
<td></td>
</tr>
</tbody>
</table>

Group-II had ASA status II. (Table No. 4)
DISCUSSION

Although labour is a physiological process but labour pain is a severe type of pain. Providing adequate pain relief without fetal and maternal harm is the prime goal of labour analgesia. The most commonly used and effective method of pain relief is continuous epidural analgesia because of its effective pain relief during labour as well as analgesia and anesthesia for vaginal delivery and cesarean section if needed. Various Pharmacological and Non-Pharmacological methods have been used to provide labour analgesia. Another effective method of providing labour analgesia is the use of fentanyl and sufentanil in combination of local anesthetic.

In our study, we planned to analyze the effect of combining bupivacaine low dose (0.1%) with fentanyl in terms of pain score during labour. If we find any significant difference of pain by adding fentanyl in low dose bupivacaine then we may continue in future in our patients. According to best of our knowledge, no local study is done to compare these findings while international data is also scared. Our results are primary and helpful for doctors dealing labour of the patients.

In previous study, Bupivacaine at 0.125% was administered and pain at 90 minutes pain on VAS was recorded as 1.0+0.56 while another study who added fentanyl adjunct to Bupivacaine recorded pain as 19.0+13.8, which shows no additional benefit for controlling the pain during labour.7

In another study8 comparing the efficacy of fentanyl and sufentanil in combination of bupivacaine in low concentration (0.0625%) for labour analgesia, they concluded that there was no increase in chances of cesarean delivery in any group.

Although more patients in fentanyl group required supplementary boluses, the mean pain score was similar in both groups throughout labour and delivery. They concluded that in terms of providing effective labour analgesia with hemodynamic stability, maternal satisfaction and no significant serious maternal or fetal side effects, both groups i.e. bupivacaine plus fentanyl (0.0625% + 2.5 mcg/ml) and bupivacaine plus sufentanil (0.0625% + 0.25 mcg/ml) were equally effective by continuous epidural infusion.

Another study9 comparing the efficacy of PCA administered bupivacaine plus fentanyl vs. low dose bupivacaine for labour analgesia, it was recorded that as compared to Group-II analgesia was more rapid in Group-IIF. There was higher sedation, less marked motor blockade and high sedation in Group-IIF than Group-II. In Group-IIF first phase of labour was shorter, volume of solution required by the pregnant women was lower and satisfaction level was higher. They concluded that there is better patient satisfaction and higher quality of analgesia with bupivacaine and fentanyl combination than bupivacaine alone.

A retrospective search was conducted by Wahlin et al10 before the study on epidural analgesia for five-year period and on normal labour. Two groups were defined on the basis of presence or absence of opioid use, and the duration of hospital stay and type of labour were compared between two groups. The results showed that length of hospital stay, cesarean sections as well as number of assisted deliveries were reduced using combination of opioids with local anesthetics.11

A study conducted by Akkamahadevi et al comparing bupivacaine + fentanyl and bupivacaine + sufentanil combinations found that there was an excellent labour analgesia and high patient satisfaction in both groups without serious neonatal and maternal side effects.12

CONCLUSION

We concluded that mean pain score is significantly reduced in bupivacaine plus fentanyl when compared with bupivacaine alone during labour in terms of mean pain score.

Author’s Contribution:
Concept & Design of Study: Syed Imran-ul-Hassan
Drafting: Salman Athar Qureshi
Data Analysis: Kanwal Awan, Maryam Liaquat, Yasar Ijaz
Revisiting Critically: Syed Imran-ul-Hassan, Salman Athar Qureshi, Faiqa Qurban
Final Approval of version: Syed Imran-ul-Hassan

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

Elevated Homocysteine Levels in Patients with Acute Ischemic Stroke
Kamal Ahmed¹, Doniya Bahar¹, Muhammad Athar Khan², Wania Abbas¹, Abdul Aziz² and Aisha²

ABSTRACT

Objective: To determine the plasma homocysteine levels in patients with acute ischemic stroke at a tertiary care Hospital, Karachi.

Study Design: A Cross Sectional study.

Place and Duration of Study: This study was conducted at the Department of General Medicine, Liaquat National Hospital, Karachi from October 2019 to April 2020.

Materials and Methods: All patients who fulfilled the inclusion criteria in the Department of General Medicine Liaquat National Hospital & Medical College, Karachi were included. After taking informed written consent history was taken, clinical examination was done and blood sample was sent for serum homocystein level to assess the outcome i.e. frequency of hyperhomocysteinemia.

Results: Total of 191 patients of hyperhomocysteinemia with ischemic stroke was included. 120 patients (62.8%) were males & 71 patients (37.2%) were females with the mean age (years) was 51.2±11.4 years. Hyperhomocysteinemia was seen in 86(45%) patients.

Conclusion: In conclusion hyperhomocysteinaemia, a modifiable risk factor for ischaemic stroke, was seen in about half of ischemic stroke patients, was predominant in male gender and common in patients with advance age.

Key Words: Homocysteinemia, ischemic stroke, risk factors.


INTRODUCTION

Stroke is among the leading causes of mortality and disability in both developed and developing countries.¹ Stroke (including ischaemic stroke and haemorrhagic stroke) affects 13.7 million people globally per year and is the second leading cause of death, with 5.5 million deaths per year.² Previous studies have shown a higher prevalence and higher in-hospital mortality compared with western countries.³,⁴ Homocysteine is a sulphur-containing amino acid derived from the metabolic demethylation of dietary methionine. A normal level of homocysteine in blood is 5-12mmol/L. High levels of homocysteine cause oxidative damage to vascular endothelium with proliferation of vascular smooth muscle and creates a prothrombotic environment through its action on platelets, thrombin and fibrin.⁵ Many studies have shown an association between increased homocysteine level and a risk for atherosclerotic vascular disease.⁶ Similarly studies have also reported a relationship between homocysteine levels and stroke.⁷ Moreover, stroke patients with hyper-homocysteinaemia have more frequently developed cerebral microangiopathy and multiple infarctions compared to patients with normal homocysteine serum level.⁸ Epidemiological research has shown that increased total homocysteine (tHcy) levels are associated with an increased risk of thromboembolic disease; however, controversy still exists over which subtype of stroke is allied to hyperhomocysteinemia.⁹ Elevated fasting homocystein level was found in 75.0% of ischemic stroke patient and in 16.67% of healthy controls (p=0.001).¹⁰ Elevated fasting homocysteine level was found in 76.66% of ischemic stroke cases and in 10% of healthy controls.¹¹ Overall, 56 (58.3%) cases had hyper-homocysteinaemia.¹²

This study will evaluate the frequency of homocysteinemia in patients with ischemic stroke. Several studies have shown homocysteinemia in patients with ischemic stroke.¹⁰,¹² However, the evidence is still lacking in a Pakistani population. The early suspicion is made to avoid diagnostic delay and to do further research to identify risk factors so that they can be avoided in our population. The objective of this
study was to determine the plasma homocysteine levels in patients with acute ischemic stroke at a tertiary care Hospital, Karachi.

MATERIALS AND METHODS

A Cross Sectional Study was conducted in Department of General Medicine, Liaquat National Hospital, Karachi during October 2019 to April 2020. Ethical approval was obtained from Institutional Review Board Liaquat National Hospital, Karachi. A total 191 patients with ischemic stroke were required according to the sample size calculated by Raosoft calculator assuming frequency of homocysteinemia in patients with ischemic stroke 58.3% \(^1\), confidence level 95%, and bond on error 7%.

Patients between 30 years to 70 years of age, either gender, with diagnosis of ischemic stroke as per operational definition for > 6 months and signed informed consent were selected through non-probability consecutive sampling technique. Patients not given informed consent, renal insufficiency (either known creatinine clearance < 30 ml/min/1.73m\(^2\) or current medical care for severe renal insufficiency) and hemorrhagic stroke (CT scan showing hyperdense area) were excluded.

Subjects attending inpatient or outpatient department of General Medicine, Liaquat National Hospital, Karachi who was diagnosed case of ischemic stroke for > 6 months as per operational definition. In all these patients serum sample was taken and sent for homocysteine level to the institutional laboratory. Serum homocysteine levels >15µmol/L are diagnostic of hyperhomocysteinemia. All demography, clinical history was recorded by a principal investigator on a predesigned performa, informed written consent was taken before enrolment. Exclusion criteria were followed strictly to avoid confounding variables.

SPSS version 22 was used for data analysis. Frequencies and percentages were computed for categorical variables like gender, co-morbid conditions i-e DM, hypertension (yes/no), hyperhomocysteinemia (yes/no). Values were presented as mean ± standard deviation for continuous variables like age, duration of ischemic stroke, homocysteine level. Effect modifier like age, gender, duration of ischemic stroke, co-morbid conditions i-e DM, hypertension was controlled through stratification. Chi-square test was used. P ≤0.05 was considered level of significance.

RESULTS

A total of 191 patients of hyperhomocysteinemia with ischemic stroke selected to conduct this study. The mean age (years) was 51.2 ±11.4 years. A total of 120 patients (62.8%) were males & 71 patients (37.2%) were females. The mean duration of ischemic stroke (months) was 12.9 ±4.2 months. The mean Serum homocysteine level (mg/dl) was 20.5 ±13(Table I).

In our study diabetic mellitus was seen in 86(45%) patients and hypertension was seen in 58(30.4%) patients. In our study Hyperhomocysteinemia was seen in 86(45%) patients, as shown in Table-I. The frequencies of age (years) groups, gender, duration of ischemic stroke (months), diabetic mellitus & hypertension were calculated according to Hyperhomocysteinemia (Table II).

In our study Hyperhomocysteinemia was significantly associated with gender but not significantly associated with age, duration of ischemic stroke (months), diabetic mellitus & hypertension, with P-value of 0.098, 0.34, 0.454, 0.935, & 0.504 respectively.

Table No.1: (Descriptive statistics of Age, Duration of Ischemic stroke and Serum homocysteine level

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Age (Years)</th>
<th>Duration of Ischemic stroke (months)</th>
<th>Serum homocysteine level mg/dl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>30</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Maximum</td>
<td>70</td>
<td>22</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>51.2</td>
<td>12.9</td>
<td>20.5</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>11.4</td>
<td>4.2</td>
<td>13</td>
</tr>
</tbody>
</table>

Table No.2: Hyperhomocysteinemia according to age, gender, duration of Ischemic stroke, diabetes mellitus and hypertension (n=191)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Hyperhomocysteinemia</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>30-50 years</td>
<td>42(22%)</td>
<td>55(28.6%)</td>
</tr>
<tr>
<td>51-70 years</td>
<td>44(23%)</td>
<td>50(26.4%)</td>
</tr>
<tr>
<td>Male</td>
<td>47(24.6%)</td>
<td>73(28.2%)</td>
</tr>
<tr>
<td>Female</td>
<td>39(20.4%)</td>
<td>32(16.8%)</td>
</tr>
<tr>
<td>Duration of Ischemic stroke (months)</td>
<td>6-14</td>
<td></td>
</tr>
<tr>
<td>15-22</td>
<td>33(17%)</td>
<td>34(17.8%)</td>
</tr>
<tr>
<td>Diabetic mellitus</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>47(24.6%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Yes</td>
<td>24(12.6%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>62(32.5%)</td>
</tr>
</tbody>
</table>

Chi-square test was applied. P-value ≤ 0.05 considered as significant.

DISCUSSION

Over the last decade, convincing evidence has been gathered on the relation between moderate elevation of plasma Hcy and ischemic stroke. Several studies have reported that HHcy is associated with two to threefold
increased risk of ischemic stroke. A meta-analysis of 27 observational studies on Hcy and atherosclerotic vascular disease, of which 11 studies addressed the association between Hcy and risk of stroke. Nine case-control studies provided support for the hypothesis that Hcy is an independent risk factor for stroke, while 2 prospective studies reported negative results.

The study showed a strong association between hyperhomocysteinemia and ischaemic stroke. In our study hyperhomocysteinemia was seen in 86(45%) patients as compare to Niazi et al study in which the half of ischaemic stroke patients had hyperhomocysteinemia. This frequency is similar to the findings presented in some other studies. One study showed that hyperhomocysteinemia was found in 48% of ischaemic stroke patients. In another study, hyperhomocysteinemia was found in 50% of stroke patients, and stroke patients with hyperhomocysteinemia were found to have multiple infarctions and cerebral microangiopathy as compared to patients with normal serum homocysteine level. Elevated fasting homocystein level was found in 75.0% of ischemic stroke patient and in 16.67% of healthy controls. Elevated fasting homocystein level was found in 76.66% of ischemic stroke cases and in 10% of healthy controls. Overall, 56 (58.3%) cases had hyper-homocysteinemia. Major modifiable risk factors were similar to stroke patients elsewhere in the world. The most common risk factors in our stroke patients were diabetes mellitus and hypertension. Syed et al. reported that approximately 77% of their cohort had diabetes mellitus, hypertension, or both. Hypertension was the commonest risk factor in our patients (38%) of the patients. Some studies have reported a relationship between hypertension and homocysteine levels. In Niazi et al. study, the association was not statistically significant. Some other studies have also failed to establish any relation. This further re-emphasizes the need for more research studies to observe the association between homocysteine levels and the traditional risk factors of stroke such as diabetes and hypertension.

In our study, hyperhomocysteinemia was predominant in in male gender which is similar to Niazi et al study males had higher homocysteine levels than females. Another study also reported that males were found to have higher homocysteine levels than females. In our study hyperhomocysteinemia was common in age group of 51-70 years as compare to Niazi et al. study also found that males in the age group of 36-45 years were especially found to be high homocysteine levels. Forty-five out of 71 (63%) patients were in the age group 36-45 years, 27 out of 45 (60%) had high homocysteine levels in Niazi et al. study. In an Indian study, the difference in homocysteine levels between males and females were statistically insignificant.

The limitation of our study was single center study, smaller sample size. Further studies with larger sample sizes are required.

CONCLUSION

In conclusion hyperhomocysteinaemia, a modifiable risk factor for ischaemic stroke, was seen in about half of ischemic stroke patients, was predominant in male gender and common in patients with advance age.

Author’s Contribution:
Concept & Design of Study: Kamal Ahmed
Drafting: Doniya Bahar, Muhammad Athar Khan, Wania Abbas
Data Analysis: Abdul Aziz, Aisha
Revisiting Critically: Kamal Ahmed, Doniya Bahar
Final Approval of version: Kamal Ahmed

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Diagnostic Accuracy of CRP for Evaluation of Spontaneous Bacterial Peritonitis

Rizwan Saeed Kiani¹, Muhammad Nadeem² and Abdul Quddus¹

ABSTRACT

Objective: The objective of the present study was to determine the diagnostic accuracy of CRP for evaluation of spontaneous bacterial peritonitis in patients keeping ascitic fluid neutrophilic count more than 250/mm³ as a gold standard.

Study Design: Cross Sectional Validation study.

Place and Duration of Study: This study was conducted at the Department of Gastroenterology and Medicine, Poonch Medical College Rawalakot from October 2019 to January 2020.

Materials and Methods: All diagnosed cases of Chronic Liver Disease having ascites admitted in gastroenterology ward or presenting in the emergency department from 18 years and above, both male and female were included in the study by consecutive sampling were included in the study. A diagnosis of spontaneous bacterial peritonitis was made and documented if > 250 /mm3 neutrophils were found in ascitic fluid. A serum sample was drawn for CRP and the results were reported in mg/L. Serum CRP level of ≥ 29.5mg/L was considered as significant.

Results: Total 210 patients were included in the study. There were 60.95% (n=128) male and 39.04% (n=82) female patients with the mean age of 43.36+13.68 years (range 19-78 years). Spontaneous bacterial peritonitis was diagnosed in 28.09% (n=59) patients, CRP levels was greater than 29.5mg/L in 29.52% (n=62) patients. Sensitivity was 83.05% and specificity was 91.39 %. Negative Predictive Value was 93.24% and Diagnostic Accuracy was 89.04%.

Conclusion: CRP is reliable serum marker for rapid diagnosis of spontaneous bacterial peritonitis in patients admitted due to complications of cirrhosis.

Key Words: Ascitic fluid, liver disease, peritonitis.

Citation of article: Kiani RS, Nadeem M, Quddus A. Diagnostic Accuracy of CRP for Evaluation of Spontaneous Bacterial Peritonitis. Med Forum 2020;31(8):139-142.

INTRODUCTION

Cirrhosis of liver is a common condition among patients presenting to the emergency and gastroenterology department. In 2017 globally there were about 10-6 million (10-3-10-9) cases of decompensated cirrhosis and 112 million (107-119) cases of compensated cirrhosis¹. Cirrhosis is one of the leading cause of mortality amongst Pakistani population and frequent cause of admissions in our hospitals². One of the most important complications of decompensated chronic liver disease is spontaneous bacterial peritonitis (SBP), which is common and associated with a high risk of morbidity and mortality. About 10-30% of patients having ascites develop SBP³, mortality is 20-25%.due to SBP in hospitalized patients⁴.

¹. Department of Gastroenterology / Medicine², Poonch Medical College Rawalakot.

Traditional ascitic fluid routine examination has been used for evaluating suspected intra-peritoneal bacterial infection in patients with decompensated chronic liver disease. A neutrophil count > 250 cells/mm³ is considered diagnostic of SBP regardless of isolation of any infective agent from ascitic fluid⁵,⁶. Different inflammatory markers are also raised significantly in the SBP and different studies have been conducted to determine the usefulness of these markers⁷. TNF-α and IL-6 were found significantly higher in patients of SBP as compared to sterile asites⁸,⁹. Similarly ascitic fluid lactoferrin, calprotectin and ascitic procalcitonin levels were found raised in SBP patients as compared to patients having ascites without SBP¹⁰,¹¹. Leukocyte esterase reagent strips, based on detection of leukocyte esterase activity in fluids and serum C reactive proteins (CRP) were also found useful in the diagnosis of SBP¹²,¹³.

Immediate diagnosis of SBP is important for prompt empiric antibiotic therapy. Ascitic fluid analysis to count neutrophils is not always readily available in all hospitals. Simple and reliable laboratory parameters are necessary for immediate diagnosis of infections in decompensated chronic liver disease patients. Most of the biomarkers studied also need diagnostic ascitic fluid tap to confirm the diagnosis of SBP. Serum CRP is only non-invasive, easily available and cost effective.
alternative as shown by different studies. It is also helpful in predicting the response of treatment\textsuperscript{13}. Few studies have been conducted to find the usefulness of CRP in the early diagnosis of SBP internationally. Some of these studies used ascitic fluid CRP levels rather than serum CRP levels\textsuperscript{15}. No study has been conducted in Pakistan. This study was conducted to determine the diagnostic accuracy of serum CRP levels for the rapid diagnosis of spontaneous bacterial peritonitis in patients having ascites secondary to decompensated chronic liver disease in our population. Simple and reliable laboratory parameters are necessary for immediate diagnosis of infections in decompensated chronic liver disease patients. Recently, serum inflammatory biomarkers such as CRP and pro-calcitonin (PCT) have been shown to improve clinician accuracy for the diagnosis of spontaneous bacterial peritonitis with important prognostic and therapeutic implications.

**MATERIALS AND METHODS**

This cross sectional validation study was conducted at Department of Gastroenterology and Medicine poonch medical college rawalakot from 16-10-2019 to 15-01-2020. All diagnosed cases of Chronic Liver Disease having ascites admitted in gastroenterology ward or presenting in the emergency department from 18 years and above, both male and female were included in the study by consecutive sampling were included in the study. Patients with any of the following conditions were excluded: having ascites due to other causes, evidence of infection from other sources as evident by urine and stool routine examination, chest x-ray or obvious source of skin infection. Informed consent was taken from each patient; Ethical approval was obtained from Hospital Ethical committee. Patient’s age and gender was recorded upon admission. Baseline investigations including complete blood count, urine RE and chest X ray were done. An abdominal ultrasound was done to confirm the presence of ascites. Diagnostic abdominal paracentesis was done with 24 gauge needle. Initially 10 cc ascitic fluid was sent to laboratory for routine examination including total cell count (mm\(^3\)), differential count (percentages), protein concentration (gm/dl) and gram stain. A diagnosis of spontaneous bacterial peritonitis was made and documented if > 250 mm\(^3\) neutrophils were found in ascitic fluid. A serum sample was drawn for CRP and the results were reported in mg/L. Serum CRP level of \(\geq 29.5\text{mg/L}\) was considered as significant. All the data was recorded in the Performa.

SPSS (version 17) was used to enter and analyze the data. Mean ± standard deviation (SD) was calculated for quantitative variable like age and CRP levels. Frequencies and percentages were calculated for qualitative variables like gender, presence or absence of spontaneous bacterial peritonitis. Sensitivity, specificity, Positive predictive value (PPV) and Negative prediction value (NPV) were calculated to validate the findings.

**RESULTS**

Total 210 patients were included in the study. There were 60.95 (n=128) male and 39.04% (n=82) female patients with the mean age of 43.36+13.68 years (range 19-78 years).

Spontaneous bacterial peritonitis was diagnosed in 28.09% (n=59) patients, CRP levels was greater than 29.5mg/L in 29.52% (n=62) patients. CRP level was high in 83.05% (n=49) patients with SBP whereas it was raised only in 8.6% (n=13) patients without SBP. Sensitivity was 83.05% and specificity was 91.39% (shown in table 1). Positive Predictive Value was 79.03%, Negative Predictive Value was 93.24% and Diagnostic Accuracy was 89.04%.

**DISCUSSION**

Decompensated chronic liver disease is a common complaint among patients presenting to the emergency department. One of the most important complications of decompensated chronic liver disease is spontaneous bacterial peritonitis, which is common and associated with a high risk of morbidity and mortality.

Traditionally, ascitic fluid evaluation has been used for evaluating suspected intra-peritoneal bacterial infection in patients with decompensated chronic liver disease. By considering a neutrophils count > 250 cells/mm\(^3\) determined by the manual method as the “gold standard” for the SBP diagnosis, the automated blood cell counter had a sensitivity of 100% and a specificity of 97.7%, whereas positive and negative predictive values were 94.1% and 100%, respectively.\textsuperscript{16}

Simple and reliable laboratory parameters are necessary for immediate diagnosis of infections in decompensated chronic liver disease patients. Recently, serum inflammatory biomarkers such as CRP and pro-calcitonin (PCT) have been shown to improve clinician implication.
accuracy for the diagnosis of spontaneous bacterial peritonitis with important prognostic and therapeutic implications.\(^4\)

In our study we found that serum CRP level was raised significantly in patients of cirrhosis having spontaneous bacterial peritonitis. Its sensitivity in diagnosing the SBP was found 83.05\% and specificity 91.39 \% as compared to gold standard ascitic neutrophils count. It can be used as non-invasive serum marker for the diagnosis of SBP. Negative predictive value was 93.24 \%, so a normal CRP is more important to rule out the SBP in suspected patients.

Our 60.95\% patients were male and 39.04\% patients were female. Cirrhosis is more common in males because females have slower progression of fibrosis and decreased incidence of cirrhosis pre transplantation as shown by studies done earlier.\(^1^7\) A study conducted in Taiwan shows male predominance of 71\% in patients having cirrhosis.\(^1^8\) These findings are consistent with our findings of male predominance. Another study also supports our findings by showing that men had higher incidence of cirrhosis in all age groups as compared to women.\(^1^9\) A local study also showed that 64 \% patients of cirrhosis were male in their study.\(^2^0\)

Mean age in our study was 43.36 ± 13.68 years. Although cirrhosis of liver is found in young age as well but usually it is common in old age having higher mean age.\(^1^8\) Mean age was found 40.5 years in patients of cirrhosis in a study conducted by Devrajani BR et al.\(^2^0\) This mean age is comparable with our study. A study conducted in china shows mean age of 50.29± 7.03 in SBP group of cirrhotic patients, almost as found in our study.\(^2^1\)

CRP level was high in 83.05\% patients of SBP in our study with sensitivity of 83.05\% and specificity of 91.39\% for the diagnosis of SBP in patients of cirrhosis. Positive predictive value was 79.03\% and negative predictive value was 93.04\%. Our findings are suggestive that CRP level can be used as a marker to help in the diagnosis of SBP. These results are comparable with the results of Rizk E et al, they concluded that CRP may be used as a reliable marker for the diagnosis of SBP; CRP was shown to have 96\% specificity and 90\% sensitivity for detecting SBP in their study.\(^2^2\) Kadam et al also have same results, showing that CRP level was significantly higher in patients with SBP as compared to patients having sterile ascites.\(^1^5\) The sensitivity of CRP in diagnosing the SBP was found 93.3\% in another study conducted in Egypt also supporting our findings.\(^2^3\)

It was single center study considering Neutrophils count > 250 mm\(^3\) as diagnostic of SBP; ascitic fluid culture was not done. In future multicenter studies are recommended comparing CRP levels with ascitic fluid culture along with neutrophil count.

**CONCLUSION**

CRP is reliable serum marker for rapid diagnosis of spontaneous bacterial peritonitis in patients admitted due to complications of cirrhosis.

**Author’s Contribution:**

Concept & Design of Study: Rizwan Saeed Kiani

Drafting: Muhammad Nadeem

Data Analysis: Abdul Quddus

Revisiting Critically: Rizwan Saeed Kiani, Muhammad Nadeem

Final Approval of version: Rizwan Saeed Kiani

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

**REFERENCES**


Evaluation of Left Ventricular Size in Early Postoperative Period in Patients with Aortic Regurgitation after Aortic Valve Replacement

Iftikhar Paras1, Muhammad Ali Khan1, Muhammad Sher-i-Murtaza2, Waqas Hamid2, Hafiz Muhammad Azam Raheel2 and Rafay Gilani2

ABSTRACT

Objective: To evaluate the left-ventricular size in early postoperative period in patients with aortic regurgitation after aortic valve replacement.

Study Design: Retrospective Observational study.

Place and Duration of Study: This study was conducted at the Multan Institute of Cardiology from January 2012 and January 2020.

Materials and Methods: Data was collected from 116 patients with severe chronic aortic regurgitation, who underwent AVR in which transthoracic echocardiograms was performed before and after the surgery. The left ventricular calculations such as LVEDD, LVESD, posterior wall thickness (PWT), and interventricular septum (IVS) were collected as per recommended standards. In our study ≥10% reduction in left ventricular volumes is referred to as reverse left ventricular remodeling as measured by either Teichholz or modified Simpson’s methods. Mean ± standard deviation was used for summarizing continuous variables and were compared using t test while Fisher’s exact test was used to summarize as count and to compare the categorical variables. The difference between ΔLVESTeichholz and ΔLVESViSimpson, and ΔLVEDViTeichholz and ΔLVEDViSimpson were calculated by estimation of spearman correlations and 95% confidence intervals. Moreover, the assessment of positive and negative agreement by LVEDV and LVESV measurements were done by cross-tabulation of diameter and volume-based left ventricular remodeling individually.

Results: The mean Interventricular septum thickness, left ventricular end-diastolic diameter, indexed left ventricular end-diastolic diameter, left ventricular end-systolic diameter, indexed left ventricular end-systolic diameter, posterior wall thickness, indexed left ventricular mass, left ventricular outflow tract diameter, aortic root diameter and ascending aorta diameter of the patients pre-AVR, was 1.17±0.83, 6.51±1.18, 3.68±1.26, 4.21±1.38, 2.37±1.49, 1.22±0.27, 134.5±13.13, 2.41±1.43, 4.61±0.61, and 4.62±1.25 respectively. The mean Interventricular septum thickness, left ventricular end-diastolic diameter, indexed left ventricular end-diastolic diameter, left ventricular end-systolic diameter, indexed left ventricular end-systolic diameter, posterior wall thickness, indexed left ventricular mass, left ventricular outflow tract diameter, aortic root diameter and ascending aorta diameter of the patients post-AVR was, 1.27±0.29, 5.16±0.51, 2.64±0.47, 3.49±0.94, 2.03±0.48, 0.99±0.09, 115.41±11.12, 2.01±0.11, 3.17±0.31, and 3.03±0.32 respectively.

Conclusion: The outcomes of our study proposed that left ventricular volumes were better than left ventricular diameter measurements for assessment of the reverse remodeling. On the other hand, large scale studies must be conducted in order to conclude whether volumes of the left ventricular also influence outcomes in the long-term.

Key Words: Aortic Regurgitation, Left Ventricle, Aortic Valve Replacement, Reverse Remodeling, Size.


INTRODUCTION

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Being a progressive disorder, chronic aortic regurgitation leads to volume overload in the left ventricle (LV). For compensation of this volume overload in left ventricle various changes occur such as increase in size of left ventricle and eccentric hypertrophy, known as remodeling. Geometric changes of shape are included in such alterations in which shape of left ventricle changes from elliptical to spherical shape. The size of left ventricle and systolic function was determined by echocardiography which is also used to assess the valvular disease severity. In patients with aortic regurgitation (AR), echocardiographic estimation of severity of AR, left ventricle dimensions, and the left ventricular ejection fraction (LVEF) are...
essential for assessment of the time of valve intervention and clinical prognosis. Linear left ventricle dimensions are not recommended as data showed that indexed volumes of left ventricle is more sensitive in predicting the cardiovascular events, till date the recommendations for intervention of aortic valve are still based on left ventricle diameters and LVEF. As in linear left ventricle dimensions we assume fixed shape of left ventricle (prolate ellipsoid) which does not measure accurate volume that cannot be applied in the cardiac pathologies like AR. Similarly, the Teichholz and Quinones methods (used for measurement of LVEF and linear left ventricular dimension) are not recommended anymore and volumetric method as modified Simpson’s method (biplane methods) are used for clinical uses now a days. The volumetric measurement of left ventricle is used because it does not rely on the geometric shapes and is acceptable for shape alteration. In patients with severe AR underwent aortic valve replacement in first few months after surgery, the size of left ventricle is reduced known as left ventricle reverse remodeling. With improving LVEF and New York Heart Association (NYHA) functional class is related to the reduction in left ventricular-end-systolic diameter (LVESD) postoperatively. Left ventricular end-systolic volume index (LVESVi) is found to be predictor of clinical results according to recent studies. In the past studies there is no data available on the comparison of linear and volumetric dimensions valuation of left ventricular remodeling in severe AR patients, regardless of the extensive use of left ventricular volumetric measures. In our study we compared the left ventricular volumes to left ventricular diameters in order to determine which method better describe left ventricular reverse remodeling in severe AR patients who are receiving AVR.

MATERIALS AND METHODS

Data was collected from 116 patients with severe chronic aortic regurgitation, in Multan institute of cardiology from January 2012 and January 2020, who underwent AVR in which transthoracic echocardiograms was performed before and after the surgery. Patients with complex congenital heart disease or underwent coronary artery bypass grafting, mitral valve repair were excluded from the study. Research Ethics Board of Multan institute of cardiology approved this study. All of the echocardiographic measurements were done in lateral decubitus position. The left ventricular calculations such as LVEDD, LVESD, posterior wall thickness (PWT), and interventricular septum (IVS) were collected as per recommended standard of leading-edge method by American Society of Echocardiography. Devereux formula was used for measurement of the left ventricular mass. Teichholz formula was used to calculate the LVEDD and LVESD.

derived indexed left ventricular volume i.e. LVEDDi and LVESDi, respectively [8]. The major axis was from the apical endocardial surface to the surface of the MV in the four chamber view of the apex. On the other hand, minor axis was assessed orthogonally to the major axis at 1/3rd of the base of the major axis. The index of left ventricle shape, left ventricle end-systolic and end-diastolic sphericity was measured as ratio of minor-axis to the major-axis length of left ventricle in systole and diastole. The measurement of volume was done on the basis of blood or tissue interface tracings in apical 2 and 4 chamber views. The left ventricle length is the distance between the end of the curve of left ventricle and the middle of this straight line. Modified Simpson’s method was used for measurement of as well as LVEF.

In our study ≥10% reduction in left ventricular volumes [4] is referred to as reverse left ventricular remodeling as measured by either Teichholz or modified Simpson’s methods. Mean ± standard deviation was used for summarizing continuous variables and were compared using t test while Fisher’s exact test was used to summarize as count and to compare the categorical variables. The difference between ∆LVESViTeichholz and ∆LVESViSimpson, and ∆LVEDViTeichholz and ∆LVEDViSimpson were calculated by estimation of spearman correlations and 95% confidence intervals. Harmony among these measurements was evaluated with the help of Bland–Altman analysis. Moreover, the assessment of positive and negative agreement by LVEDV and LVESV measurements were done by cross-tabulation of diameter and volume-based left ventricular remodeling individually. SPSS (version 23) was used for conducting all the calculations.

RESULTS

Overall one hundred and sixteen patients were included in this study. The mean age and BMI of the patients was 48.47±5.47 years and 29.71±2.86 kg/m², respectively. There was n=83 (71.6%) males and n=33 (28.4%) females. Aortic dilatation was noted in n=52 (44.8%) patients, endocarditis in n=7 (6.0%) patients, bicuspid aortic valve in n=5 (4.3%) patients, rheumatic/degenerative in n=35 (30.2%) patients and miscellaneous in n=17 (14.7%) patients. During follow-up n=4 (3.4%) patients died. (Table. 1).

The mean Interventricular septum thickness, left ventricular end-diastolic diameter, indexed left ventricular end-diastolic diameter, left ventricular end-systolic diameter, indexed left ventricular end-systolic diameter, posterior wall thickness, indexed left ventricular mass, left ventricular outflow tract diameter, aortic root diameter, ascending aorta diameter, velocity time integral across LVOT, stroke volume, left ventricular end-diastolic volume, indexed left ventricular end-diastolic volume, left ventricular end-systolic volume, indexed left ventricular end-systolic
volume, left ventricular ejection fraction by Simpson’s biplane method of disks, sphericity index in diastole and sphericity index in systole of the patients pre-AVR was 1.17±0.83, 6.51±1.18, 3.68±1.26, 4.21±1.38, 2.37±1.49, 1.22±0.27, 134.5±13.13, 2.41±1.43, 4.61±0.61, 4.62±1.25, 30.25±6.56, 32.02±4.86, 260.82±25.06, 134.32±23.81, 124.37±27.11, 69.54±10.83, 57.66±16.16, 0.63±0.002 and 0.55±0.31, respectively. While, the mean Interventricular septum thickness, left ventricular end-diastolic diameter, indexed left ventricular end-diastolic diameter, left ventricular end-systolic diameter, indexed left ventricular end-systolic diameter, posterior wall thickness, indexed left ventricular mass, left ventricular outflow tract diameter, aortic root diameter, ascending aorta diameter, velocity time integral across LVOT, stroke volume, left ventricular end-diastolic volume, indexed left ventricular end-diastolic volume, left ventricular end-systolic volume, indexed left ventricular end-systolic volume, left ventricular ejection fraction by Simpson’s biplane method of disks, sphericity index in diastole and sphericity index in systole of the patients post-AVR was 1.27±0.29, 5.16±0.51, 2.64±0.47, 3.49±0.94, 2.03±0.48, 0.99±0.09, 115.41±11.12, 2.01±0.11, 3.17±0.31, 3.03±0.32, 19.9±3.36, 75.51±13.64, 179.24±22.31, 87.35±15.11, 100.21±28.21, 48.69±14.57, 45.92±5.99, 0.84±0.009 and 0.49±0.086, respectively. The differences were statistically significant except interventricular septum thickness (p=0.250). (Table 2).

Agreement between volume and diameter based remodeling using left ventricle end diastolic parameters were shown in table. III. The difference was statistically insignificant. (p=0.081). Agreement between volume and diameter based remodeling using left ventricle end systolic parameter were shown in table. IV. The difference was statistically significant, (p=0.000).

### Table No.1: Demographic characteristics of the patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>48.47±5.47</td>
</tr>
<tr>
<td>BMI kg/m²</td>
<td>29.71±2.86</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>n=83 (71.6%)</td>
</tr>
<tr>
<td>Female</td>
<td>n=33 (28.4%)</td>
</tr>
<tr>
<td>Etiology of AR</td>
<td></td>
</tr>
<tr>
<td>Aortic dilatation</td>
<td>n=52 (44.8%)</td>
</tr>
<tr>
<td>Endocarditis</td>
<td>n=7 (6.0%)</td>
</tr>
<tr>
<td>Bicuspid aortic valve</td>
<td>n=5 (4.3%)</td>
</tr>
<tr>
<td>Rheumatic/degenerative</td>
<td>n=35 (30.2%)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>n=17 (14.7%)</td>
</tr>
<tr>
<td>Died during follow-up</td>
<td>n=4 (3.4%)</td>
</tr>
</tbody>
</table>

### Table No.2: Echocardiographic characteristic of the patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-AVR</th>
<th>Post-AVR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventricular septum thickness (cm)</td>
<td>1.17±0.83</td>
<td>1.27±0.29</td>
<td>0.250</td>
</tr>
<tr>
<td>Left ventricular end-diastolic diameter (cm)</td>
<td>6.51±1.18</td>
<td>5.16±0.51</td>
<td>0.000</td>
</tr>
<tr>
<td>Indexed left ventricular end-diastolic diameter (cm/m²)</td>
<td>3.68±1.26</td>
<td>2.64±0.47</td>
<td>0.000</td>
</tr>
<tr>
<td>Left ventricular end-systolic diameter (cm)</td>
<td>4.21±1.38</td>
<td>3.49±0.94</td>
<td>0.000</td>
</tr>
<tr>
<td>Indexed left ventricular end-systolic diameter (cm/m²)</td>
<td>2.37±1.49</td>
<td>2.03±0.48</td>
<td>0.000</td>
</tr>
<tr>
<td>Posterior wall thickness (cm)</td>
<td>1.22±0.27</td>
<td>0.99±0.09</td>
<td>0.000</td>
</tr>
<tr>
<td>Indexed left ventricular mass (g/m³)</td>
<td>134.5±13.13</td>
<td>115.4±11.12</td>
<td>0.000</td>
</tr>
<tr>
<td>Left ventricular outflow tract diameter (cm)</td>
<td>2.41±1.43</td>
<td>2.01±0.11</td>
<td>0.000</td>
</tr>
<tr>
<td>Aortic root diameter (cm)</td>
<td>4.61±0.61</td>
<td>3.17±0.31</td>
<td>0.000</td>
</tr>
<tr>
<td>Ascending aorta diameter (cm)</td>
<td>4.62±1.25</td>
<td>3.03±0.32</td>
<td>0.000</td>
</tr>
<tr>
<td>Velocity time integral across LVOT (cm)</td>
<td>30.25±6.56</td>
<td>19.9±3.36</td>
<td>0.000</td>
</tr>
<tr>
<td>Stroke volume (mL)</td>
<td>32.02±4.86</td>
<td>75.51±13.64</td>
<td>0.000</td>
</tr>
<tr>
<td>Left ventricular end-diastolic volume (mL)</td>
<td>260.82±25.06</td>
<td>179.24±22.31</td>
<td>0.000</td>
</tr>
<tr>
<td>Indexed left ventricular end-diastolic volume (mL/m³)</td>
<td>134.32±23.81</td>
<td>87.35±15.11</td>
<td>0.000</td>
</tr>
<tr>
<td>Left ventricular end-systolic volume (mL)</td>
<td>124.37±27.11</td>
<td>100.21±28.21</td>
<td>0.000</td>
</tr>
<tr>
<td>Indexed left ventricular end-systolic volume (mL/m³)</td>
<td>69.34±10.83</td>
<td>48.69±14.57</td>
<td>0.000</td>
</tr>
<tr>
<td>Left ventricular ejection fraction by Simpson’s biplane method of disks (%)</td>
<td>57.66±16.16</td>
<td>45.92±5.99</td>
<td>0.000</td>
</tr>
<tr>
<td>Sphericity index in diastole</td>
<td>0.63±0.002</td>
<td>0.84±0.009</td>
<td>0.000</td>
</tr>
<tr>
<td>Sphericity index in systole</td>
<td>0.55±0.31</td>
<td>0.49±0.086</td>
<td>0.000</td>
</tr>
</tbody>
</table>
DISCUSSION

In this study the patients suffering from the severe AR in which AVR was done, improved Simpson’s method was used for reclassification of patients not having left ventricular reverse remodeling on the basis of left ventricular diameter into left ventricular reverse remodeling based on left ventricular volume. The outcomes of this study suggested that in patients with severe aortic regurgitation volumetric measurements of left ventricular with improved Simpson’s method showed better left ventricular reverse remodeling as compared to linear dimensions. Another previous comparative study\textsuperscript{10} was conducted for comparing left ventricular linear volumes and dimensions for measuring left ventricular remodeling in patients with severe aortic regurgitation after performing AVR. A large number of studies involving more than thousands of patients were conducted showed that in the patients with asymptomatic AR at early stages LVESV or LVESD and LVEF are related to the expansion of indications or eventually death\textsuperscript{11}. Furthermore, in the symptomatic aortic regurgitation patients underwent AVR, LVEF, and left ventricular dimensions before surgery determines the survival of patients after surgery\textsuperscript{7}. Due to this reason the correct identification of left ventricular dimensions is very important in AR patients. left ventricular modifications occur in the chronic AR patients such as left ventricular dilatation and eccentric hypertrophy due to volume overload and left ventricular pressure. Geometric shape alterations occur in left ventricular in case of chroming AR such as elliptical to a spherical shaped LV. In our study it was revealed that improved Simpson’s method measures the LVEDV and LVESV well in comparison to diameter-based method. Moreover, the method based on diameter also not estimates the difference in left ventricular indexed dimensions before- and after AVR amongst two methods correctly. Hence outcomes of our study proposed that measurement of volumes of left ventricular done by the improved Simpson’s method was better in estimating the shape alteration of left ventricular in AR in comparison to the left ventricular linear dimensions.

Following conception has been previously incorporated in calculations of LVEF. According to various trials the improved Simpson’s method showed better results for alteration of shape of LV with fewer geometrical assumptions in comparison to linear dimensions\textsuperscript{12}. However, this method depends upon getting clear imaging and good endocardial definition, and for evaluation of volumes of left ventricular and LVEF it is highly recommended technique\textsuperscript{8}. Normally in chronic AR patients the shape of left ventricular is said to be rounder\textsuperscript{13}. In another study by Bartella et al.\textsuperscript{13} angiography was used in severe AR patients for determination of the shape of left ventricular which revealed anterolateral, anterobasal, and inferoapical regions with larger curvature while anteroapical one with lesser curvature. In addition, both eccentric index and circularity index were not sufficient to distinguish shape abnormalities. In same way the sphericity index also failed to distinguish the postoperative remodeling. While, these findings not matched to those of previous studies, which demonstrated left ventricular spherical remodeling in a variety of cardiac pathologies\textsuperscript{14,16}. According to the study of Van Dantzig et al.\textsuperscript{16}, it was found that, more the sphericity of the LV, greater the rate of mitral regurgitation. In addition, the left ventricular sphericity is linked to less exercise and explicit HF in the patients having considerable left ventricular systolic dysfunction\textsuperscript{15}. Tischle et al.\textsuperscript{17} in his study revealed that left ventricular shape descriptors were very helpful in differentiating normal ventricles from cardiomyopathic ventricles and the shape of the ventricles changed prior to the alterations of left ventricular systolic function become visible. The outcomes of group studies done previously and that of our group study showed significant difference. Primarily, chronic aortic regurgitation patients were not the part of any previous studies and because of AR the sphericity index failed to depict the left ventricular changes properly. Additionally, patients with preserved LVEF were not included in the previous studies while our study included such patients, corroborating this parameter only involved the patients with left ventricular dysfunction\textsuperscript{17}.

In this study the indexed left ventricular measurements were used which showed better characterization of left ventricular dimensions than the unadjusted left ventricular diameters. In patients with small body structures, the indexed left ventricular dimensions were more accurate than absolute diameters\textsuperscript{12}. Brown et al.\textsuperscript{12}
in his study also found out that the use of indexed left ventricular dimension after AVR improved the prediction of unfavorable outcomes.

CONCLUSION

The outcomes of our study proposed that left ventricular volumes were better than left ventricular diameter measurements for assessment of the reverse remodeling. On the other hand, large scale studies must be conducted in order to conclude whether volumes of the left ventricular also influence outcomes in the long-term.

Author’s Contribution:

Concept & Design of Study: Iftikhar Paras
Drafting: Muhammad Ali Khan, Muhammad Sher-i-Murtaza
Data Analysis: Waqas Hamid, Hafiz Muhammad Azam, Raheel, Rafay Gilani
Revisiting Critically: Iftikhar Paras, Muhammad Ali Khan
Final Approval of version: Iftikhar Paras

Conflict of Interest: The study has no conflict of interest to declare by any author.

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Pattern of Renal Osteo Dystrophy in Chronic Renal Disease Patients

Mohammad Husain Bloch¹, Faisal Iqbal² Nadeem Shafiq³ and Kamran Hamid⁴

ABSTRACT

Objective: To study the Pattern of Renal Osteo dystrophy in chronic renal Disease patients.

Study Design: Observational study

Place and Duration of Study: This study was conducted at the Rawal Teaching Hospital Institute of Health Sciences, Rawalpindi and Idris Teaching Hospital Sialkot during Feb 2018 to Feb 2020.

Materials and Methods: This study conducted on 100 patients The Demography data and laboratory finding was recorded on designed Performa. The informed consent was taken before taking the sample and clinical examination. The permission of Ethical Committee was considered before collection of data and get publishing in medical journal. The results were analysis by SPSS version 10.

Results: The maximum incidence was diabetes mellitus patients 42(42%), minimum PCKD(2%) and Undiagnosed patients 2(2%). In moderate renal disease Muscle pain was 14(53.83%) in male 12(46.15%) in female. Severe Renal disease 22(55%) male 18(45%) female were having muscle pain. Serum Calcium was normal 9.49±0.545, low 8.30 ± 0.1732, high 11.32 ± 0.487, Inorganic Phosphate the normal value 3.68 ± 0.565, in high 6.83 ± 1.66, Alkaline phosphatase normal value 216.66 ± 51.86, High value 727.11 ± 405.03, Intact Parathormone normal value 5.45 ± 1.806, high value 25.09 ± 16.338. Para thyroid hormone was normal to slightly elevated in low turnover, in high turnover it was Markedly Elevated.

Conclusion: The most common histological type of renal Osteo dystrophy among dialysis and chronic kidney disease sick persons not on dialysis was hyperparathyroid bone disease; however, the presence of a dynamic bone disease was significant in both groups.

Key Words: Pattern, chronic renal disease, Osteo dystrophy


INTRODUCTION

Constant renal malady is related with explicit irregularities of skeletal the tendency towards a relatively stable equilibrium between interdependent elements, normally called renal defective ossification of bone (ROD), which if not rewarded properly during the basic periods of skeletal development can bring about bone disfigurements and an upset development design. The fundamental variables for the improvement of ROD are unsettling influences in the calcium phosphate the tendency towards a relatively stable equilibrium between interdependent elements, in nutrient D and hormone of parathyroid digestion just as changes in the hormone-secreting cell in the anterior pituitary hub, i.e., on secreting internally and relating to a hormone whose release only affects tissue surrounding the gland levels. As of late it has been perceived that the range of kidney bone illness covers 'high-' just as 'low-turnover' conditions. As a result of incessant kidney ailment itself and of the treatment of kidney bone illness, high plasma phosphate levels and a raised calcium phosphorus item are normal. These are significant hazard factors for the advancement of blood vessel calcification and vessel of the heart dreariness and mostly in youthful grown-ups who have been on kidney substitution treatment since adolescence. Since aluminum-containing phosphat folios are no longer shown in kids, aluminum-related with pathology of bone isn't considered in these proposals.

The European Pediatric Peritoneal Working Group (EPPWG) was built up in 1999 by children nephrologists with a significant enthusiasm for abdominal dialysis and has, between others, distributed rules on interminable and intense abdominal dialysis. The gathering consolidates expert of children nephrology from 12 European nations. One of the elements of the gathering is to build up master direction in significant clinical territories related with constant renal disappointment and dialysis [now the European children Dialysis Working Group (EPDwg) related to different individuals from the multidisciplinary group.
These rules were started and talked about at gatherings of the gathering and created by email conversation to create accord dependent on combined clinical experience and announced studies.

MATERIALS AND METHODS

This observational study of 100 patients has been conducted during Feb 2018 to Feb 2020 in the department nephrology Rawal teaching hospital institute of health sciences Rawalpindi and Idris teaching hospital Sialkot. The Demography data and laboratory finding were recorded on designed Performa. The informed consent was taken before taking the sample and clinical examination. The permission of Ethical Committee was considered before collection of data and get publishing in medical journal. The results were analysis by SPSS version 10.

RESULTS

The maximum incidence was diabetes mellitus patients 42(42%), minimum PCKD 2(2%) and Undiagnosed patients 2(2%) as shown in table 1.

The Diabetes M patients were 2 (5%) in mild renal disease, they were 6 (27%) male and 7 (33%) female in moderate renal disease and 5 (24%) male, 2(10%) female patients. In chronic GN 4 (18%) male 2(9%) female in moderate renal disease. In female 4(36%), in HTN only 4(18%) female and no male in moderate renal disease, 12(54%) male 6(27%) female patients in Severe Renal disease in TIN 2(33%) male 4(66%) female patients Severe Renal disease were found, OBS Uropathy 2(50%) male and no female in moderate renal disease 2(50%) male and no female were found in Severe Renal disease. In PCKD only 2(100%) female were found in Severe Renal disease, In case of undiagnosed patients only 2(100%) female were found (Table 2). In moderate renal disease Muscle pain was 14(53.83%) in male 12(46.15%) in female, Severe Renal disease 22(55%) male 18(45%) female were having muscle pain. Bone pain was 8(57.14%) male 6(42.85%) female in moderate renal disease and 22(52.38%) male 20(47.61) female were having bone pain Severe Renal disease patients. Bone tenderness was 10(62.50%) male 6(37.50%) in female in moderate renal disease patients and 18(50%) in male and 18(50%) in female was seen in Severe Renal disease patients. The Itching was 4(33.33%) in male 8(66.66%) in female of Severe Renal disease patients was observe (Table 3).

Serum Calcium was normal 9.49 +4.054, low 8.30 + 0.1732, high 11.32 + 0.487, Inorganic Phosphate the normal value 3.68 + 0.565, in high 6.83 + 1.66, Alkaline phosphatase normal value 216.66 + 51.86, High value 727.11 + 405.03, Intact Parathormone normal value 5.45 + 1.806, high value 25.09 + 16.338 was seen in table 4.

Para thyroid hormone was normal to slightly elevated in low turnover, in high turnover it was Markedly Elevated. In mixed Combined Picture of low And high turnover, Alkaline Phosphatase was Normal to low in low turnover in case of high turnover it was Elevated in case of mixed there was Combined Picture of low And high turnover. The phosphate was normal to Elevated in low turnover and was elevated in high turnover and in mixed it was Combined Picture of low and high turnover. The calcium was variable to elevate in low turnover bone disease and was variable in high turnover bone disease and Combined Picture of low And high turnover. The radiograph was normal to osteopenia in low turnover osteodystrophy and erosion + sclerosis was seen in high turnover lesions of osteodystrophy (table 5)

In case of PTH there was 20.9 + 12.140, in normal bone in low turnover it was 13.76 + 5.53, in high turnover it was 58.55 + 10.33, in mixed picture it was 15.45 + 4.31.

### Table No. 1: Diagnosis Distribution

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage % of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes M</td>
<td>24 Male &amp; 18 Female (42%)</td>
</tr>
<tr>
<td>Chronic GN</td>
<td>12 Male &amp; 10 Female (22%)</td>
</tr>
<tr>
<td>HTN</td>
<td>12 Male &amp; 10 Female (22%)</td>
</tr>
<tr>
<td>TIN</td>
<td>2 Male &amp; 4 Female (6%)</td>
</tr>
<tr>
<td>OBS Uropathy</td>
<td>4 Male (4%)</td>
</tr>
<tr>
<td>PCKD</td>
<td>2 Female (2%)</td>
</tr>
<tr>
<td>Undiagnosed</td>
<td>2 Female (2%)</td>
</tr>
</tbody>
</table>

### Table No 2: Demographic and etiology and severity of renal disease distribution

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Mild Renal disease</th>
<th>Moderate Renal disease</th>
<th>Severe Renal disease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (Mean age)</td>
<td>Female (Mean age)</td>
<td>Total (Mean age)</td>
</tr>
<tr>
<td>Diabetes M</td>
<td>2/42 (5%)</td>
<td>2/42 (5%)</td>
<td>2/42 (5%)</td>
</tr>
<tr>
<td>Chronic GN</td>
<td>---</td>
<td>---</td>
<td>4/18 (27%)</td>
</tr>
<tr>
<td>HTN</td>
<td>---</td>
<td>---</td>
<td>2/9 (20%)</td>
</tr>
<tr>
<td>TIN</td>
<td>---</td>
<td>---</td>
<td>4/18 (20%)</td>
</tr>
<tr>
<td>ONS Uropathy</td>
<td>---</td>
<td>---</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>PCKD</td>
<td>---</td>
<td>---</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>Undiagnosed</td>
<td>---</td>
<td>---</td>
<td>2 (100%)</td>
</tr>
</tbody>
</table>
### Table No 3: Signs and symptoms distribution

<table>
<thead>
<tr>
<th>Signs &amp; symptoms</th>
<th>Moderate renal disease</th>
<th>Severe Renal disease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (53.83%)</td>
<td>Female (46.15%)</td>
</tr>
<tr>
<td>Muscle pain</td>
<td>14 (26%)</td>
<td>12 (18%)</td>
</tr>
<tr>
<td>Bone pain</td>
<td>8 (57.14%)</td>
<td>6 (42.85%)</td>
</tr>
<tr>
<td>Bone tenderness</td>
<td>10 (62.50%)</td>
<td>6 (37.50%)</td>
</tr>
<tr>
<td>Itching</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

### Table No. 4: Serum calcium, phosphate, alkaline phosphates and intact parathormone* levels

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Normal</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Calcium (mg/dl)</td>
<td>Number 80 (80%)</td>
<td>10 (10%)</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>Inorganic Phosphate (mg/dl)</td>
<td>Number 32 (32%)</td>
<td>-</td>
<td>68 (68%)</td>
</tr>
<tr>
<td>Alkaline Phosphatase (U/L)</td>
<td>Number 64 (64%)</td>
<td>-</td>
<td>36 (36%)</td>
</tr>
<tr>
<td>Intact Parathormone (Pmol/L)</td>
<td>Number 16 (16%)</td>
<td>-</td>
<td>84 (84%)</td>
</tr>
</tbody>
</table>

### Table No. 5: The probability of various lesions of osteodystrophy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Low turnover</th>
<th>High turnover</th>
<th>Mixed</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTH</td>
<td>Normal to Slightly elevated</td>
<td>Markedly Elevated</td>
<td>Combined Picture of low And high turnover</td>
<td>Normal</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>Normal to low</td>
<td>Elevated</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>Calcium</td>
<td>Variable</td>
<td>Variable</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>Phosphate</td>
<td>Normal to elevated</td>
<td>Elevated</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>Radiograph</td>
<td>Normal to osteopena</td>
<td>Erosion + Sclerosis</td>
<td>=</td>
<td>=</td>
</tr>
</tbody>
</table>

### Table No. 6: Correlation between biochemical data of various renal osteodystrophy lesions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal values</th>
<th>Low turnover</th>
<th>High turnover</th>
<th>Mixed</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTH</td>
<td>1.7-7.8 Pmol/L</td>
<td>20.9-12.140 (2.4-48)</td>
<td>13.76+5.53 (4.60-22.80)</td>
<td>58.55+10.33 (42.60-74.0)</td>
<td>15.45+4.31 (12.40-18.50)</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>60-306 U/L</td>
<td>324.57+106.34 (179.489)</td>
<td>211.13+55.57 (106-294)</td>
<td>1238+167.2 (961-1412)</td>
<td>783.5+146.37 (680-887)</td>
</tr>
<tr>
<td>Calcium</td>
<td>8.5-10.5 Mg/dl</td>
<td>9.0-483 (8.0-9.80)</td>
<td>10.14+0.76 (9.20-12.00)</td>
<td>8.95+0.797 (8.40-10.50)</td>
<td>9.85+0.212 (9.70-10.00)</td>
</tr>
<tr>
<td>Phosphate</td>
<td>2.4-4.5 Mg/dl</td>
<td>5.92+1.842 (3.0-10.90)</td>
<td>4.71+1.22 (2.70-7)</td>
<td>9.23+1.01 (8.20-10.70)</td>
<td>7.35+1.485 (6.30-8.40)</td>
</tr>
</tbody>
</table>

Alkaline Phosphatase it was 324.57 ± 106.34 in normal bone, in low turnover it was 211.13 ± 55.57, in high turnover it was 1238 ± 176.2. Calcium was 9 ± 0.483 in normal bone in low turnover, it was 10.14 ± 0.76, in high turnover it was 8.95 ± 0.797, in mixed picture it was 9.85 ± 0.212 mg/dl. Phosphate it was 5.93 ± 1.842 in normal bone, it was 4.71 ± 1.22 in low turnover but it was 9.23 ± 1.01, but in mixed picture
Discusion

Renal Osteodystrophy (ROD) involves a wide range of signs that incorporates a high-turnover state, for example, hyper parathyroid bone illness and a low-turnover state, for example, OM and ABD.7 ROD happens from the get-go throughout ceaseless kidney disease (chronic kidney disease) and exacerbates as renal work decays. Bone illness is basic between sick persons with (chronic kidney disease) stage 5 and when dialysis is started, practically all patients are affected.8 Our objective was to assess the predominance of renal Osteodystrophy and set up a relationship between serum biochemical markers related with the pace of bone turnover, for example, Para thyroid hormone, alkaline phosphatase, basic alkaline phosphatase, or OC, with hidden bone the study of the microscopic structure of tissues, so as to build up a precise conclusion of ROD, which is basic to dole out treatment. We found a general high predominance of dynamic bone sickness—33% and 8% among CKD patients on dialysis and CKD patients not on dialysis, individually. Be that as it may, singular investigations have discovered a commonness of a unique ailment as high as fifty eight percent & fifty two percent between dialysis sick persons & chronic kidney disease sick persons not on dialysis, separately. We discovered hyper parathyroid bone infection was the most widely recognized kind of renal Osteodystrophy in both chronic kidney disease sick persons on dialysis and those not on dialysis. In the dialysis gathering, Para thyroid hormone, alkaline phosphatase, basic alkaline phosphatase and OC were fundamentally higher in those with high turnover (HTO) bone ailment than in those with low turnover (LTO) bone infection. Thus, in interminable kidney ailment (chronic kidney disease) sick persons not on dialysis, Para thyroid hormone, basic alkaline phosphatase, and OC were essentially higher in those with high turnover of bone infection than in those with low turnover of bone malady.

Different techniques, for example, serum biochemical markers, imaging examines, and the tissue changes that affect a part or accompany a disease considers are right now used to analyze renal Osteodystrophy. Calcium, Phosphorus, para thyroid hormone, alkaline phosphatase, & basic alkaline phosphatase are between the most regularly utilized serum biochemical markers. Like past examinations, we found no huge relationship between Calcium or Phosphorus with pace of bone turnover in ROD.9 10 Serum levels of PTH can foresee the nearness and seriousness of SHPT without corresponding with the basic bone disease.11 12 Levels of iPTH in dialysis patients multiple occasions ordinary and under multiple times typical are related with a more noteworthy recurrence of high turnover & low turnover of bone sickness, respectively.13 Although Para thyroid hormone is a decent pointer of bone digestion, the affectability and particularity to determine high turnover of bone illness to have less than five hundred ng/mL and ABD ailment with levels <100 ng/mL are lacking. 28 Bone biopsy concentrates among dialysis patients uncovered that bone rebuilding and reaction to Para thyroid hormone differs among different racial groups.14 15 In an investigation of 76 ESKD patients, most of African American patients with low turnover of bone malady had higher serum Para thyroid hormone levels than those of whites with low turnover of bone disease.16 In our precise survey, albeit singular sick persons had varieties in the connection of Para thyroid hormone with basic bone turnover, at a total level there was a decent relationship between the degree of PTH and bone turnover between both dialysis and non-dialysis patients.

Radiographic assessment of bone can give significant data with respect to the nearness of hyperparathyroidism, for example, osteopenia, subperiosteal resorption, and blisters. Be that as it may, related with X-Ray finding are less touchy and don't decide kidney osteodystrophy. Between sick persons with advance bone illness, plain movies may uncover subperiosteal resorption in extreme OF or looser zones in serious OM.17 The significance of bone mineral thickness (BMD) estimation is indistinct in sick persons with renal Osteodystrophy; be that as it may, a lower BMD has appeared to foresee crack hazard in dialysis patients.18 19 In chronic kidney disease sick persons, distal span is the favored site for BMD estimation, as BMD of the spine might be deceiving a direct result of aortic calcifications.

The commonness of weaker bone or potentially bone weakening increases the risk of a broken bone additionally increments with a diminishing kidney filtration rate.20 22 In an investigation of patients with CKD, the most significant levels of BMD in the lumbar spine, hip, and distal lower arm were found in those with a glomerular filtration rate somewhere in the range of 70 and 110 mL/min/1.73 m² (stages 1 and 2 CKD), while those with a glomerular filtration rate somewhere in the range of 6 and 26 mL/min/1.73 m² (stage 4 CKD) had the least BMD levels. The variations from the norm in bone digestion that may be answerable for the diminished BMD were not portrayed in these studies.23 26 A blend of serum biochemical markers can foresee the hidden pace of bone turnover with more precision. An investigation of 30 constant hemodialysis sick persons
in whom a bone biopsy was acted related to appraisal of biochemical markers indicated that if just PTH was thought about, 36.6% of patients were accurately grouped by their finding. Be that as it may, if both Para thyroid hormone & bone thickness were thought about, forty six point six percent were arranged accurately. Considering Para thyroid hormone & related with x-Ray changes in clavicular and metacarpal bones, for example, Periosteal, endosteal, and intracortical resorption, sixty percent of sick persons were ordered correctly.21

Taking everything into account, we found that on an aggregate premise serum levels of Para thyroid hormone, alkaline phosphatase, basic alkaline phosphatase, & osteocalcin are high in highturnover bone sickness and low in low-turnover bone infection. Utilization of a blend of at least 3 markers may decide basic kidney osteodystrophy with more precision than individual biochemical markers. Be that as it may, a bone biopsy ought to be supported in more youthful patients with ESKD, with PTH levels somewhere in the range of two hundred & five hundred pg/dl. Where other biochemical markers are not very much characterized.

CONCLUSION

The most common histological type of renal Osteodystrophy among dialysis and chronic kidney disease sick persons not on dialysis was hyperparathyroid bone disease; however, the presence of a dynamic bone disease was significant in both groups. A combination of two or three serum biochemical markers such as Para thyroid hormone, alkaline phosphatase, basic alkaline phosphatase, and OC might help clinicians to more accurately diagnose renal Osteodystrophy in order to assign treatment with vitamin D.

Author’s Contribution:
Concept & Design of Study: Mohammad Husain Bloch
Drafting: Faisal Iqbal, Nadeem Shafiq
Data Analysis: Kamran Hamid
Revisiting Critically: Mohammad Husain Bloch, Faisal Iqbal
Final Approval of version: Mohammad Husain Bloch

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES
18. Negri AL, Alvarez Quiroga M, Bravo M, et al. Whole PTH and 1-84/84 PTH ratio for the non


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When appropriate, may be included.

ACKNOWLEDGMENTS
List of all contributors who do not meet the criteria for Authorship, such as a person who provided purely technical help, writing assistance or department chair who provided only general support. Financial & Material support should be acknowledged.

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