Original Article

Sero-Positive Rate of Hepatitis-C Viral Infection in Patients of Communicable and Non-Communicable Diseases in Rural Communities of Punjab Pakistan

HCV in Communicable and non Communicable Diseases in Rural Population

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ABSTRACT

Objective: To estimate the prevalence rate of hepatitis-C (HCV) viral infection in terms of detection of serum antibodies in the patients of different categories of communicable and non-communicable diseases in the communities of rural Punjab, Pakistan.

Study Design: Observational / descriptive / cross sectional study.

Place and Duration of Study: This study was conducted at the Institute of Public Health, the University of Lahore from 1st January 2015 to 31st December 2015.

Materials and Methods: A total of 3830 patients from Southern, Central and Northern Punjab were selected. Method of probability based random sampling was employed. For this purpose 5ml of blood was collected and subsequently serum was separated for testing the sero-positivity rate against the antibodies of hepatitis C virus. In non-communicable disease category, patients belonged to illnesses of cardiovascular system, diabetes mellitus, dental diseases, minor and major surgical interventions, gynaecological, obstetrical, blood transfusion, accidental wounds, and injectables given with glass syringes at multiple occasions. In the communicable disease category, patients belonged to diseases of malaria, dengue fever and typhoid fever.

Results: Maximum seropositivity rates of 46% and 43% were observed in the patients who were given injectables parenterally with non-disposable glass syringes and dental patients respectively, then 39% obstetrical and blood transfused patients. A sero-positivity rate of 37% and 34% was observed in the surgical patients, cardiovascular disease patients respectively. Sero-positivity rate in descending order in other categories was 30% in minor surgery patients, 30% in diabetes patients, 20% in malarial patients, 17% in gynaecological patients, 10% in typhoid patients and 17% in dengue fever patients.

Conclusion: High prevalence rate of hepatitis-c virus was found in patients who were injected with glass syringes frequently and dental patients residing in rural Punjab, Pakistan.

Key Words: Seropositivity, prevalence rate, hepatitis C viral infection, antibodies against HCV

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INTRODUCTION

Among hepatitides, hepatitis C viral infection (HCV) is a disease of Public Health importance, spreading from person to person through a vehicle of blood. It is distributed worldwide and the rate of spread is higher in developing countries as compared to developed nations of the globe[1].

Internationally the disease appears to be in the form of a pandemic because of two main risk factors. Firstly lack of awareness and secondly in the absence of a vaccine.

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Incidence as well as the prevalence rates is increasing day by day thus pooling of the diseases patients throughout the world. According to an estimate 185 million people around the globe with a cumulative prevalence rate of 2.5-3% have been reported while suffering from chronic liver disease or cirrhosis of liver[2].

Currently cumulative prevalence rate 7.6% has been reported in Pakistan. It has been projected that 14.5 million people will suffer from chronic liver disease in 2025[3].

The major risk factors include HCV infected blood donors, intravenous drug users, blood transfusions without screening, infected surgical instruments, use of non-disposable glass syringes which are not sterilized adequately[4].

In Pakistan, during the last two decades, prevalence of various infectious diseases has been continuously increased. Among all infectious diseases, most notable diseases are hepatitis-B and hepatitis-C. In developing countries, rising incidence of infectious diseases is not

being controlled due lack of political commitment and health prioritization. Infrastructure of various health facilities, especially in rural areas is at compromised stage. Qualified medical staff and sufficient medical equipments for diagnosis and treatment of the diseases are deficient in rural health centers and basic health units. Lack of adequate monitoring system has diminished the provision of quality care. Community representatives belonging to rural areas have become less proactive. Migration of medical doctors and nurses to overseas has further reduced the available health professionals in rural areas. High cost involved in the diagnostic laboratory tests has further minimized the capacity of poor population living in rural areas for taking preventive and curative measures for the control of hepatitis-B and hepatitis-C viral infections.

MATERIALS AND METHODS

A descriptive epidemiological study was conducted to capture the accurate picture of hepatitis C viral infection from the representative population of rural communities of the Punjab province of Pakistan. Study was conducted during the period from 1st January 2015 to 31st December 2015. Out of 36 district of Punjab, three districts were randomly selected each from Southern, Central and Northern rural Punjab

A passive surveillance was conducted in all the rural health centers (RHC), basic health units (BHU), Tehsil Headquarter hospitals (THQ) and District Headquarter hospitals (DHQ), in the administrative territory of nine districts located in Southern, Central and Northern rural communities of Punjab. A total of 4113 patients were identified from which 3830 consented for hepatitis-C viral testing, in the category of communicable diseases like malaria, dengue fever and typhoid fever. Informed consent was taken. 5ml of blood sample from each individual was collected and subsequently serum was separated for testing the sero-positivity rate against the antibodies of hepatitis C virus. Seropositivity in terms of sero-prevalence rate was estimated as mentioned above. Data was analyzed by using SPSS version 22.

RESULTS

Maximum seropositivity rates of 46% and 43% were observed in the patients who were given injectables parenterally with non-disposable glass syringes and dental patients respectively, then 39% obstetrical and blood transfused patients.

A sero-positivity rate of 37% and 34% was observed in the surgical patients, cardiovascular disease patients respectively. Sero-positivity rate in descending order in other categories was 30% in minor surgery patients, 30% in diabetes patients, 20% in malarial patients, 17% in gynaecological patients, 10% in typhoid patients and 17% in dengue fever patients.

Table No.1: Prevalence of anti HCV antibodies in patients of surgical intervention, gynaecology obstetrics, blood transfusion and accidental injured patients in hospitals of rural Punjab.

	Punjab							
Category	Southern		Central		Northern		Total	
	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)
Surgical intervention ≥ 2 times	100	39(39)^{c}	100	28(28)^{c}	100	35(35)^{c}	300	102(34)^{c}
Gynaecology	100	15(15)^{b}	100	7(7)^{a}	100	30(30)^{c}	300	52(17.3)^{b}
Obstetrics	100	32(32)^{c}	100	40(40)^{d}	100	45(45)^{d}	300	117(39.0)^{c}
Blood transfused once	100	40(40)^{c}	100	21(21)^{b}	100	57(57)^{d}	300	118(39.3)^{c}
Blood transfused ≥ 2 times	100	38(38)^{c}	100	30(30)^{c}	100	49(49)^{d}	300	117(39.0)^{c}
Accidental wound ≥2 times	100	15(15)^{b}	100	45(45)^{b}	100	51(51)^{d}	300	111(37.0)^{c}
Injectables with glass syringe multiple	100	47(47)^{b}	100	32(32)^{c}	100	59(59)^{d}	300	138(46)^{d}
Total	700	226(32.2)^{c}	700	203(29)^{c}	700	326(46.5)^{d}	2100	755(40)^{d}

Different superscripts show statistical significant difference between two values of percentage at an alpha level of 0.05%.

Table No.2: Prevalence of anti HCV antibodies in patients of cardiovascular disease, diabetes mellitus, dental, minor surgery, malaria, dengue fever and typhoid in rural Punjab.

PUNJAB								
Category	Southern		Central		Northern		Total	
	Numbers Tested	HCV Positive %)	Numbers Tested	HCV Positive %)	Numbers Tested	HCV Positive %)	Numbers Tested	HCV Positive %)
Cardiovascular disease	100	8(8)[a]	100	11(11)[a]	100	15(15)[a]	300	34(11.3)[a]
Diabetes Mellitus	100	25(25)[b]	100	37(37)[c]	100	28(28)[b]	300	90(30)[b]
Dental treatment	100	39(39)[b]	100	42(42)[c]	100	48(48)[c]	300	129(43)[c]
Minor Surgery	100	17(17)[b]	100	29(29)[b]	100	43(43)[c]	300	89(29.6)[b]
Malaria	50	15(30)[b]	50	20(40)[c]	50	25(50)[c]	150	60(20)[b]
Dengue fever	100	3(3)[a]	100	2(2)[a]	100	1(1)[a]	300	6(2.0)[a]
Typhoid	20	2(10)[a]	30	1(3.3)[a]	30	5(16.6)[b]	80	8(10)[a]
Total	570	109(19.1)[b]	580	142(24.4)[b]	580	165(28.4)[b]	1730	416(22.1)[b]

The different superscripts different superscripts percentages shown a statistical significant diffuse between at an & level of 0.5%

DISCUSSION

A cross sectional descriptive epidemiological study was designed to know the prevalence rate of hepatitis-C virus in the rural population of Punjab. Many studies on the prevalence of anti HCV antibodies in the population residing in urban areas were conducted because of availability of the resources and data but very few such studies had been conducted in rural areas of Punjab Pakistan. People living in the rural areas are poor, without facility of advanced hospitals and laboratories. Another logic behind conducting this study was that some studies had been reported high prevalence of HCV antibodies level up to 40% in peri-urban and rural areas of Sindh Pakistan[5].

The other risk factors are poverty, lack of education, blood transfusions without screening and re-use of infected glass syringes by the quacks. Health facility providers, policy makers, administrators and politicians are responsible for public health at large[6].

Health providers have been failed to take care of the patients neither for the treatment nor for the prevention purpose. It has been reported that 30% health workers were found infected with hepatitis-C virus[7].

Similarly in blood transfusion centers the blood screening is very defective due to lack of quality reagents and giving rise to inaccurate results. The risk factors include negligence in disinfecting dialysis equipments and financial constraints[8].

Similarly housekeeping staff in the health facilities while collecting the garbage get sharp pricks resulting into infection of hepatitis C and B viruses[9].

Being low literacy rate, high poverty and lack of advanced public health awareness campaigns in rural areas, people in general remain ignorant of the potential risk factors[10].

CONCLUSION

High prevalence rate of hepatitis-c virus was found in patients who were injected with glass syringes frequently and dental patients residing in rural Punjab, Pakistan.

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

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