Original Article

Pancreatitis

To Determine the Frequency of Raised C-Reactive Protein in Patients of Acute Pancreatitis

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ABSTRACT

Objective: To determine the frequency of raised c-reactive protein in patients of acute pancreatitis.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at Surgical Department Jinnah Post Graduate Medical Centre Karachi and Dow University Hospital from January 2013 to June 2014.

Materials and Methods: The patients were selected on the basis of clinical features. Take detailed history regarding epigastric and upper abdomen pain. All the patients of either gender with acute abdominal pain presenting to emergency and diagnosed as acute pancreatitis by serum amylase of 1000 units or more were included in the study. Ranson Scoring and C reactive protein levels on admission were noted.

Results: A total of 144 patients, both males and females were included in the study. 17(11.80%) out of 144 subjects were males and rest were females 127(88.19%) cases. The minimum age was 25 years and maximum was 60 years but most of the patients were in the range of 40 to 55 years means age was 43±6.7 years. The minimum value was found to be 25 mg/L while maximum was 57 mg/L. Mean CRP was found to be 32.2± 11.43 mg/L for that group of patients. All the patients were also categorized as mild and moderate to severe on the basis of Ranson's criteria. 73% patients were found to have mild disease with rest having moderate to severe disease. Frequency of CRP observed in our study were in 139(96.52%) cases.

Conclusion: We concluded that C reactive protein was a useful severity assessment marker in patients with acute pancreatitis and it can be proposed as an important single factor for determining severity of patients presenting with acute pancreatitis.

Key Words: Ranson Criteria, Acute Pancreatitis, C-Reactive Protein

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INTRODUCTION

Acute pancreatitis is acute inflammation of pancreas, a gland that serves many important functions, most common causes being gallstones and alcoholism. It is mostly a self limiting mild disease.[1] But some patients can develop severe pancreatitis with high mortality.[2]. About two third of the patients of acute pancreatitis have mild disease with 1% mortality. One third of the patients of acute pancreatitis have moderate to severe disease with around 30% mortality. The prevalence of acute pancreatitis in U.S is 0.04%[3], which is one of the highest in the world[4] and is rising[5].The prevalence of acute pancreatitis in Pakistan is 0.03%.The hospital admission rate for acute pancreatitis is 9.8 per year per 100 000 population in U.K ,although the annual incidence worldwide may vary from 5 to 50 per 100 000.The disease may occur at any age but there is a peak incidence in young women and older men. It is definitely one of the most common causes of acute abdominal pain requiring admission. Improved outcome in acute severe pancreatitis depends on early identification and rapid therapeutic interventions[6-7].Many scoring systems are used for this purpose like Ranson and APACHE but they are difficult to use due to their multifactorial nature. A number of unifactorial prognostic indices have been developed in routine clinical practice like c-reactive protein which is an acute phase reactant synthesized by hepatocytes and according to some studies is raised in about 23% of patients suffering from acute pancreatitis.[8].Normally range of C-reactive protein in blood is 0-10 mg/ml. Serial measurement of C reactive protein is a simple way to predict severity. Another study highlighted the importance of unifactor in this regard.[9]. Acute pancreatitis is a disease that can result in multiple disasters like systemic inflammatory response, sepsis, multiorgan failure, and death. The severity of the inflammation, hemorrhage, or necrosis of the pancreas, peripancreatic fluid collection, or abscess are closely related with prognosis [9-10]. Bile reflux into the common bile duct and obstruction of the Ampulla Vater by biliary sludge or stone are supposed to cause biliary pancreatitis[11]. The obstruction of the common bile duct and the pancreatic duct separately or together may effect the resolution of the pancreatitis. Also transient or permanent obstruction, acute or chronic obstruction, and type of obstruction (like tumor

or stone, etc.) of these ducts are effective on the prognosis and determine the management. If the obstruction persists more than 48 hours, the complications increase [12]. The stones in the distal common bile duct and the pancreatic duct could not be detected in all patients with biliary pancreatitis.

MATERIALS AND METHODS

This is Cross sectional study conducted at at Surgical Department Jinnah Post Graduate Medical Centre Karachi and Dow University Hospital from January 2013 to June 2014.

The patients were selected on the basis of clinical features. Take detailed history regarding epigastric and upper abdomen pain. All the patients of either gender with acute abdominal pain presenting to emergency and diagnosed as acute pancreatitis by serum amylase of 1000 units or more were included in the study. Ranson Scoring and C reactive protein levels on admission were noted.

RESULTS

A total of 144 patients, both males and females were included in the study. 17(11.80%) out of 144 subjects were males and rest were females 127(88.19%) cases (Chart No.1). The minimum age was 25 years and maximum was 60 years but most of the patients were in the range of 40 to 55 years means age was 43±6.7 years (Chart No.2).

In this study single measurement of CRP was done at admission. The minimum value was found to be 25 mg/L while maximum was 57 mg/L. Mean CRP was foud to be 32.2± 11.43 mg/L for that group of patients. All the patients were also categorized as mild and moderate to severe on the basis of Ranson's criteria. 73% patients were found to have mild disease with rest having moderate to severe disease. Frequency of CRP observed in our study were in 139(96.52%) cases (Chart No.3)

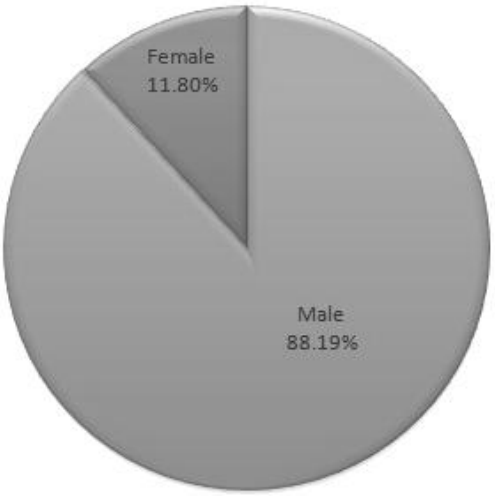

Chart No.1: Gender Distribution

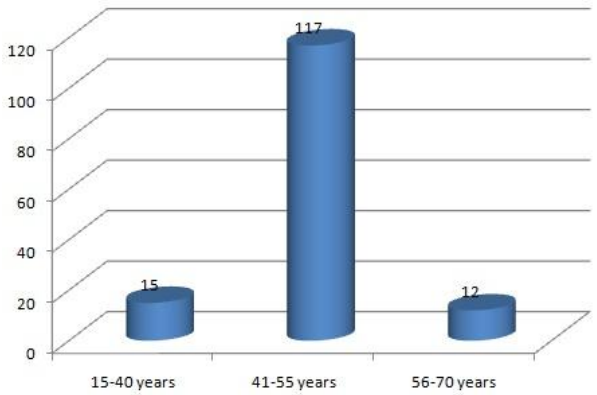

Chart No.2: Age Distribution

Chart No.3: Frequency of raised CRP

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DISCUSSION

Acute pancreatitis is a disease effecting a wide range of population worldwide[13]. Regardless of etiology, it has been observed that the disease has significant complications. Although the mortality due to acute pancreatitis has decreased markedly in recent years, it is still a life- threatening disease. The demographic characteristics of acute pancreatitis are similar in many series; most patients are in the 50-60 year age group[14]. In most series published in the English literature, gallstones are the leading cause, followed by alcohol[15].The case is similar in our part of world where acute biliary pancreatitis supersedes all other causes of the disease and effects mainly middle age adults with about 80 percent cases falling in the age range of 30-50 years. The term idiopathic pancreatitis also exists but is much less diagnosed now due to more detailed investigations now being done to determine the etiology of acute pancreatitis. The frequency is lower in centers that perform extensive investigations and usually biliary causes are revealed. Accordingly, with the introduction of ERCP, the frequency has decreased from 30% to 20% in most centers[16].Other cause of pancreatitis although relatively uncommon are much important because delay in evaluating those causes and in turn failure to treat can lead to significant mortality.

Once a patient of acute abdominal pain presents to the emergency and suspicion of acute pancreatitis is high,

serum amylase or lipase levels should be send and an ultrasound examination ordered. If the suspicion of pancreatitis comes out to be true after these investigations and ultrasound confirming gallstones as the cause, then the most important question arises that what wil be the prognosis of our patient. It is really critical to determine whether we are dealing with a patient of mild pancreatitis with almost no mortality or on the other hand patient of moderate to severe pancreatitis with significant mortality. How can prognosis of acute pancreatitis be determined and there are multiple simple answers to it. There are multiple scoring systems for past century in use to evaluate the severity of pancreatitis. The most widely and trustfully used is the famous Ranson's criteria[17] but it is not the only one. Other scoring systems like APACHE 2, Glasgow scoring etc are also used. CTSI (CT scan severity index) has also been used for years[18] .A problem common to all the scoring systems is that these involve multiple factors assessment which is quite troublesome. The main issues with the Ranson criteria score are the need to wait 48 hours to confirm whether a patient should be considered critically ill and the fact that it does not allow for scores to be reevaluated on a daily basis. The APACHE II is commonly used in intensive care units and permits a daily score to be calculated as needed. However, it also presents problems, such as the complexity of calculating the score, the age factor and difficulty in distinguishing between necrotizing and interstitial pancreatitis as well as between infected and sterile necrotizing pancreatitis[19]. In addition, APACHE II can overestimate the severity of acute pancreatitis, characterizing as critical some patients who do not actually have organ failure. For this reason, other criteria, such as the Sepsis-related Organ Failure Assessment (SOFA) and Marshall scores, have been suggested in recent years for evaluating patients with severe acute pancreatitis[20].

Now remains the last but the most researched prognostic index that is a single factor assessment for determining prognosis of acute pancreatitis. There can be two type of single factors which can be used to determine the prognosis. They can either be clinical factor or a lab index. Clinical factors indicating a severe disease include fluid sequesteration, a raised hematocrit count of above 47 at admission or features of SIRS, All these are now accepted as single factor to indicate high mortality.

Recent studies have suggested that the serum levels of interleukins and TNF-α may be used to identify patients who are prone to develop local or systemic complications and were compared with CRP which has been employed in the prediction of severity of acute pancreatitis [21,22]. Early identification of such patients can lead to a more intensive management that would result to a decreased morbidity and mortality of that potentially fatal disease .In our study, the frequency of raised CRP in pancreatitis was found out. CRP is an acute phase reactant synthesized by hepatocytes and is considered to be the most important single prognostic factor in determining prognostic of acute pancreatitis. It is not specific for pancreatitis and is raised in a variety of of inflammatory conditions. Our study results showed that all patients with acute pancreatitis had raised values and in addition patients who were found to have severe disease according to Ranson's criteria also had substantially increased CRP levels. This finding indicates that CRP levels directly correlate with the severity of pancreatitis to some extent. Previously multiple studies have been done to evaluate the prognostic value of CRP and had almost similar results. One study stated that if on admission, CRP is found to be normal or mildly raised, then severe pancreatitis is very unlikely and can be confidently excluded[23].Our study results also supported this fact and also showed a strong correlation between severity on Ranson's scoring and on CRP. Another study done by Gorunet and his colleagues in 2010 estimated multiple factors to detect the severity of acute pancreatitis that included Ranson's scoring, CRP and other serum biochemical markers. The study concluded that CRP is an independent factor in assessing the prognosis of acute pancreatitis[24]. After studying the research protocol in detail, readers will have a strong idea on how important CRP estimation is and how helpful its assessment can be to evaluate the severity of pancreatitis.

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CONCLUSION

Acute pancreatitis is a major causes of disease specific morbidity and mortality in Pakistan. The diagnosis of acute pancreatitis is principally clinical supported by hematology and radiolology. Although no age is exempted from this disease but patients aged between 30 to 50 years are mostly at risk. In our setup patients presenting to the emergency with abdominal pain are usually diagnosed clinically confirmed by raised serum amylase and then prognosis assessed by Ranson scoring usually.In our study of assessing the frequency of raised c reactive protein in acute pancreatitis.CRP came out to be a very good prognostic marker.

Recommendations: On the basis of our study ,we can recommend CRP to be measured in all patients of acute pancreatitis and we also recommend an analytical study to prove the prognostic value of CRP.

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