Analysis of Acute Pancreatitis in Young Age Group

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ABSTRACT

Objectives: The burden of hospital admissions for acute pancreatitis (AP) has significantly increased in past few years across the globe. In severe form it is one of the deadliest diseases of hepatobiliary system. Acute pancreatitis is a noticeable health issue which leads more than million hospital admissions in USA per year. The incidence of this disease in young age group has also increase dramatically. The purpose of this study was to identify the causes, severity and outcomes of AP in young population. Study Design: A Prospective, cross-sectional study Setting: Surgical Unit 1 Holy Family Hospital, Rawalpindi, Pakistan Study Duration: June 2014 to March 2017. Materials &Methods: All patients between 12 and 25 years with clinical features of Acute Pancreatitis, having serum amylase greater than three times the upper normal limit or raised lipase levels, were included in our study. Causes, clinical features, severity and outcomes of acute pancreatitis were evaluated. Results: A total A total of 78 patients were included in our study out of which 63 (80.8 %) were female and 15 (19.2 %) were males. Gall bladder stones were the main cause of pancreatitis in 54 (69%) patients followed by drugs in 13 (17%) patients. Contrast enhanced computerized tomography scan (CT scan) done between 24 to 48 hours of presentation showed 30 (38.5%) patients had necrotizing pancreatitis whereas 48 (61.5 %) patients had interstitial pancreatitis. The organ failure which was predominantly pulmonary system occurred in 15 (19.2 %) of patients All 78 patients were discharge from hospital without any mortality.

Conclusion: In resource limited countries acute pancreatitis is posing a great burden to emergency as well as outpatient departments of tertiary care hospitals. This study concluded that etiology of acute pancreatitis is significantly different in young age group although the predominant causative factor is still gallstones.

Keywords: Acute pancreatitis, Young age group, Gall bladder stones

1. INTRODUCTION

Acute pancreatitis is a noticeable health issue which leads more than million hospital admissions in USA per year\(^{(1,2)}\). The yearly worldwide incidence of acute pancreatitis (AP) ranges from 20-40/100000 and has risen considerably with time\(^{(3)}\). As a repercussion, the number of acute pancreatitis related hospital admissions has increased significantly in the past twenty to thirty years, and it is now one of the major reasons for gastrointestinal related diseases of hospital admissions, with an annual costs of up to approximately US$2.6 billion in the United States\(^{(3,4)}\).

The causes and variations of acute pancreatitis in adults and children are very well demonstrated in different studies\(^{(5,6,7,8)}\) but for young adults the spectrum is not well analyzed. The etiology varies among different areas and

cultures but bile stones and alcohol remain the leading causes, making about 60-70% of cases\(^6,9\). Due to increased incidence of cholelithiasis the incidence of acute pancreatitis is also shooting up. In Pakistan, gallstones are found in 22.5% above 50 years, 66.5% between 25-50 years and 11% were less than 25 years of age\(^10\).

Due to scantiness of literature it is not known whether the risk factors for developing acute pancreatitis in younger age group are the same as in older population or not. Currently there is no significant study showing the spectrum and causes of acute pancreatitis in young adults (i.e. between 12 to 30 years of age). The purpose of our study was to highlight and analyze the cause, presentation and outcomes of acute pancreatitis in young adults.

2. METHODS

Study Design
Prospective, cross-sectional study. Approval for the study was granted by the institutional Ethical committee.

Settings
Surgical Unit 1 Holy Family Hospital, Rawalpindi, Pakistan.

Duration

Operational definitions

Acute pancreatitis defined as pain epigastrium radiating to back with serum amylase levels greater than three times the upper normal limit or simply raised serum lipase levels above normal.

Young age group
Patients between 12 to 25 years of age.

Severity of pancreatitis

- MILD PANCREATITIS having CTSI 0-4
- MODERATE PANCREATITIS having CTSI 5-6
- SEVERE PANCREATITIS having CTSI 7-10

Total Patients
78 patients were included in our study.

Inclusion Criteria
All patients between 12 and 25 years with clinical features of Acute Pancreatitis, having serum amylase greater than three times the upper normal limit or raised lipase levels, were involved in our study. Exclusion criteria comprised of the age less than 12 years or more than 25 years, chronic pancreatitis, pancreatic cancer, patients referred from other centers after treatment and patient with liver cirrhosis.

To rule out gallstones and bile duct stones abdominal ultrasound was performed in all patients. In all patients Ranson’s score was calculated at zero and 48 hours as per hospital protocol. Contrast enhanced CT abdomen with pancreatic protocol was done between 24 to 48 hours of presentation for severity of pancreatitis. To predict severity of disease, CT severity index using Balthazar scoring system \(^11\) was used. Data was collected from all patients on a predesigned Performa. Data was entered and an analysis was done using Statistical Package for Social Sciences v20.0 (SPSS, Inc., Chicago, IL, USA). For categorical variables, frequencies and percentages were reported.

3. RESULTS
A total of 78 patients were included in our study out of which 63 (80.8 %) were female and 15 (19.2 %) were males. Gall bladder stones were the main cause of pancreatitis. The etiology of acute pancreatitis in young age group is shown in figure 1. Ranson’s score calculated at zero and 48 hours and the total score is depicted in figure 2. Contrast enhanced computerized tomography scan (CT scan) done between 24 to 48 hours of presentation showed 30 (38.5%) patients had necrotizing pancreatitis whereas 48 (61.5 %) patients had interstitial pancreatitis. The severity of acute pancreatitis on basis of CT scan findings (CTSI) is shown in table 1. The C - reactive protein levels (CRP) measured within 24 hours is shown in table 2. The organ failure which was predominantly pulmonary system occurred in 15 (19.2 %) of patients which required aggressive monitoring including shifting to intensive care unit. All 78 patients were discharge from hospital without any mortality.
**Table 1: CT severity index for Acute pancreatitis in young age group (n=78)**

<table>
<thead>
<tr>
<th>SCORE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 (Mild)</td>
<td>15</td>
<td>19.2 %</td>
</tr>
<tr>
<td>5-6 (Moderate)</td>
<td>42</td>
<td>53.8%</td>
</tr>
<tr>
<td>7-10 (severe)</td>
<td>21</td>
<td>26.9%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>78</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

**Table 2: C-reactive protein (CRP) levels in Acute Pancreatitis in young age group (n=78)**

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 60</td>
<td>45</td>
<td>57.7 %</td>
</tr>
<tr>
<td>60-120</td>
<td>27</td>
<td>34.6 %</td>
</tr>
<tr>
<td>More than 120</td>
<td>6</td>
<td>7.7 %</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>78</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
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4. DISCUSSION

Acute pancreatitis is now one of the commonest diseases of pancreas, even in young age group, and may lead to death in severe cases. The risk factors and causes of acute pancreatitis in young patients often differs from that in adults, and differences in the clinical symptoms and sequence of events may occur. There are many causative factors of acute pancreatitis, which can be easily investigated in up to 80% of patients. Nearly 60 - 80% of all cases of AP in developed countries occur as a consequence of either gallstone disease or alcohol abuse. In our study, our study conducted in young patients, gall stones was found to be the causative factor in 69% of patients and no patient reported with history of alcohol intake.

In various studies conducted in adult population drugs are responsible in 0.1%-2% cases of acute pancreatitis. Most of the cases of drug-induced pancreatitis are mild to moderate in severity. Our study involving young patients showed drug induced pancreatitis in 17% of patients. In a study conducted by A. Cosentini et al the etiology of pancreatitis was found to be biliary in 69.7% of patients.16.2% included in the study had history of alcohol intake. Other minor causes included trauma, hypercalcemia and vasculitis.

In another study conducted by Nydeggar A et al, trauma was found as a causative factor in 36.3%, systemic disease in 22.2%, metabolic in 5.8%, biliary in 5.2%, drugs in 3.2% and viral in 2.2%, cases of acute pancreatitis. 25.1% cases of acute pancreatitis were considered idiopathic.

Various scoring systems and markers of systemic inflammatory response have been studied to predict the severity of acute pancreatitis. CRP, a marker of systemic inflammatory response, is a relatively simple and economical method to assess the prognosis of acute pancreatitis. In a study conducted by J T Makela et al, CRP levels in patients of acute pancreatitis were assessed. Cut off value of 150 was used. 56% of patients among survivors had CRP less than 150 and 44% had CRP above 150. In the patients who died CRP value was below 150 in 11% of patients and above 150 in 89% of patients. In our study 57.7% of studied patients has CRP levels less than 60. 34.6% of patients had CRP levels between 60-120 and 7.7% of patients had CRP levels above 120. The Ranson’s score was considered a major success in assessing the severity of AP and has been used for over thirty years to predict AP severity. Literature shows a cut off value of 3 for severe pancreatitis.

Comparison of various scoring systems in predicting organ failure, complications, and mortality in acute pancreatitis was done by Georgios I. Papachristou et al, in their study including 185 patients. 131 patients had ranson’s score less than 3, whereas 47 patients had ranson’s above 3. The sensitivity and specificity of ranson’s in predicting severity at 95% CI was 84.2% and 89.8% respectively. In our study focusing on young patients of acute pancreatitis, 45 (57.6%) patients had ranson’s score less than 3 whereas 33 (42.3%) had ranson’s score above 3.

In 2002 Balthazar created a severity assessment method based on necrosis extent and pancreatic morphologic changes seen on contrast enhanced CT scan. This scoring system i.e. CTSI has a maximum of ten points, and patients with CTSI more than 6 have higher chances of developing complications and death.

Lautz et al reported that in comparison to a clinical scoring system the CT severity index is more predictable for identifying children with severe pancreatitis that are at higher risk for developing serious complications. Studies conducted in adult population shows that 80% of the cases had mild pancreatitis, but 20% of patients will have moderate to severe disease. This is in contrast to our study in young patients, where majority of the patients (53.8%) had moderate pancreatitis diagnosed on the basis of CTSI. Mild and severe pancreatitis was seen in 19.2% and 26.9% respectively.

One of the major complications in severe acute pancreatitis, that is associated with worst outcome, is multi organ failure. In a study conducted in India by Jai Dev Wig et al Organ failure developed in approximately 53% patients. Of the patients with organ failure, 48.8% had single organ failure, 33.3% and 17.9% had two and three organ systems failure respectively. Pulmonary system dysfunction was the most common 76.2%, followed by renal 59.5% and cardiovascular failure 33.3%. This study also concluded that age is a risk factor for developing organ failure and mean 39.9±14.2 years. In our study 19.2% developed only pulmonary failure and were managed accordingly. No other organ dysfunction developed in any patient.

Mortality in acute pancreatitis has significantly decreased in past 20 years. Mortality is considerably higher in patients developing multiorgan dysfunction and SIRS.

involving young patients with acute pancreatitis and all 78 patients were discharged.

5. CONCLUSION

This study concluded that etiology of acute pancreatitis is significantly different in young age group although the predominant causative factor is still gallstones. Frequency of patients developing severe pancreatitis is similar to adult population but complications such as organ failure and mortality is considerably lower in young age group.

REFERENCES