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Demographic Profiles and Etiology of Patients Presenting With Acute Pancreatitis in Bangladesh Medical College Hospital, Dhanmondi, Dhaka, Bangladesh

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ABSTRACT:

Background: *Acute pancreatitis accounts for 3% of all cases of abdominal pain admitted to hospital. It is a common disorder with devastating consequences if remains untreated. Mortality and morbidity depends on the severity of the disease presentation.*

Objective: *To find out the demographic profiles and etiology among patients with acute pancreatitis to optimise the treatment options*

Methods: *This was hospital based cross sectional observational study done at Bangladesh Medical College Hospital, Dhanmondi, Dhaka with the study period from January 2018 to December 2021. Total 100 patients with features of acute pancreatitis enrolled for this study.*

Results: *Majority (68%) of our acute pancreatitis patients were male and the predominant age group (53%) was 31-40 years. Gallstones (56.25%) was the chief etiology of our cases followed by ascariasis (12.5), although around 18.75% cases no apparent causes were found for acute pancreatitis. Abdominal pain (around 87%) was the typical presentation of the patients followed by vomiting (93.75%) which was mainly predominant among female group. During ultrasonography 41% cases revealed swollen/enlarged pancreas as well as cholelithiasis were found 29% cases. Regarding systemic complications that we encounter during our study were mainly hyperkalemia, hyperglycaemia and acute renal failure. We have successfully treated around 88% patients through the conservative management but around 5% patients needed to refer to the higher specialised centres for the multidisciplinary approach.*

Conclusion: *This study shows an elevated rate of acute pancreatitis among younger age group. Serum amylase and lipase levels played an important role in the diagnosis. Mortality of acute pancreatitis mainly depends on its severity of presentation. Timely interventions can reduce these burdens very easily now-a-day.*

Keywords: *Acute pancreatitis, Serum amylase, Serum lipase*

I. INTRODUCTION

Acute pancreatitis is an emergency clinical condition that requires urgent treatment. It encounters a wide spectrum of disease ranging from mild self-limiting symptoms to a fulminant process with multi-organ failure [1]. It affects 2-28 per 100000 of the population and the incidence is increasing day by day. It is a potentially serious condition with an overall mortality of 10%. Around 80% cases are found to be mild with favourable outcomes. Approximately 98% of deaths from acute pancreatitis occur in the 20% of patients with severe disease and about one-third of these arise within first week, usually from multi-organ failure. After this period, the most of mortality rate from sepsis, mainly with infected necrosis of pancreas. To categorise pancreatitis from mild to severe several scoring systems are available [2]. 90% causes of acute pancreatitis are gallstones, alcohol, post ERCP and idiopathic. The 10% is related to metabolic factors, drugs and other conditions [3]. The variations of etiology differ from person to person and the country of origin [4].

Acute pancreatitis occurs as a consequence of premature intracellular trypsinogen activation, releasing proteases that digest the pancreas and surrounding tissue. The severity of acute pancreatitis is dependent on the balance between the activity of the released proteolytic enzymes and antiproteolytic factors.

The typical presentation is with mild abdominal discomfort to severe constant upper abdominal pain, of increasing intensity over 15-60 minutes, which usually radiates towards back. Nausea and vomiting are also commonly found. On physical examination, there is significant epigastric tenderness, but in the early stages (in contrast to the perforated peptic ulcer disease), guarding and rebound tenderness are absent because the inflammation is principally retroperitoneal. Clinical presentation can progress to hypotension, metabolic derangements, sepsis, fluid sequestration, multiple organ failure and death. Majority of acute pancreatitis patients have self-limited and mild-moderate course, only 10% patients develop severe life threatening features of acute pancreatitis.

Diagnosis of acute pancreatitis usually remain clinical followed by increased levels of serum amylase and lipase. These help to reach the confirmation for diagnosis as well as supportive radiological investigations which includes sonography, computed tomography and MRI. Due to assess the severity at the beginning of the disease course increase the risk of mortality in acute pancreatitis.

In our study we tried to evaluate the socio-demographic profiles and causes of acute pancreatitis to reach the diagnosis and assess the severity in due time for preventing further complications and decrease mortality and morbidity.

II. MATERIALS AND METHODS

A. Study Design & Area:

This is a population based cross sectional observational study carried out in both outdoor and indoor Medicine department of Bangladesh Medical College Hospital (BMCH), Dhanmondi, Dhaka, Bangladesh.

B. Study Period:

The study period was 4 years from January 2018 to December 2021.

C. Study Population:

Total 100 patients with clinical features along with biochemical and radiological profiles of acute pancreatitis were enrolled in this study as the study population after fulfilling the inclusion and exclusion criteria.

D. Inclusion Criteria:

- Age 18 years and above
- Written and oral informed consent

E. Exclusion Criteria:

- Abdominal blunt injuries
- Patients with comorbidities like renal failure, malignancy, chronic liver disease
- Post-operative patients
- Immunocompromised patients
- Patients with alterations in higher psychic functions
- Critically ill patients
- Patients unwilling to participate in the study

F. Sampling Techniques:

Consecutive convenient (purposive) sampling method was applied in here

G. Methods of Data Collection:

All the study population underwent thorough medical history, clinical examination before enrolment. Participants provided the informed consent before the participated in the study. Once informed consent was obtained, all participants were asked to complete a questionnaire to collect basic demographics such as age, gender, clinical manifestations, etiology,

history of alcohol intake, presence of calculus cholecystitis, any procedures like ERCP etc. Serum amylase and lipase levels were investigated immediately on presentation. All the patients underwent ultra-sonogram of the whole abdomen during presentation. In the absence of significant precipitating factors for acute pancreatitis serum triglycerides level was also evaluated. Serum triglycerides level >800 mg/dl was taken as an precipitating factor for acute pancreatitis. If no obvious cause was apparent after doing all these investigation those patients were categorised as idiopathic pancreatitis.

We repeated ultra-sonogram and even in some cases chose to do CT scan of abdomen if the patient's condition didn't improve or even if the patient deteriorated. If the patients developed any complications during the period of acute pancreatitis they had been treated accordingly with the help of multidisciplinary approach.

Most of the cases were managed by conservative approach and supportive care. Some patients needed intensive care unit (ICU) for their deteriorating condition.

H. Data Analysis:

Data was recorded into semi-structured pre-tested pro forma. It was applied into Microsoft Excel and analysed using SPSS v 16.0. Summarisation of data was done according to data types and appropriate statistical tests were done. Descriptive statistics include mean, standard deviation an percentage. Here, various modes of clinical presentation and demographic profiles were expressed as the total number of patients presenting with a particular presenting feature and then calculated as a percentage of the total number of patients. Statistical analysis was done by using appropriate statistical tool like 'chi-square' test, student 't' test, where applicable. The odds ratio (OR) and 95% confidence intervals (CIs) were calculated. A p value of <0.05 was considered to be statistically significant and p value of > 0.05 was considered not significant statistically.

III. RESULTS

I. Age and Gender distribution of study group:

Among 100 patients of acute pancreatitis majority (68%) were males and (32%) were females. Among these group 53% belonged from the age group 31-40 years followed by 29% from 41-50 years. (Figure 1) & (Table 1).

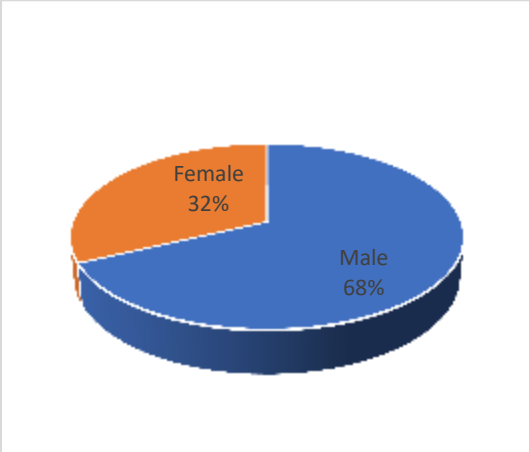

Figure 1: Gender wise distribution of study group

Age (years)	No of patients	Percentage (%)
18-30	4	4
31-40	**53**	**53**
41-50	29	29
51-60	9	9
>60	5	5
Total	100	100

Table 1: Age wise distribution of study population

II. Etiological factors of acute pancreatitis in study population:

Out of 100 patients, 38.23% males and 56.25% females had gallstones related pancreatitis. Another important etiology was found 27.94% due to hypertriglyceridemia. Only 1.47% & 2.94% male patients suffered from acute pancreatitis due to trauma and alcohol respectively. Although no causes were detected in significant group of patients as well.

Etiology	Male	Percentage(%)	Female	Percentage(%)
Gallstone	26	38.23	18	56.25
Alcohol	2	2.94	0	0
Trauma	1	1.47	0	0
Ascariasis	5	7.35	4	12.5
Post mumps	2	2.94	1	3.13
Hypertriglyceridemia	19	27.94	3	9.38
No cause found	13	19.11	6	18.75

Table 2: Etiological distribution of acute pancreatitis patients

III. Clinical features of acute pancreatitis:

Out of 100 acute pancreatitis majority male (86.75%) and female (87.5%) patients presented with severe abdominal pain to us followed by (93.75%) females suffered from nausea and vomiting simultaneously and (77.94%) males developed abdominal distension (Figure 2)

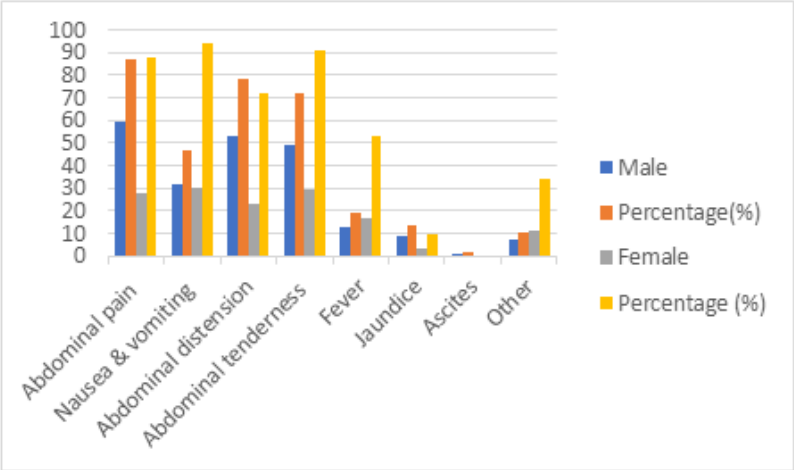

Figure 2: Clinical features of acute pancreatitis among study group

IV. Biochemical profiles of acute pancreatitis (n = 100):

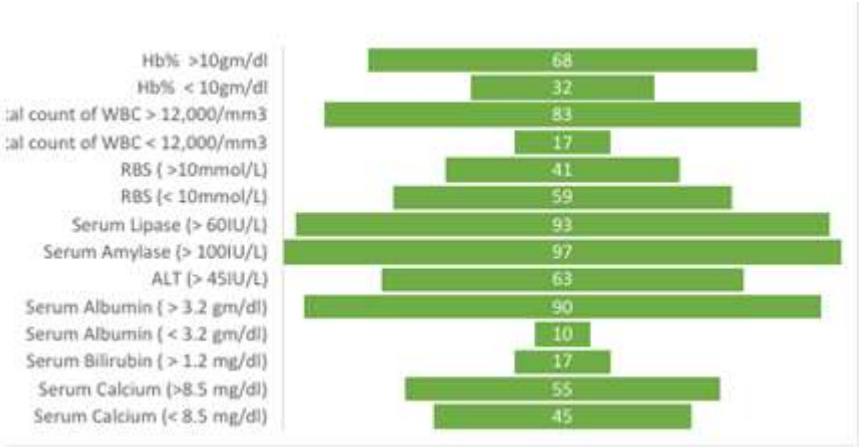

Figure 3: Biochemical profiles of acute pancreatitis patients

V. Ultra-sonogram findings of study group:

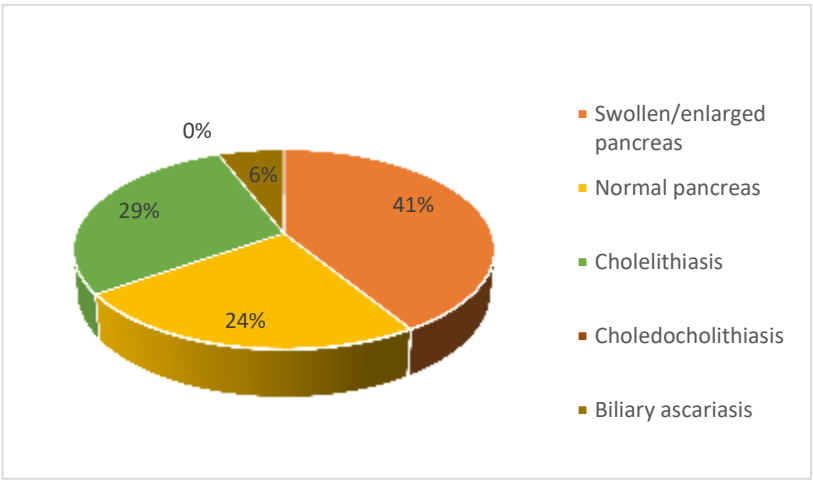

Figure 4: USG findings of study group

VI. Systemic Complications among acute pancreatitis patients:

Among our 100 patients of acute pancreatitis various complications have developed during the disease period which we have mentioned through the following Figure 5.

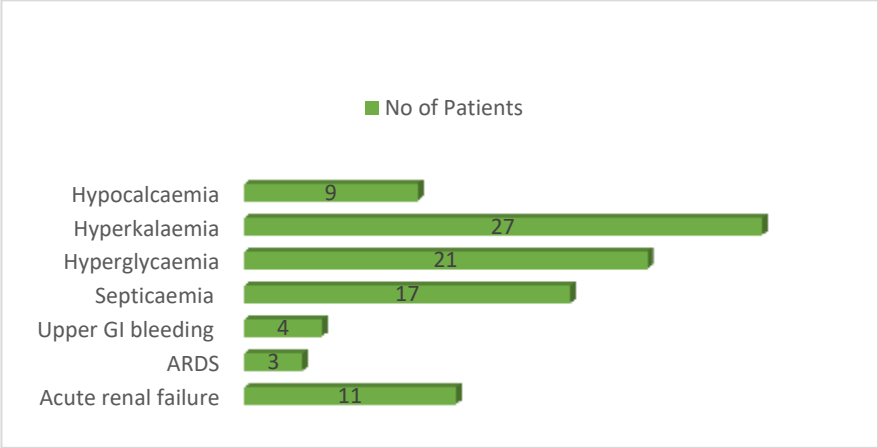

Figure 5: Systemic complications of acute pancreatitis patients

VII. Management strategies of study group:

Among 100 patients of acute pancreatitis in our study majority 88% were managed conservatively. Only 7% patients underwent surgery for cholecystectomy before discharge. Patients with multiple co-morbidities 5% had been referred to specialist centres for further management (Figure 6).

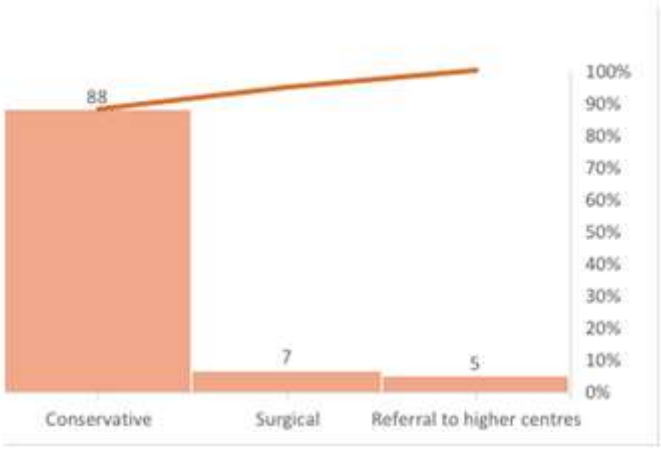

Figure 6: Management strategies of acute pancreatitis patients

IV. DISCUSSION

During diagnosis of acute pancreatitis we need to go through a thorough history, physical examination and biochemical investigations. Radiological investigations are very vitals to confirm the diagnosis and in some cases to find out the exact etiology of acute pancreatitis. In our study we have thoroughly analysed the clinical presentation of the study group as well as we have carried out the relevant investigations and radiology to find out the exact cause of acute pancreatitis here. 53% of our acute pancreatitis cases belonged from the age group 31-40 years which have got some similarities with the other studies where they have mentioned the mean age 36.2-38.94 years [5,6]. In our study we have found male predominance with M:F ratio 2:1. Various studies like the Khalid et al and Rao et al had also male predominance in their cases of acute pancreatitis as 70.91% and 86.66% respectively [6,7]. In our country lower age incidence of acute pancreatitis may be due to occurrence of cholecystitis among both males and females due to increased amount of saturated fat consumption and unhealthy lifestyles. Alcohol consumption rates are completely insignificant in our cases due to religious and sociology cultural factors in our country whether as there are many studies where alcohol has

found the main etiological factor for the development of acute pancreatitis[5,6]. Although ascariasis, mumps and trauma have also found as an etiology in our study group which are more prevalent among younger age groups.

In many parts of USA, Western Europe and Southeast Asia, gallstones have gained the prime position for the acute pancreatitis patients. So the variation of etiology depends upon the geographic location and behavioural habits of the country people. 18.75% cases we couldn't able to find any definitive cause of pancreatitis. But this could be due to various infections as a result of poor sanitation, poor nutrition and some cases financial in capabilities to carry our expensive investigations as well.

Here we have found only 1.47% case as a blunt trauma which has led to acute pancreatitis and this blunt trauma was due to road traffic accident. But in Europe blunt trauma due to road traffic accident is a very important etiology for pancreatitis as well as injury by knives or bullets; although they were predominant in North America as well.

Patients with triglycerides levels more than 800mg/dl put the risk with acute pancreatitis which we also found here as 9.38% cases. Many other countries have also mentioned hypertriglyceremia as an etiology of acute pancreatitis as well.

Majority of our patients both males and females presented with severe abdominal pain which has got the similarities with other studies [5,6]. In McMohan study they mentioned upper abdominal pain (50%) followed by vomiting (75%) as their chief complaints wether as in our study 93.75% females patients suffered from vomiting along with abdominal pain [8].

The sensitivity of serum amylase level in our study was 97% which has got similarities with the study done by Koizumi et al [9] where they have mentioned 95.6% sensitivity of serum amylase level. The sensitivity of serum lipase in the present study was 93% and was comparable to 98% sensitive by Corsetti et al [10].

All patients of this study underwent ultrasonographic examinations. 41% patients developed enlarged or swollen pancreas. The pancreatic changes noted are granular heterogeneity, hypoechogenecity, increased thickness of the gland and indistinct margins of the gland. In Khashid et al. study they found 66.67% patients diagnosed with ultrasound and this may be because USG is operator dependent and also because the view can be obscured by overlying bowel gas [7,10]. Ultrasound can also detect various other abnormalities like cholelithiasis, pancreatic ascites, pancreatic necrosis, pseudocyst and pleural effusion.

There are many systemic complications of acute pancreatitis among which renal failure is common. In most of the patients renal failure occurs due to hypotension and hypovolemia. In our study we found 11 out of 100 patients developed acute renal failure and around 27 patients developed hyperkalaemia.

In our study we haven't found any relationship between Serum bilirubin, serum albumin, serum calcium levels and higher mortality rates.

V. CONCLUSION

In acute pancreatitis higher mortality rates are associated with concomitant presence of medical and surgical conditions but not to age or gender. Multi organ failure is associated with highest mortality rates. In our study we came to a conclusion that conservative management of acute pancreatitis can still be the treatment of choice if it can be diagnosed and treated at the earlier stages.

VI. LIMITATIONS

As the current study has carried out in a tertiary care teaching hospital in the urban area with a small sample size, hence the results may not be the complete reflection of acute pancreatitis cases in the whole community. Limitations of this study also include referring cases to higher specialised centres to combat the complications through the multidisciplinary approach.

VII. ACKNOWLEDGMENT

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