Original Article

Clinical and Severity Profile of Acute Pancreatitis in a Hospital for Low Socioeconomic Strata

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Abstract

Introduction: There is an upsurge in the incidence of acute pancreatitis over the last few decades; although the case fatality rate has remained unchanged. This may either be due to increased incidence of gallstone disease or improvement in diagnostic modalities. It is a potentially life threatening disease with varying severity of presentation. **Methods:** This observational analytical study was conducted in the Department of General Surgery in our hospital for a period of one year. All patients of acute pancreatitis were included in the study as per inclusion & exclusion criteria. **Observations and Results:** Total 62 Patients were included in the study. Gall stones disease is the most common cause of acute pancreatitis. The mean age of the patients in the study was 39 years. 28 females and 34 male patients were present. 22 patients of the patients had severe disease as per Atlanta classification. Four out of these 22 severe pancreatitis patients expired. All patients in the severe pancreatitis group had mild to life threatening complications and pleural effusion was the most common followed by necrosis. There was notable difference in terms of hospital stay between mild group and severe group of AP. **Conclusion:** The clinician should be aware that acute pancreatitis can occur in any age group and gender due to different etiology. The severity of AP does not depend on etiology, age or gender and it is associated with significant morbidity and mortality. SAP can be diagnosed on clinicoradiological basis and appropriate management can be done in those patients.

Keywords: Acute pancreatitis, Atlanta classification, CT severity index, severe pancreatitis

Introduction

Acute pancreatitis (AP) is a potentially life threatening disease with varying severity of presentation.[1] Nearly 60-80% of all cases of AP in developed countries are attributable to either gallstone disease or alcohol abuse.[2]

There is an upsurge in the incidence of AP over the last few decades, although the case fatality rate has remained unchanged.[3] This may either be due to increased incidence of gallstone disease or improvement in diagnostic modalities.[4] The incidence of alcoholic pancreatitis is higher in male and even risk of developing acute pancreatitis with gallstone disease is higher in male. However, increased number of young females develop this disorder due to higher incidence of gallstones in this subset of population.[5]

Acute pancreatitis is mild and resolves itself without serious complications in 80% of patients. Morbidity and mortality occur in up to 20% of patients despite the aggressive intervention.[6]

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This is usually due to systemic inflammatory response syndrome and organ failure in the first two-week period, while after two weeks it is usually due to sepsis and its complications.[7]

In a systematic review of studies of acute pancreatitis, overall mortality was approximately 5%. Mortality rates in patients with interstitial and necrotizing pancreatitis were 3%, and 17%, respectively.[8]

Abdominal pain is seen in patients with acute pancreatitis. Pancreas being a solid retro-peritoneal organ, the pain is epigastric and of deep boring nature often radiating to back.

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Physical examination usually reveals a distended abdomen with epigastric tenderness and sluggish bowel sounds. Occasionally, patients may have a rigid abdomen mimicking surgical condition. Patients may present with abdominal pain and shock with very little abdominal findings. Ecchymosis in the flank (Grey Turner's sign) or near umbilicus (Cullen's sign) are also seen in few patients. These patients have a high mortality.

This study was done with objective to observe the clinical and severity profile of patients diagnosed with AP and related morbidity and mortality in our institution.

Methods

This observational analytical study was conducted in the Department of General Surgery in our hospital after due permission from the Institute Ethical Committee for a period of one year.

All patients of acute pancreatitis were included in the study with following inclusion and exclusion criteria:

Inclusion criteria

- Age group >18 years and <70 years (Both male and female)
- All patients attending emergency/OPD with diagnosis or diagnosed as case of acute pancreatitis
- Patients willing to participate in the study.

Exclusion criteria

- Chronic pancreatitis
- Pancreatic Malignancy
- Patients not willing to participate in the study.

The diagnosis of acute pancreatitis was made as per guidelines by American Gastroenterological Association (AGA) and according to revised Atlanta classification (2012):[8] two of the following three features.

1. Abdominal pain: clinically suggestive of acute pancreatitis
2. Serum lipase (or amylase) at least three times the normal upper limit
3. Radiological findings (USG/CT/MRI) suggestive of acute pancreatitis.

Written & informed consent from patients was taken for the study. A detailed history including present medical history and previous surgical morbidity/intervention was taken. Detailed clinical examination was carried out including general physical examination, systemic examination and local examination.

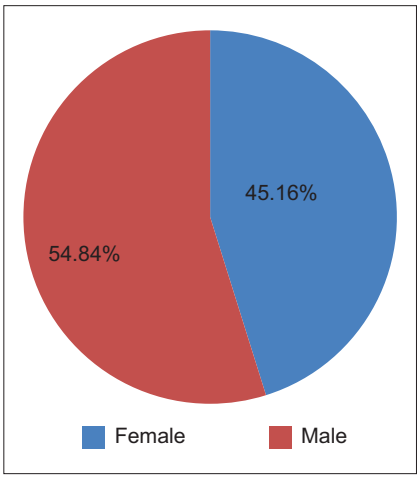
Observations and Results

The mean age of the patients in the study was 39.21 ± 12.43 years. 29.03% of the patients were in the age group 31-40 years, 24.19% of the patients were in the age group 41-50 years and 19.35% of the patients were in the age group 21-30 years; with few patients ≤ 20 years and >50 years [Table 1].

In our study, 45.16%(28) were females and 54.84%(34) were males [Pie Chart 1].

Table 1: Age distribution (in years)

Age distribution (in years)	Frequency	Percentage
<=20	5	8.06%
21-30	12	19.35%
31-40	18	29.03%
41-50	15	24.19%
51-60	8	12.90%
61-70	4	6.45%
Mean±S.D.	39.21±12.43	
Median (IQR)	38 (30-48)	



Pie Chart 1: Gender distribution of study subjects

Gall stone was present in majority (67.74%) of patients followed by alcohol (17.74%) and idiopathic (14.52%) [Pie Chart 2].

The most common complaint of patients at the time of presentation to hospital was pain abdomen (100%) followed by, fever (20%) and abdominal distension (29%). Nausea/ Vomiting was seen in 10 (16%) only [Pie Chart 3].

According to revised Atlanta classification, majorities (64.52%) of patients were categorized as mild acute pancreatitis and 35.48% of patients were categorized as severe acute pancreatitis [Table 2].

According to modified CT severity index, majority (53.23%) of patients were categorized as moderate acute pancreatitis followed by 30.65% of patients as severe acute pancreatitis and 16.13% of patients as mild acute pancreatitis. Mean value of modified CT severity index of study subjects was 5.13 ± 2.53 [Table 2].

In this study, incidence of complications was 38.71%. Majority of patients had pleural effusion followed by necrosis. 11.29% of patients had ascitis, and very few patients had MODS and pseudocyst [Table 3]. 4 out of 62 patients died due to MODS [Pie Chart 4].

Mean value of ALP, serum amylase, and lipase of study subjects was 175.77 ± 74.27 IU/L, 735.16 ± 452.78 U/L, and 1200.23 ± 1015.25 U/L respectively.

Mean value of blood urea and hemoglobin was 36.44 ± 13.81 mg/dl and 10.95 ± 1.28 g/dl with median (interquartile range) of 36 (27-43) mg/dl and 10.9 (10-12) g/dl respectively.

Mean value of platelet count was 2.72 ± 1.1 lac/mm^3 (per microliter) with interquartile range within normal limits (1.9-3.5 lac/mm3 (per microliter). Mean value of TLC was 9062.9 ± 3011.58 (per microliter).

Mean value of serum bilirubin and creatinine was 1.17 ± 0.53 mg/dl and 1.27 ± 0.63 mg/dl respectively. Values of serum sodium and potassium were 138.6 ± 4.11 meq/L and 4.14 ± 0.54 meq/L, respectively.

Mean value of SGOT and SGPT was 62.53 ± 27.79 IU/L and 65.21 ± 27.97 IU/L respectively [Table 4].

Mean value of pulse rate of study subjects was 87 ± 11.48 bpm. Systolic and diastolic blood pressure of study subjects was recorded as 120.44 ± 14.1 mmHg and 76.45 ± 12.6 mmHg [Table 5].

Mean duration of hospital stay was 9.95 ± 3.64 days with median (interquartile range) of 9 (7-13) days [Figure 1].

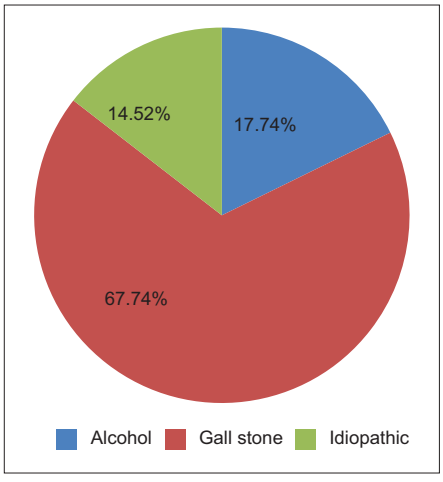
No significant association exists between modified CT severity index and etiology. ($P > 0.05$) Distribution of modified CT severity index was comparable between different etiologies with no significant difference between them. Proportion of patients categorized as mild acute pancreatitis in alcohol, gall stone and idiopathic was 18.18%, 14.29% and 22.22% respectively. Though in patients with gall stone and idiopathic etiology, proportion of patients categorized as moderate acute pancreatitis was higher as compared to alcohol yet the difference was not statistically significant [Bar Graph 1].

No significant association exists between severity according to revised Atlanta classification and etiology. ($P > 0.05$) Distribution of severity according to revised Atlanta classification was comparable between different etiologies with no significant difference between them. Proportion of patients categorized as mild acute pancreatitis in alcohol, gall stone and idiopathic was 45.45%, 69.05% and 66.67% respectively. Though in patients with gall stone and idiopathic etiology, proportion of patients categorized as mild acute pancreatitis was higher as compared to alcohol yet the difference was not statistically significant [Bar Graph 2].

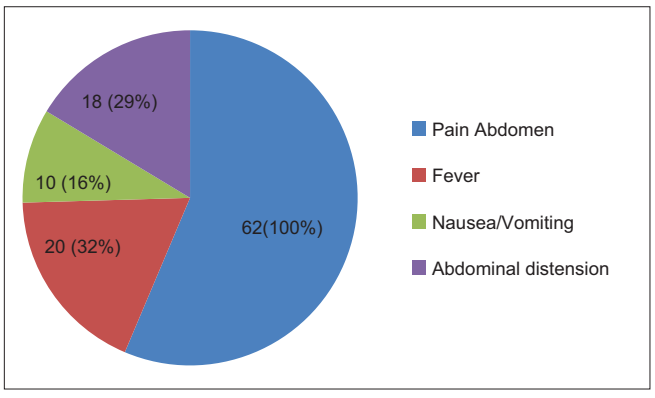
Discussion

In this study, majority (29.03%) of the patients were in the age group 31-40 years, 24.19% of the patients were in the age group 41-50 years and 19.35% of the patients were in the age group 21-30 years. Patients were between 18-70 years of age with mean age of 39 years. In similar studies, the mean age of 42.9 years (age range 18-80 years) was reported in a study by Raghu M G *et al*.[9] and the mean age of 30 years was reported by Baig *et al*.[10] This indicates that acute pancreatitis can occur in any age group but 30-50 age group is more affected.

In our study, 45.16% subjects were females and 54.84% were males (M:F = 1.2:1), which is comparable to studies by Negi *et al*.[11] (M:F = 2.6:1) and A C de Beaux[12] (M:F = 1.6:1). Increased



Pie Chart 2: Etiological distribution of patients



Pie Chart 3: Presenting complaints of patients

Table 2: Severity according to revised Atlanta classification and Modified CT severity index

	Severity according to					
	Revised Atlanta Classification			Modified CT Severity Index		
	Mild	Severe	Total	Mild	Moderate	Severe
Frequency	40	22	62	10	33	19
Percentage	64.52%	35.48%	100.00%	16.13%	53.23%	30.65%
				Mean±S.D.	5.13±2.53	
				Median (IQR)	4 (4-8)	

incidence of pancreatitis in male patients observed in earlier studies, may be attributed to higher prevalence of alcoholism.

Gall stone was the most common etiology (67.74% cases) observed in our study, followed by alcohol (17.74%) and idiopathic (14.52%). Since predominance of gall stones is more in women, especially in India, this may explain the higher prevalence of acute pancreatitis in females in our study. Marshall J B[13] in a study found that biliary stone and alcohol account for 60-80% cases of AP, while Steinberg *et al*.[14] mentioned that biliary disease is the most common cause of AP in the United states, Asia and most of Western Europe.

The average hospital stay of patients was 9 days (5-13) in mild pancreatitis and 13.5 days (9-18) in severe pancreatitis. However, in a study by Gurleyik *et al*.[15] mean hospital stay was 10.3 days (range 6-19 days) in mild cases and a mean hospital stay was 21.4 days (range 12-42 days) in severe cases. Banday *et al*.[16] reported 1.5, 6.9 and 14.2 days of hospital stay in mild, moderate and severe AP, respectively.

The duration of hospital stay was significantly higher in patients categorized as severe acute pancreatitis as compared to patients categorized as mild and moderate acute pancreatitis probably due to increased tissue damage by inflammatory mediators. However, duration of hospital stay was not found to be significantly associated with etiology.

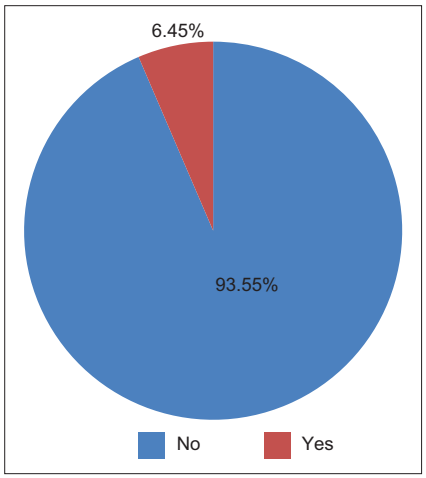
Value of lipase and duration of hospital stay was significantly higher in patients categorized as severe acute pancreatitis by revised Atlanta classification as compared to patients categorized as mild acute pancreatitis.

Gungor *et al*.[17] stated that there must be three times increase in serum amylase level for making a diagnosis of AP. In our study, values of amylase in patients categorized as severe acute pancreatitis was 913.73 ± 601.19 U/L and in mild cases it was 636.95 ± 313.3 U/L. Though the value of amylase was higher in severe as compared to mild pancreatitis, the difference was not found to be statistically significant.

A study by Gomez *et al*.[18] showed that serum amylase levels are not required and lipase level alone is sufficient to diagnose AP. No significant association was seen between amylase and severity of disease according to revised Atlanta classification and modified CT severity index. We found that values of amylase and lipase were higher in idiopathic etiology as compared to alcohol and gall stone but the difference was not statistically significant ($P > 0.05$).

Table 3: Complication/sequelae distribution of study subjects

Complication/Sequelae	Frequency	Percentage
No	38	61.29%
Yes	24	38.71%
Type of Complications: (Note- One patient can have more than one type of complication)		
Pleural effusion	18	29.03%
Necrosis	14	22.58%
MODS	4	6.45%
Ascitis	7	11.29%
Pseudocyst	3	4.84%
Total	62	100.00%



Pie Chart 4: Mortality distribution of study subjects

Table 4: Descriptive statistics of biochemical parameters

Biochemical parameters	Mean±SD	Median (IQR)
ALP (IU/L)	175.77±74.27	174.5 (132-197)
Serum amylase (U/L)	735.16±452.78	581 (412-969)
Lipase (U/L)	1200.23±1015.25	1000 (668-1327)
Blood urea (mg/dl)	36.44±13.81	36 (27-43)
Hemoglobin (g/dl)	10.95±1.28	10.9 (10-12)
Platelet count (lac/mm^3) (/microlitre)	2.72±1.1	2.42 (1.900-3.500)
Serum bilirubin (mg/dl)	1.17±0.53	1 (0.800-1.400)
Serum creatinine (mg/dl)	1.27±0.63	1.15 (0.900-1.800)
Serum sodium (meq/L)	138.6±4.11	138.5 (136-141)
Serum potassium (meq/L)	4.14±0.54	4.1 (3.800-4.400)
SGOT (IU/L)	62.53±27.79	63.5 (37-87)
SGPT (IU/L)	65.21±27.97	62.5 (38-89)
Total leucocyte count (/microlitre)	9062.9±3011.58	8700 (6700-10800)

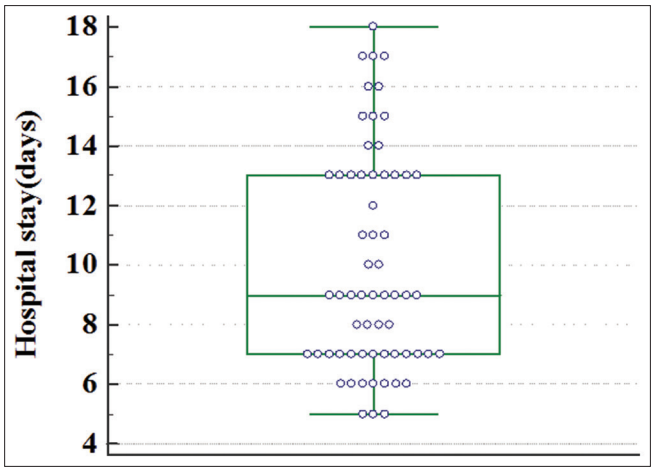
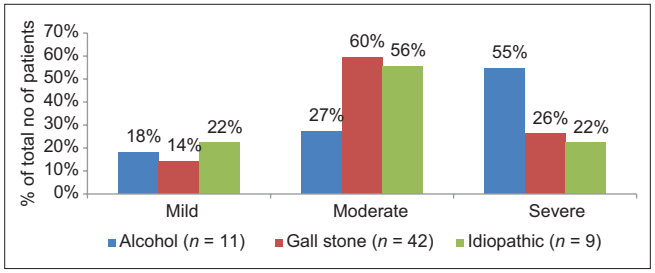
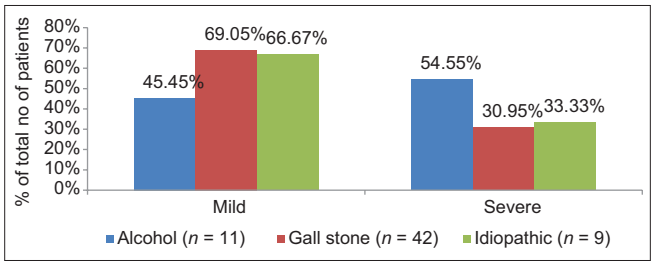


Figure 1: Descriptive statistics of hospital stay (days)



Bar Graph 1: Association of modified CT severity index and etiology



Bar Graph 2: Association of severity according to revised Atlanta classification and etiology

The incidence of complications in present study was 38.71%. Majority of patients had pleural effusion (29.03%) followed by necrosis (22.58%), ascites (11.29%), MODS (6.45%) and pseudocyst (4.84%). Chauhan Y *et al*.[19] also reported Pleural effusion in 22% patients and 18% was reported by Maharaul.[20] Viedma *et al*.,[21] Lankisch *et al*.[22] and Toh *et al*.[23] also noted that respiratory failure was the most common type of organ failure in SAP.

Abdominal pain (epigastric pain with radiation to the back) was the most common presenting complaint in all patients (100%) and fever was seen in 20% patients, which co-relates with the studies by Negi *et al*.[12] and Chauhan Y *et al*.[19]

Four out of 62 (6.45%) patients died due to severe acute pancreatitis. In our study, major cause of death was MODS. Mann *et al*.[24] and Banerjee *et al*.[25] separately noted that in acute pancreatitis the average mortality rate approaches 2-10% while Steinberg *et al*.[14] noted a mortality of 2-9% in his study.

Table 5: Descriptive statistics of hemodynamic parameters

Hemodynamic parameters	Mean±SD	Median (IQR)
Pulse rate (bpm)	87±11.48	88 (80-92)
Systolic blood pressure (mmHg)	120.44±14.1	122 (112-128)
Diastolic blood pressure (mmHg)	76.45±12.6	78 (68-88)

Conclusion

The clinician should be aware that acute pancreatitis can occur in any age group and gender due to different etiology. The diagnosis of AP is made on clinical and biochemical basis but the severity is not indicated by routinely used diagnostic biochemical parameters like amylase and lipase. It is difficult to predict the course of the disease in individual patients. Advanced age and associated comorbidities are known to be related to poor or delayed outcome. Early diagnosis and treatment of cases are expected to cut short the progression of disease. However, there are cases which progressed to severe acute pancreatitis inspite of early presentation and management. Therefore, severity of AP does not depend on etiology, age or gender and socioeconomic status. Most cases of SAP can be diagnosed on clinical and radiological findings and responds to timely appropriate management. Studies to assess the role of biochemical markers for early diagnosis of SAP are there but consensus is yet to be reached.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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