Original Article

Aetiology and Clinical Profile of Acute Pancreatitis in a Tertiary Care Hospital

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Abstract:

Background: Acute Pancreatitis is a potentially serious condition with an overall mortality of 10%. Early diagnosis is important for its management. So clinician must carefully evaluate the patient with history, physical examination, laboratory tests and imaging studies before arriving a correct diagnosis. Death is more likely in certain subgroups of patients including elderly, co-morbidity, severe coexisting hospital acquired infection and organ dysfunction. **Objectives:** To assess aetiology and clinical profile of acute pancreatitis in a tertiary care hospital. **Methods:** A six-month Cross sectional study carried out at the department of Medicine, Comilla Medical College. Ethical approval from the institutional review board was obtained to ensure patient privacy and confidentiality. **Results:** The majority of patients are within the age group of 21-60 years (88.4%), with a higher proportion of males (71.2%) than females (28.8%). The most common clinical presentations were abdominal pain (95.6%) and nausea/vomiting (89.6%). Idiopathic (38%) and gallstone-related (38.4%) causes were the most common etiologies, while necrotizing pancreatitis (9.6%) and pancreatic pseudocysts (4.8%) were the most frequent complications. Regarding outcomes, a majority of patients experienced a favorable prognosis, with 64.4% recovering and being discharged. However, the complexity and severity of some cases were evident, as 17.6% of patients required referral to higher levels of care for further management. Additionally, a small percentage of patients left against medical advice (14.8%), and mortality was observed in 3.2% of cases. Laboratory investigations played a crucial role in diagnosing acute pancreatitis, and elevated levels of serum amylase (64.4%) and lipase (95.2%) were prominent diagnostic markers. Other abnormal laboratory parameters, such as elevated transaminase (90.8%) and C-reactive protein (86.4%), provided valuable insights for diagnosis and management. **Conclusion:** The study found acute pancreatitis with a wide range of clinical presentations and aetiologies. Abdominal pain is the most common symptom and gallstones are the most common causes. The study has evaluated the outcomes and complications of acute pancreatitis indicating that a significant proportion of cases had a favorable prognosis. A notable proportion required referral to higher levels of care, suggesting the complexity and severity of some instances of acute pancreatitis. A smaller percentage left against medical advice, and a few cases resulted in mortality.

Keywords: Acute pancreatitis, Abdominal pain, Gallstone, Mortality.

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Introduction:

Acute Pancreatitis is an acute inflammatory process of the pancreas with variable involvement of regional tissues and remote organ system.[1,2] The average mortality rate in severe acute pancreatitis approaches 2-10%.[3] The diagnosis of acute pancreatitis requires two of the following three features: abdominal pain consistent with acute pancreatitis (acute onset of persistent, severe, epigastric pain often radiating to the back), serum lipase activity (or amylase activity) at least three times greater than the upper limit of the normal and characteristic finding of acute pancreatitis on Transabdominal Ultrasonogram and CECT. The American College of Gastroenterology (ACG) practice guidelines provide acceptable terminology for the classification of acute pancreatitis and its complications.[4] Acute pancreatitis is broadly classified (The Atlanta Classification) as mild and severe. The mild acute pancreatitis is often referred to as Interstitial Pancreatitis, based on its radiographic appearance. Severe acute pancreatitis implies presence of organ failure, local complications, or pancreatic necrosis. Interstitial pancreatitis implies preservation of pancreatic blood supply. The attack is mild in almost 80% of patients who will show marked improvement within 48 hours. In some 20% of patients however it is severe with high morbidity and mortality.[5,6] The first twelve hours are extremely important to provide appropriate management which decreases morbidity and mortality.[7,9]

There are many cases admitted in Cumilla Medical College Hospital every year and many of them have serious consequences. It is important to know the nature and severity of acute pancreatitis in order to take prompt appropriate measures to save lives and reduce morbidity and mortality. The incidence of mortality and morbidity of acute pancreatitis depends on the several factors, but the early detection and prompt management of the critically ill patients are the key components. With the view of this concept, we have designed this cross-sectional study to assess the clinical profile and aetiology of acute pancreatitis cases admitted in Medicine, Gastroenterology and Hepatology Department of this Hospital.The purpose of the study is to assess the clinical profile and aetiology of acute pancreatitis in tertiary care hospital.

Methods:

This hospital based cross sectional study was carried out in Department of Medicine, Gastroenterology and Hepatology, Comilla Medical College Hospital, Comilla, Bangladesh. A total of 250 patients with diagnosis as acute pancreatitis over period of six months July 2022 to December 2022 were included in this study. A predesigned case record form was used and detailed clinical history was recorded from the patient's history or written history sheet. Age, sex, address, symptoms and signs were noted. Relevant past history, family history and personal history, specially alcohol consumption were recorded. Associated medical diseases like diabetes mellitus, hypertension, chronic renal failure, bronchial asthma, chronic obstructive pulmonary disease (COPD) and ischemic heart disease were also noted. Results of haematological, biochemical and imaging tests were noted. The most likely aetiological factor was identified by analyzing history, physical examination and relevant investigations. Gall stone related acute pancreatitis, was based upon the identification of stone in the common bile duct (CBD). The data analysis was done using Statistical Packages for the Social Sciences (SPSS) 26. Informed consent were obtained from the patient/patient's relative. Approval of the study, its verification and ethical clearance was obtained from institutional review committee.

Selection criteria

Inclusion criteria:

- ✓ Age 12 to 80 years irrespective of gender.
- ✓ All acute pancreatitis cases admitted in Medicine Department.
- ✓ Those who are agree to take part in this study.

Exclusion criteria:

- ✓ Age below 12 years and above 80 years
- ✓ Chronic pancreatitis and pancreatic malignancy

History, physical examination and data considering demographic variables, clinical features, complications, laboratory and radiological findings were studied. Complete hemogram, liver function tests, renal function tests, serum amylase, serum lipase, random blood sugar, lipid profile, serum calcium, LDH, C-Reactive protein and arterial blood gas analysis were done for all the patients. Ultrasound of the abdomen was done at emergency at the time of presentation and repeated within next 48 hours.

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Data were collected covering the relevant parameters for the study. All categorical data were expressed in percent and absolute number. All numerical continuous data were expressed in mean ±SD. The data analysis was done using Statistical Packages for the Social Sciences (SPSS) 26. Informed consent was obtained from the patient/patient's relative. Approval of the study, its verification and ethical clearance was obtained from institutional review committee.

Results:

Table-I: Demographic characteristics of the study respondents (n=250)

Variables	Number of patients	Percentage (%)
Age group (years)		
<20	4	1.6
21-40	109	43.6
41-60	112	44.8
>60	25	10.0
Mean±SD Range (min-max)	43.7±11.8 (15-70) years	
Gender		
Male	178	71.2
Female	72	28.8
Male: female ratio	2.5:1	
Socioeconomic status		
Lower	38	15.2
Lower Middle	147	58.8
Middle	55	22.0
Upper middle	10	4.0

Table-I shows the demographic characteristics of the patients. The majority of patients were within the age group of 21-60 years, with 43.6% between 21-40 years and 44.8% between 41-60 years. The age range was broad, spanning from 15 to 70 years, with a mean age of 43.7 years and a standard deviation of 11.8. A smaller proportion of patients were either younger than 20 years (1.6%) or older than 60 years (10.0%). In terms of gender distribution, a higher number of male patients were included in the study, accounting for 71.2% of the respondents, while the remaining 28.8% were female. Regarding socioeconomic status, the majority of patients were within the lower-middle category, comprising 58.8% of the study participants. Lower socioeconomic status patients constituted 15.2%, while middle and upper-middle socioeconomic status patients accounted for 22.0% and 4.0%, respectively.

Table-II: Distribution of the study patients by clinical presentation (n=250)

Clinical presentation	Number of patients	Percentage (%)
Abdominal pain	239	95.6
Nausea and vomiting	224	89.6
Fever	56	22.4
Epigastric tenderness	170	68.0
Abdominal distension	81	32.4
Jaundice	33	13.2
Dehydration	8	3.2
Guarding	120	48.0

Table-II shows the distribution of clinical presentation of study patients. The most common symptom reported was abdominal pain, with 239 patients (95.6%) experiencing it. Nausea and vomiting were reported by 224 patients (89.6%). Epigastric tenderness was seen in 170 patients (68.0%), while guarding was noted in 120 patients (48.0%). Fever was reported by only 56 patients (22.4%). Abdominal distension was seen in 81 patients (32.4%) and jaundice in 33 patients (13.2%). Dehydration was the least commonly reported symptom, with only 8 patients (3.2%) experiencing it.

Table-III: Distribution of the study patients by comorbidities (n=250)

Comorbidities	Number of patients	Percentage (%)
DM	50	20.0
Hypertension	25	10.0
IHD	2.8	14.8
CKD	15	6.0
Others	4	1.6

Table-III shows the comorbidities of acute pancreatitis patients. Diabetes mellitus (DM) was the most prevalent comorbidity, affecting 20% of patients, followed by hypertension (10%) and chronic kidney disease (CKD) (6%). Ischemic heart disease (IHD) and

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multiple comorbidities were observed in smaller proportions.

Table-IV: Distribution of the study patients by aetiology (n=250)

Aetiology	Number of patients	Percentage (%)
Idiopathic	95	38.0
Gallstone	96	38.4
Hypertriglyceridemia	25	10.0
Infection	5	2.0
Obesity	10	4.0
Trauma	4	1.6
Pancreatic divisun	10	4.0
AKI	5	2.0
Total	250	100

Table-IV shows the distribution of the study patients by aetiology. The most common aetiologies were idiopathic and gallstone, each accounting for 95(38%) patients and 96(38.4%), respectively. Hypertrigly ceridemia was present in 25(10%) cases, while infection, obesity, trauma, pancreatic divisun, and AKI were less common, accounting for 5 (2.0%), 10(4%), 4(1.6%), 10(4.0%), and 5(2.0%) patients, respectively.

Table-V: Distribution of the study patients by outcome (n=250)

Outcome	Number of patients	Percentage (%)
Recover and discharged	161	64.4
Referred	44	17.6
Leave without medical advice	37	14.8
Expired	8	3.2
Total	250	100.0

Table V shows the distribution of the study patients by outcome. Out of 250 patients, 161 (64.4%) recovered and were discharged, while 44 (17.6%) were referred to other hospitals. Additionally, 37 (14.8%) patients left against medical advice, and 8 (3.2%) patients expired.

Table-VI: Distribution of the study patients by investigations profile (n=250)

Laboratory investigations	Number of patients	Percentage (%)
S. Amylase	161	64.4
Raised (>90 u/L)	158	63.2
Normal (<90 u/L)	92	36.8
S. Lipase		
Raised (>58 u/L)	238	95.2
Normal (<58 u/L)	12	4.8
Hb		
>10gm/dl	203	81.2
<10 gm/dl	47	18.8
TC of WBC		
>15000	62	24.8
<15000	188	75.2
RBS		
>10 mmol/L	30	12.0
<10 mmol/L	220	88.0
S. Calcium		
>8.0 mg/dl	196	78.4
<8.0 mg/dl	54	21.6
S. LDH		
Raised (>443 U/L)	129	51.6
Normal (<443 U/L)	121	48.4
CRP		
Positive	216	86.4
Negative	34	13.6
SGPT		
Raised (>42 U/L)	227	90.8
Normal (<42 U/L)	23	9.2
S. Bilirubin		
>1.2 mg/dl	33	13.2
<1.2 mg/dl	217	86.8
S. Albumin		
>3.2 gm/dl	181	72.4
<3.2 gm/dl	69	27.6
Raised S. creatinine	5	2.5
USG W/A	96	38.4
Hypertriglyceridemia	25	10.0

Table-VI shows the distribution of the study patients by investigations profile. Lab investigations in acute pancreatitis patients showed abnormality in various parameters. Raised serum amylase (>90 u/L) was

found in 161 (64.4%) patients, while 238 (95.2%) patients had raised serum lipase (>58 u/L). Raised SGPT (>42 U/L) was observed in 227 (90.8%) patients, and 129 (51.6%) patients had raised serum LDH (>443 U/L). Positive CRP was observed in 216 (86.4%) patients, and 33 (13.2%) patients had raised serum bilirubin (>1.2 mg/dL). Only five patients (2.5%) had raised serum creatinine levels.

Table-VII: Distribution of the study patients by complications (n=250)

Complications	Number of patients	Percentage (%)
Necrotizing pancreatitis	24	9.6
Pancreatic pseudocyst	12	4.8
Pancreatic abscess	9	3.6
Death	8	3.2
No complications	197	78.8
Total	250	100.0

Table VII showed that 24(9.6%) patients had necrotizing pancreatitis, 12 (4.8%) had pancreatic pseudocyst, 9 (3.6%) had pancreatic abscess, and 8 (3.2%) died. The majority of patients, 197 (78.8%), did not experience any complications.

Discussion:

Worldwide acute pancreatitis is a relatively common disease with incidence of 5-80 per 1,00,000 population. Early diagnosis and treatment is required to reduce morbidity and mortality.10This study was performed to evaluate the clinical profile and aetiology of acute pancreatitis in Comilla Medical College Hospital, Comilla, Bangladesh.

At present studies have showed the demographic characteristics of the patients who participated in a study on the clinical profile and etiology of acute pancreatitis in CoMCH. The study included 250 patients. The majority of patients were between the ages of 21-60 years old, with 43.6% in the 21-40 age group and 44.8% in the 41-60 age group. The mean age of the patients was 43.7±11.8 years, with a range of 15-70 years old. In accordance this Bhattaraiet al.11reported the mean age of acute pancreatitis patient was 44±10.87 years with a range of 21- 68 years of age. Ahmed et al.12 reported age range 13 to 74 years, with a mean age of 37 years. Another study13 noted the mean age of patient was 39.1 years. The maximum age was 80 years and minimum age was 18 years. Other comparable to studies[14,15,16] noted most cases of Acute Pancreatitis was seen in 20-39 year of age group (57.77%).

In present study showed the male to female ratio was 2.5:1, with 71.2% of respondents being male and 28.8% being female. Ahmed et al.[12] reported 32(64%) patients were male and eighteen (36%) were female, male to female ratio was 1.78:1. Das et al.[16] reported males contributed 96% of the patient population and females were 4% only. Nawahreshaet al.[17] noted among the 61 consecutive patients 87% of the patients with acute pancreatitis were males. This finding is similar to the other study[18] which have shown male predominance.

In present study showed the most common symptom was abdominal pain 95.6% of patients, nausea and vomiting by 89.6%, fever by 22.4%, epigastric tenderness by 68.0%, abdominal distension by 32.4%, jaundice by 13.2%, dehydration by 3.2%, and guarding by 48.0% of patients. Similar findings reported by Yadavet al.[13] the majority of patients (100%) experienced pain in their abdomen and also tenderness. Vomiting was reported by 73.33% of patients, while 44.44% of patients had abdominal distention. Fever was present in only 24.44% of patients, and jaundice was reported in 8.88% of patients. A significant percentage of patients (66.66%) had guarding, and only 17.77% of patients had a mass in their abdomen. Datet al.[16] reported most common symptom observed was abdominal pain (100%) followed by vomiting (85%) and fever (3%). This correlates with the studies by Negi et al,[14] where vomiting 42.27% and fever 22.4% were seen respectively. In the study done by Ahmed et al,[12] the most common symptoms were upper abdominal pain (96%), nausea and vomiting (88%), abdominal distension (40%) and fever (12%) which correlates with our study. Similar findings were observed in the study done by Rojas et al.[19] in which the triad of epigastric pain, nausea and vomiting was seen in 97.4% patients and Mathan et al.[20] reported the most common symptom observed was abdominal pain (100%) followed by vomiting (85%), guarding (50%), jaundice (14%). The clinical presentation varies from case to case, depending on severity of acute pancreatitis and any underlying co-morbidities. Mild acute pancreatitis present with minimal organ dysfunction and uneventful recovery, while severe acute pancreatitis is associated with local and systemic complications and high mortality.

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In present study showed the comorbidities of acute pancreatitis patients. Diabetes mellitus (DM) was the most prevalent comorbidity, affecting 20% of patients, followed by hypertension (10%) and chronic kidney disease (CKD) (6%). Ischemic heart disease (IHD) and other comorbidities were observed in smaller proportions. Bhattarai and Gyawali[11] reported 33(53.2%) had some form of preexisting co-morbidities. Hypertension, Diabetes Mellitus and coronary artery diseases were the most common co-morbidities. In accordance, Babu et al. demonstrated 15 comorbidities in total, of which 7 (46%) were diabetes mellitus, 3 (21%) were renal calculi, and 5 (33%) were liver disease brought on by alcoholism.

In present study showed the most common aetiologies were idiopathic and gallstone, each accounting for 95(38%) patients and 96(38.4%), respectively. Hypertriglyceridemia was present in 25(10%) cases, while infection, obesity, trauma, pancreatic divisun, and AKI were less common, accounting for 5 (2.0%), 10(4%), 4(1.6%), 10(4.0%), and 5(2.0%) patients, respectively. Similarly, Goelet al.22 reported the etiology of acute pancreatitis out of the 100 patients, 56% had gallstones, 25% had alcohol-related pancreatitis, 15% had idiopathic pancreatitis, 3% had pancreatitis as a result of post-endoscopic retrograde cholangiopancreatography (ERCP), and 1% patient had pancreatitis due to trauma. Negi et al.14 reported the etiology of acute pancreatitis, 73 (59.35%) had alcohol-related pancreatitis, 40(32.52%) had pancreatitis due to gallstones, 5 (4%) had idiopathic pancreatitis, 3 (2.44%) had pancreatitis due to hypertriglyceridemia, 1 (0.81%) had pancreatitis as a result of post-endoscopic retrograde cholangiopan creatography (ERCP), and 1 (0.81%) patient had autoimmune pancreatitis. In a study by Simoeset al.21 the most common etiology was alcoholconsumption (39.3%) followed by gallstones (24.1%). Yadav et al.13 noted the incidence of gall stones was 71.1% whereas the incidence of alcohol induced pancreatitis was 26.6 % which is similar to Kashid,[22] where the incidence of gall stones was found to be 36.4 % and that of alcohol 29.1 %. In the study done by Buchleret al.[23], incidence of gall stones as 45 %. Other studies by Zarnescuet al.[24], Alkareemy EA et al.[25] also shows that the incidence is more in biliary pathology.

In presents study showed the lab investigations in acute pancreatitis patients showed abnormality in various parameters. Raised serum amylase (>90 u/L) was found in 161 (64.4%) patients, while 238 (95.2%) patients had raised serum lipase (>58 u/L). Raised SGPT (>42 U/L) was observed in 227 (90.8%) patients, and 129 (51.6%) patients had raised serum LDH (>443 U/L). Positive CRP was observed in 216 (86.4%) patients, and 33 (13.2%) patients had raised serum bilirubin (>1.2 mg/dL). Only five patients (2.5%) had raised serum creatinine levels. Concordance, Bhattarai and Gyawali11 reported serum amylase and serum lipase were raised in 60(96.8%). Serum amylase was raised more than 3 times in 54(87.1%) patients. Significant rise in serum lipase (more than 3 times) was seen in 48 (77.4%). Serum AST, LDH and CRP were raised in 56 (90.3%), 43(69.3%) and 36(58.1%) patients respectively. Low serum calcium (<8mEq/L) was seen in six (9.6%) cases. Blood urea and serum creatinine were raised in 12 (19.4%) cases. Rojas et al.[19] pancreatic enzymes were found to be elevated in most cases: amylase and lipase were measured at 36% and 84%, respectively.

The current study revealed that a significant majority of patients (64.4%) experienced successful recovery and were subsequently discharged, indicating a favorable prognosis. Nonetheless, a noteworthy proportion of cases (17.6%) necessitated referral to higher levels of medical care, underscoring the complexity and severity inherent in certain instances of acute pancreatitis. A smaller fraction of patients (14.8%) chose to depart against medical advice, while a minor percentage 3.2% mortality. Among the range of complications observed, necrotizing pancreatitis was the most prevalent, affecting 9.6% of the patients. Additionally, 4.8% of cases exhibited pancreatic pseudocysts, and 3.6% presented with pancreatic abscesses. The majority of patients (78.8%) encountered no complications during their course of treatment. Comparatively, the findings of other studies offer valuable context. Goelet al.[21] identified pseudocyst formation in 10% of patients, necrosis in 5%, and infected necrosis in 1%. Rojas et al.[19] reported that out of 323 acute pancreatitis patients, 83.6% experienced an uneventful course, while 10.9% faced necrotizing pancreatitis, 2.3% developed pancreatic pseudocysts, 2.1% manifested pancreatic abscesses, and 1.0% developed diabetes mellitus. The overall mortality rate in their study was 4.1%. Similarly, Kurreyet al.[26] found that 16% of patients suffered from necrotizing pancreatitis, while 4% developed pseudocysts.

Conclusion:

It can be concluded that acute pancreatitis is a relatively common disease with a wide range of

clinical presentations and etiologies. Abdominal pain is the most common symptom and gallstones are the most common causes. Diabetes mellitus is the most prevalent comorbidity. The majority of patients experience successful recovery, but a significant proportion may require referral to higher levels of medical care or encounter complications such as necrotizing pancreatitis, pseudocysts, or pancreatic abscesses. Early diagnosis and treatment are crucial to reducing morbidity and mortality.

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