

## ORIGINAL ARTICLE

### Clinical profile of acute pancreatitis in a teaching hospital

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#### Abstract

**Background:** Acute pancreatitis is a potentially fatal disease. Mortality and morbidity depends on severity of the disease

**Objective:** To find out the clinical presentation and to optimize the treatments.

**Method:** This hospital based cross sectional descriptive study was performed to find out the clinical presentations of acute pancreatitis from the available clinical, biochemical, haematological and radiological data.

**Results:** A total of 50 cases were studied. Age range was 13 to 74 yrs, with a peak incidence in the fourth decade. Male to female ratio were 1.78:1. Among the known aetiological factors 18% were due to gallstone disease and 10% due to alcoholism. Most common symptoms were upper abdominal pain (96%) and nausea, vomiting (88%). Among the clinical signs most common were abdominal tenderness (92%) and muscle guard (66%). In this study 82% patients had mild and 18% had severe acute pancreatitis. Overall mortality rate was 6%. Mortality was significantly higher (33.33%) in severe acute pancreatitis (33.3% vs 0%).

**Conclusion:** A higher mortality was associated with concomitant medical or surgical diseases, but not to age or sex. A higher mortality was associated with leucocytosis but not to haemoglobin level. Among the biochemical parameters tested, a high blood glucose and serum creatinine level and a lower serum albumin and calcium level were significantly associated with a higher mortality.

**Key words:** Acute pancreatitis, Mortality, Morbidity.

#### Introduction

Acute pancreatitis is an acute inflammatory process of the pancreas with variable involvement of regional tissues and remote organ systems.<sup>1</sup> The incidence of pancreatitis varies in different countries and depends on cause e.g., alcohol, gallstones, metabolic factors and viral infections. The estimated incidence in industrialized countries is 10-20/100,000 per year.<sup>2</sup> There are many causes of acute pancreatitis, but the mechanisms by which these conditions trigger pancreatic inflammation have not been identified.<sup>3</sup> Gall stones continue to be the leading cause of acute pancreatitis in most series.<sup>4</sup> Gall stone pancreatitis is more common in women than in men. Alcohol is also a common cause of acute pancreatitis.<sup>5</sup> Alcoholic pancreatitis is more common in men, and usually occurs in individuals with long standing alcohol abuse. Hypertriglyceridemia is the cause of acute pancreatitis in 1.3 to 3.8% of cases.<sup>6</sup> Approximately 2 to 5% of cases of acute pancreatitis are drug related. Drugs cause pancreatitis either by a hypersensitivity reaction or by the generation of a toxic metabolites.<sup>7</sup>

Early accurate diagnosis is very important for its management. Symptoms of acute pancreatitis vary considerably. Some patients have mild epigastric discomfort that may mimic peptic ulcer. Others suffer from an acute catastrophic illness that cannot be readily distinguished from such severe intra abdominal condition as perforated duodenal ulcer or mesenteric infarction. For this reason the clinician must carefully evaluate information derived from other sources that supplement the history and physical examination including laboratory tests, imaging studies before arriving at a correct diagnosis of acute pancreatitis. Removal of factors that may have precipitated the attack is one of the important aspects of management of acute pancreatitis. If the cause of the attack can be eliminated there will be no further attacks and the pancreas will return to normal in terms of its morphology and function.<sup>8</sup> The variation in the etiology of pancreatitis from series to series is quite marked and depend on the country of origin.<sup>9</sup>

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In this potentially fatal disease, mortality depends on the severity. Most attacks of acute pancreatitis are mild and death is unusual in such patients. Mortality and morbidity is very high in those with severe acute pancreatitis. So grading of severity is of critical importance in providing appropriate therapy in acute pancreatitis. Studies suggest that outcome of an attack of acute pancreatitis can be improved by early treatment and therefore, urgent treatment of severe acute pancreatitis will reduce morbidity and mortality.<sup>10-12</sup> Many attempts have been made to improve the recognition of a severe attack at the onset. Combinations of clinical and laboratory data that can indicate the severity of acute pancreatitis within first 48 hours after admission have been developed by Ranson and colleagues and clinician from Glasgow. APACHE II illness grading system can also be used to predict severity.<sup>13</sup> All those systems are cumbersome and such combination system has low sensitivity in clinical practice.<sup>14</sup> A number of risk factors have been evaluated in the clinical setting. These include markers of pancreatic injury and of inflammatory response, together with simple routine tests and imaging methods.<sup>15</sup> However, these markers are not available in every hospital and some of them proved not to be useful in current clinical practice. The main objective of this study was to observe the clinical presentations of acute pancreatitis.

### Patients and Methods

This was a cross sectional descriptive study carried out at Department of Medicine and Department of Surgery, Rajshahi Medical College Hospital from May 2009 to April 2011. In this study a total 50 cases of acute pancreatitis were analyzed. All ages of both sexes of patients were included, the diagnosis of acute pancreatitis was based on the presence of appropriate clinical evidence associated with an elevation of serum amylase and/or urinary amylase. Normal value of serum amylase is upto 220 U/L and that of urinary amylase is upto 400 U/L. Patient with a serum amylase level greater than upper limit of normal value with a diagnosis of pancreatic or periampullary cancer, chronic pancreatitis, perforation of the gut and diabetic ketoacidosis were excluded from 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) by sonography. Alcohol, mumps or trauma was considered to be aetiological factor from the history. A pancreatobiliary ascariasis was diagnosed on the basis of sonographic findings. When the triglyceride level was above 1000 mg/dl, it was considered to be the aetiological factor. When no known cause was found it was termed idiopathic.

Criteria of severity was based on the Glasgow criteria. Acute pancreatitis was defined as an acute inflammatory process of the pancreas with variable involvement of regional tissues and remote organ systems. To evaluate prognostic factors, a standard scoring system like Ranson, Glasgow or APACHE II, all data were not available. Available data of all the studied patients were analysed to find out the important prognostic factors. Data of survivors and non survivors were compared two demographic (age and sex), two haematological (haemoglobin and total white cell count), five biochemical (blood sugar, serum bilirubin, aspartate aminotransferase, serum albumin and serum calcium) parameters. Blood glucose level in those patients previously diagnosed diabetic were not analyzed for the prognostic purpose. Patients were stratified in four age groups (i.e., below 20 years, 20 to 40 years, 41 to 60 years and above 60 years). Survivors were defined as patients discharged alive from the hospital and nonsurvivors as those who died from acute pancreatitis or its complications during hospitalization.

### Results

Out of 50 cases 5(10%) were below 20 years of age, 27 (54%) were between 20 and 40 years, 14 (28%) were between 41 and 60 years and 4 (8%) were above the age of 60 years. Age range was 13 to 74 years, with a mean age of 37 years. Thirty

**Table I**

Demographic Profile of Patients (N=50)

Age (Yrs)	Male	%	Female	%	Total	%
<20	1	3.13	4	22.22	5	10
21-40	18	56.25	9	50	27	54
41-60	10	31.25	4	22.22	14	28
>60	3	9.37	1	5.56	4	8
Total	32	100	18	100	50	100

two (64%) patients were male and eighteen (36%) were female, male to female ratio was 1.78:1. In gallstone related pancreatitis out of 9 patients 6 (18.75%) were female and 3(9.37%) were male (M:F

ratio was 1:2) (Table 1). Out of 50 patients, 9(18%) had gallstone related pancreatitis. Pancreaticobiliary ascariasis was found in 2 (4%) patients. Alcoholism was found in 5 (10%) cases, trauma in 1 (2%) case, mumps in 2 (4%), hypertriglyceridemia in 1 (2%) cases. No cause is found in 30 (60%) cases (Table 2).

**Table 2**  
Aetiological factors of acute pancreatitis (N=50)

Aetiology	Male		Female	
	Total	Percentage	Total	Percentage
Gall Stone	3	9.37	6	18.75
Alcohol	5	15.62	0	00
Ascariasis	1	3.12	1	3.12
Trauma	1	3.12	0	00
Post Mumps	1	3.12	1	3.12
Hypertriglyceridemia	1	3.12	0	00
No Cause Found	20	62.50	10	31.25

Out of 50 patients, 47 (94%) patients present with abdominal pain. Forty four (88%) patients had nausea and vomiting. Abdominal distension was present in 20 (40%) patients while fever was present in 6(12%) patients. Two (4%) patients came with other symptoms. Physical examination revealed abdominal tenderness in 46 (92%) patients, abdominal mass in 4 (8%) patients, ascites in 9 (18%) patients. Jaundice was found in 5 (10%) of patients. Thirty three (66%) had muscle guard. One (2%) of patient developed other signs (Table 3).

**Table 3**  
Presenting features of acute pancreatitis (N=50)

Presenting C/F	Male		Female	
	Total	%	Total	%
Abdominal Pain	29	90.62	18	100
Nausea & Vomiting	26	81	18	100
Abdomen Distension	12	37.50	8	44.44
Fever	4	13	2	11
Abdominal tenderness	28	87.50	18	100
Abdominal mass	4	13	0	00
Ascites		21.87	2	11.11
Jaundice	2	6	3	17
Muscle Guard	20	62.50	13	72.22
Others	1	3.12	1	5.56

All patients underwent sonographic test. Out of 50 patients, 23 (46%) patients revealed swollen or enlarged pancreas. Cholelithiasis were identified in 9 (18%) patients, choledocholithiasis in 3 (6%) patients. Ascites were detected in 6 (12%) patients, biliary ascariasis in 2 (4%) patients. Pancreas sonologically appeared normal in 23 (46%) patients (Table 4). Biochemical parameters are tested. Out of 50 patients, haemoglobin level was 10 gm/dl or above were 43 (86%) patients and

7 (14%) patients were below this level. TC of WBC >15000/mm<sup>3</sup> were in 15 (30%) patients but 35 patients were below this level. Out of the biochemical parameters tested a higher leucocyte count was associated with

**Table 4**  
USG findings of acute pancreatitis (N=50)

USG Findings	Male		Female	
	Total	%	Total	%
Swollen/ Enlarged Pancreas	18	56.25	5	27.77
Normal Pancreas	10	31	13	72
Cholelithiasis	1	3	4	22.22
Choledocholithiasis	1	3	2	11
Ascites	4	12.50	2	11.11
Biliary Ascariasis	1	3	4	22

high mortality, but a low haemoglobin level was not associated with increased mortality. A low serum calcium and albumin and a high blood glucose level were associated with higher mortality. Serum bilirubin and aspartate aminotransferase were found not to be associated with increased mortality (Table 5).

**Table 5**  
Biochemical profile of acute pancreatitis (N=50)

Biochemical profile	Total	Male		Female	
		%	Total	%	
Hb% $\geq$ 10gm/dl	28	88	15	84	
Hb% <10gm/dl	4	12	3	16	
TC of WBC $\geq$ 15,000/mm <sup>3</sup>	12	38	3	16	
TC of WBC < 15,000/mm <sup>3</sup>	20	62	15	84	
RBS (>10mmol/L)	3	9	0	0	
RBS ( $\leq$ 10mmol/L)	29	91	18	100	
S. Bilirubin (>1.2mg/dl)	1	3	1	5	
S. Bilirubin ( $\leq$ 1.2mg/dl)	31	97	17	95	
S. ALT (> 45 IU/L)	2	6	1	5	
S. ALT (< 45 IU/L)	30	94	17	95	
S. Albumin (> 3.2gm/dl)	30	94	16	89	
S. Albumin ( $\leq$ 3.2gm/dl)	2	6	2	11	
S. Calcium ( $\geq$ 8.5 mg/dl)	31	97	15	84	
S. Calcium ( $\leq$ 8.5 mg/dl)	1	3	3	16	

Only 20 (40%) patients developed complications. Out of these 20 patients, 7 patients were male and 13 patients were female. Hypocalcaemia developed in 4 (8%) patients, pancreatic pseudocyst in 3 (6%) patients, ascites with left sided pleural effusion in

**Table 6**  
Complications of acute pancreatitis (N=50)

Complications	Male		Female	
	Total	%	Total	%
Hypocalcemia	1	3	3	17
Pseudocyst	3	9	0	00
Ascites e P. Effusion	2	6	6	33
Upper GI Bleeding	1	3	1	5
Obstructive Jaundice	0	00	3	17

8 (16%) patients, upper gastrointestinal bleeding in 2 (4%) patients and obstructive jaundice in 3 (6%) cases (Table 6).

### Discussion

This was a retrospective study on 50 cases of acute pancreatitis. Only those cases who were admitted into RMCH were subjected to study. Hence these results cannot be considered to represent results of acute pancreatitis cases in the community. Acute pancreatitis is a disease that varies in severity ranging from a mild and self limiting illness to a very severe and rapidly progressive condition leading to multiple organ failure and eventually to death. An early diagnosis and identification of those who are at risk of development of severe disease and rapid institution of therapy might reduce the morbidity and mortality. If the aetiological factor/factors are known and can be eliminated, further attacks can be prevented.

In this study the age range of patient was 13 to 74 years with a peak incidence is in the fourth decade. In western countries the peak incidence of alcoholic pancreatitis is in the fifth decade, whereas pancreatitis associated with gallstones and other causes peaks in the seventh decade. In New York and Atlanta the peak age incidence of alcoholic pancreatitis is 44 and 38 yrs respectively. In our country the lower age incidence of acute pancreatitis may be due to lower life expectancy of Bangladeshi people, occurrence of gallstone disease in the female in early age due to early marriage and multiple pregnancy. Study data showed that ascariasis, mumps and trauma are common aetiological factors, that more commonly affect younger age group. In industrialized countries acute pancreatitis more commonly affects male than female and this is due to increased alcohol consumption by male. In female it is more commonly related to gallstone disease. In this study there is male predominance (Male: Female = 1.78:1).

In different series of the USA, Western Europe and Asia, gallstone are the most common cause of acute pancreatitis accounting for approximately 45% cases. Alcohol is the second most common cause. However, the variation of aetiology of pancreatitis is quite marked and depends on country of origin. In this study most cases (60%) were idiopathic i.e., no cause is found. These cases are probably related to viral or bacterial infection which needs further exploration. Gallstone ranks the second among the known aetiological factors (18% cases). The high incidence of idiopathic acute pancreatitis in our country is due to higher prevalence of infections because of poor nutrition, poor sanitation, over crowding and lack of knowledge.

In many countries where alcohol is freely consumed it is the leading cause of acute pancreatitis. In our series only 10% cases were due to alcohol. This low incidence in contrast to Western countries reflects the socio cultural and religious factor that discourage alcohol consumption in our country. Mumps is a rare cause of acute pancreatitis in developed countries. But in our study it seems to be an important aetiological factors accounting for 4% cases. This higher incidence may be due to over crowding. Blunt trauma to the abdomen is a recognized cause of acute pancreatitis, which results from the disruption of the pancreatic ductal system. Blunt trauma from road traffic accidents is the dominant cause in Europe while direct injury by a knife or bullet is more common in North America. In this series there were only 1(2%) case which was caused by blunt trauma to abdomen. Hypertriglyceridemia was responsible in 1(2%) case. Triglyceridemia levels exceeding 1000 mg per deciliter increases the risk of pancreatitis. In this study 1(2%) case developed pancreatitis due to hypertriglyceridemia which is consistent with that of other countries.

In this study a large group of patient, no cause could be identified. This so called idiopathic cause is the most common cause of acute pancreatitis in most Western series. Recently, two prospective studies on consecutive patients with apparently idiopathic pancreatitis showed that two thirds to three fourths had microlithiasis as the presumed cause, as documented by biliary drainage studies, follow up sonogram and ERCP with sphincterotomy or cholecystectomy. No such data was available in the hospital documents of studied patients in this series. In McMohan study most patients had upper abdominal pain 'With radiation to the back in 50% cases, vomiting in 75% cases and respiratory

distress was common in severe pancreatitis.<sup>16</sup> In the present study most common symptoms were upper abdominal pain (96%) with a radiation to back in most patients, nausea and vomiting (88%), abdominal distension (40%), fever (12%) and other symptoms in 4% cases. In our study most common signs were abdominal tenderness (92%), abdominal mass (8%), ascites (18%), jaundice (10%), muscle guard (66%) and other signs in 2% cases.

All patients of this series underwent ultrasonographic examinations. More than 46% of patients had sonographic abnormalities of pancreas. Forty six (46%) percent pancreas appeared to be normal which may be due to poor visualization of the gland. Despite remarkable advances in the understanding of pathophysiology of acute pancreatitis and advances in supportive and intensive care, the overall mortality rate for patients with acute pancreatitis has remained in the range of 10% for over last 40 yrs. A large prospective study showed that 3 of every 4 patients with acute pancreatitis will have a mild form of the disease which promptly responds to supportive measure. The fourth patient, however, will have a severe episode and approximately half of those patients will suffer from a complication and one third of them will die.<sup>17</sup>

In our series, 41(82%) patients had mild and 9 (18%) had severe acute pancreatitis with an overall mortality rate of 6%. Mortality was significantly higher in severe pancreatitis than mild pancreatitis. Now a days infectious complications of acute pancreatitis account for more than 80% of all death from this disease. It seems clear, that if the mortality rate in acute pancreatitis is to be reduced, attention must be directed toward the identification and management of patients with various infectious complications. Early identification of these patients who are at increased risk for the development of complications may have significant therapeutic implications. Careful and repeated clinical evaluation is clearly of paramount importance in the management of individual patients.<sup>15,18</sup> Early clinical findings have also been reported to have prognostic value. These include age, fever, physical abnormality of the chest, a palpable mass and detectable intraabdominal fluid.

Renal failure used to be a relatively common complication of acute pancreatitis and was associated with high mortality. In many cases, renal insufficiency may have been due to hypovolemia and hypotension. In this study, a higher total white cell count was associated with higher mortality and among the biochemical

parameters tested a high blood sugar and serum creatinine level and a lower serum albumin and calcium levels were significantly associated with a higher mortality. However, this study did not show any relationship between serum bilirubin, aspartate transaminase (AST), alkaline phosphatase, serum potassium levels and a higher mortality. A higher aspartate transaminase (AST) and hypokalaemia were not found to be associated with a higher mortality rate. In Ranson's and Briisando's experience a high blood sugar, serum creatinine and aspartate transaminase and low serum calcium and albumin were associated with poor prognosis.<sup>19,20</sup>

In these series, it is evident that idiopathic cause is the main cause of acute pancreatitis in our country. Gallstone has emerged as the second most important cause of acute pancreatitis. Alcoholism is the third most important cause of acute pancreatitis in this study. Mumps, traumas and hypertriglyceridemia are also important aetiological factors. Majority of the patients of acute pancreatitis presented with abdominal pain, vomiting, fever and respiratory distress. Many of them had tachycardia, hypotension, epigastric tenderness and rigidity. Concomitant medical diseases like diabetes mellitus, bronchial asthma, COPD, CRF and fever >1000F within two days of onset of abdominal pain should be considered as poor prognostic factors, similarly a white blood cell count >15,000/mm<sup>3</sup>, a high serum creatinine and a low serum albumin, calcium and presence of pleural effusion should also be considered as poor prognostic factors and such patients should be managed in a high dependency or intensive care unit.

## Conclusion

Overall mortality rate was 6% and mortality was significantly high (33.33%) in severe acute pancreatitis. A higher mortality was associated with concomitant medical or surgical diseases, but not to age or sex. A higher mortality was associated with leucocytosis but not to haemoglobin level. Among the biochemical parameters a high blood glucose and serum creatinine level and a lower serum albumin and calcium level were significantly associated with a higher mortality.

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