

# Clinical and Biochemical Characteristics of Acute Pancreatitis Patients Attended in a Tertiary Hospital of Bangladesh

Shaifuddin SM<sup>1</sup>, Sarker JJ<sup>2</sup>

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## Abstract

**Introduction:** Acute pancreatitis is a complex, life-threatening disease resulting from acute inflammation of the pancreas which causes considerable morbidity and mortality among the patients.

**Objective:** To find out the clinical and biochemical characteristics of acute pancreatitis patient attended at the Combined Military Hospital (CMH) Dhaka.

**Methods:** This observational study was conducted at CMH Dhaka among 40 patients of acute pancreatitis admitted from 1st January 2013 to 30th June 2013. Data were collected through face-to-face interview using a pre-tested semi-structured questionnaire and review of the hospital records.

**Results:** Highest number of the respondents (42.5%) belongs to the age group of 20-39 years. The mean age was 44.90 years ( $\pm 13.46$ ) years and 60.0% of them were male. More than half (57.5%) of the respondents had monthly income in the 20001 to 50000 Taka with average of 31,650 ( $\pm 15,255.60$ ) Taka. All the patients presented with pain in the abdomen which was followed by nausea/vomiting (82.5%), abdominal distention (72.5%). On examination, it was revealed that all the respondents had abdominal tenderness which was followed by muscle guard (10.0%), ascites (7.5%) and jaundice (5.0%). Almost half (47.50%) of the respondents developed acute pancreatitis due to stone in the gall bladder which was followed by idiopathic origin (30.0%). Eighty five percent of the patients had severe symptoms and rest (15%) had mild symptoms. All the respondents had elevated serum amylase level and 82.5% had elevated serum lipase level.

**Conclusion:** Acute pancreatitis mostly affect young adult male. Most common clinical presentations are upper abdominal pain, nausea/vomiting and abdominal tenderness. Gallstone is the commonest cause of the condition. Serum amylase is the most important biochemical abnormality found in acute pancreatitis.

**Key words:** Acute Pancreatitis, Abdominal Pain, Gall Bladder Stone, Combined Military Hospital.

## Introduction

Acute pancreatitis (AP), is an acute inflammatory condition of pancreas which can involve surrounding tissue and distant multiple organ function.<sup>1</sup> The incidence of pancreatitis varies in different countries. There are different causes of acute pancreatitis like alcohol, gallstones, metabolic factors and viral infections. The estimated incidence of acute pancreatitis in developed nations is 10-20/100,000 per year.<sup>2</sup> It is a complex, life-threatening disease that has many different etiologies, various clinical presentations, multiple serious complications and in most of the time an unpredictable clinical course. The disease may range from a mild, self-limiting inflammatory process to serious clinical manifestation and metabolic derangements.<sup>3</sup> There are many causes of acute pancreatitis, but the mechanisms by which these conditions trigger pancreatic inflammation is yet to be explained.<sup>4</sup> Gall stone continue to be the leading cause of acute pancreatitis in most series (30-60%). Then comes alcohol which is responsible for 15-30% of cases of the condition.<sup>5</sup> Approximately 2 to 5% of cases of acute pancreatitis are caused by drug. Hypersensitivity to drugs or production of toxic metabolites leads to pancreatic inflammation and necrosis.<sup>6</sup> There are many other less common causes of acute pancreatitis including trauma, toxins, infections, anatomic abnormalities and metabolic derangements including hypertriglyceridemia. Diagnosis is usually based on characteristic symptoms, in conjunction with elevated serum pancreatic enzymes. For the diagnosis of acute pancreatitis requires two of the following three findings: 1) upper abdominal pain characteristic of acute pancreatitis, 2) serum amylase and/or lipase three or more times of the upper limit of normal and 3) characteristic findings of acute pancreatitis on CT scan.<sup>7</sup> The natural course of acute pancreatitis varies from a mild inflammation to a severe necrotizing disease. Most episodes of acute pancreatitis are mild and self-limiting, resolving on its own within 3-5 days. Early recognition is very crucial for its overall management. Symptoms of acute pancreatitis vary considerably. Some patients have mild to moderate upper abdominal pain that may resemble peptic ulcer disease while others suffer from an acute severe illness. Severe intra-abdominal condition such as duodenal ulcer perforation or mesenteric ischemia is

1. Col Syed Mohammad Shaifuddin, MBBS, FCPS, Classified Specialist in Medicine, Combined Military Hospital (CMH) Ghatail, Shaheed Salahuddin Cantonment (E-mail: shaifs75@gmail.com) 2. Dr Jaida Jalal Sarker, MBBS, MPH, Medical Officer, Upzilla Health Complex, Gopalpur, Tangail.

difficult to be differentiated from severe disease. That is why information derived from different sources that supplement the history and physical examination including laboratory reports, imaging findings before arriving at a final diagnosis of acute pancreatitis must be evaluated meticulously. Immediate stoppage of factors that may have precipitated the attack is one of the essential measure of management of acute pancreatitis. Chances of recurrent acute pancreatitis will be lessened and the pancreas will return to normal both anatomically and physiologically if the precipitant factor can be eliminated.<sup>8</sup> Medical management is adequate for patient with mild disease, requiring little more than intravenous fluid resuscitation and analgesic. In contrast, severe pancreatitis is defined as pancreatitis associated with damage to the local/surrounding tissue leading to necrosis, abscess formation and or multiple organ dysfunctions. About 15-20% of all cases of acute pancreatitis present as severe disease.<sup>9</sup>

The initial assessment of acute pancreatitis is critical for the appropriate management of patients. Development of intensive care facility and specialized services in tertiary care hospitals in Bangladesh renders the opportunity for early detection of severe acute pancreatitis and subsequent appropriate management. Large scale study on acute pancreatitis has not been done in Bangladesh. A number of studies to determine the causes and presentation, to evaluate severity of acute pancreatitis and to observe the complications of acute pancreatitis have been carried out in different parts of the world. As such the study aimed to find out the clinical and biochemical characteristics of acute pancreatitis patient. Information obtained from this study may help in diagnosis of cases of acute pancreatitis, prompt identification of severe disease and take appropriate therapeutic intervention.

### Materials and Methods

This observational study was conducted among purposively selected 40 acute pancreatitis patients attended at the Combined Military Hospital (CMH) Dhaka from 1st January 2013 to 30th June 2013 with an objective to find out the clinical and biochemical characteristics of acute pancreatitis. The diagnosis of acute pancreatitis was depend on two of the following three criteria: 1) upper abdominal pain with or without tenderness, 2) raised serum amylase and/or lipase  $\geq 3$  times the upper limit of the normal, and 3) typical features of acute pancreatitis on ultrasound or CT scan. The patient was selected irrespective of sex. Prior to data collection, informed written consent was taken from all the patients. Data were collected from the patients through face-to-face interview using pretested semi-structured questionnaire and review of the hospital records. The ethical clearance was taken from the ethical committee of CMH Dhaka and neither any intervention nor any invasive procedure was undertaken. The study instrument

comprised a structured questionnaire which includes demographic and acute pancreatitis related information, including gender, age, monthly income, symptoms and signs, among others. Data processing and analyses were done using statistical package for social sciences (SPSS) version 23. Frequencies, percentage, mean and standard deviation (SD) were used for statistical analysis.

### Results

Among the respondents, highest number of the respondents (42.5%) belongs to the age group 20-39 years, average age was 44.90 years ( $\pm 13.46$ ) years and range was 19 to 67 years, 60.0% of them were male and rest were female. More than half (57.5%) of the respondents had monthly income in the 20001 to 50000 Taka with average of 31,650 ( $\pm 15,255.60$ ) Taka. Minimum monthly family income was 8000 and maximum was 60000 Taka (Table-I).

**Table-I:** Socio-demographic Characteristic of the respondents (n=40)

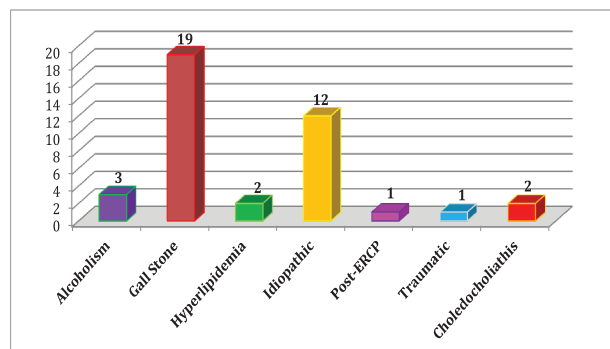
	Attributes	n	%
Age group	< 20 years	1	2.5
	20 - 39 years	17	42.5
	40 - 59 years	16	40.0
	> 60 years	6	15.0
	Mean ( $\pm$ SD)	44.90 ( $\pm 13.46$ )	
	Min-max	19-67 years	
Sex	Male	24	60.0
	Female	16	40.0
Monthly family income	<10000	5	12.5
	10001 – 20000	6	15.0
	20001 – 50000	23	57.5
	$\geq 50001$	6	15.0
	Mean ( $\pm$ SD)	31,650 ( $\pm 15,255.60$ )	
	Min-max	8000-60000	

In regards to the clinical presentations, all the 40 respondents presented with pain in the abdomen which was followed by nausea/vomiting (82.5%), abdominal distention (72.5%). On examination, it was revealed that all the respondents had abdominal tenderness which was followed by muscle guard (10.0%), ascites (7.5%) and jaundice (5.0%) (Table-II).

**Table-II:** Clinical presentations among the respondents (n=40)

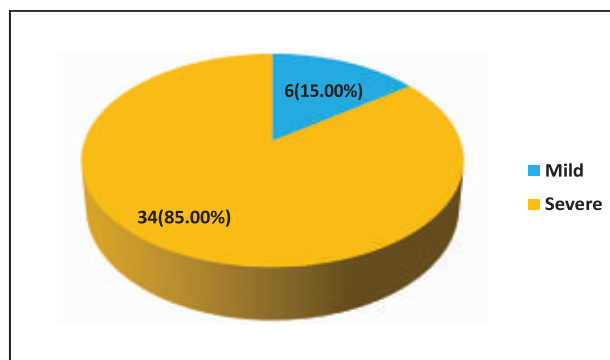
		Responses n	Percent of Cases
Symptoms	Pain Abdomen	40	100.0
	Nausea/Vomiting	33	82.5
	Abdominal distention	29	72.5
	Fever	16	40.0
Signs	Tenderness	40	100.0
	Muscle guard	4	10.0
	Ascites	3	7.5
	Jaundice	2	5.0
	Shock	1	2.5
	Mass abdomen	3	7.5

Almost half (47.50%) of the respondents developed acute pancreatitis due to stone in the gall bladder which was followed by idiopathic origin (30.0%) (Figure-1).



**Figure-1:** Etiology of Acute Pancreatitis among the respondents (n=40)

Among the respondents, 85.0% had severe symptoms and rest (15%) had mild symptoms (Figure-2).



**Figure-2:** Severity of acute pancreatitis among the respondents (n=40)

In regards to the basic biochemical findings, all the respondents had elevated serum amylase level and 82.5% had elevated serum lipase level (Table-III).

**Table-III:** Biochemical findings among the respondents (n=40)

Investigation	n	%
S. Amylase (>345 U/L)	40	100
S. Lipase (>192U/L)	33	82.5
Hb (<10gm/dl)	03	7.5
TC of WBC (>15000/mm <sup>3</sup> )	06	15
S. Calcium (<8mg/dl)	03	7.5
RBS (>11mmol/L)	04	10
S. Albumin (<32gm/L)	03	7.5
ALT (>200U/L)	02	5
LDH (>600U/L)	05	12.5
S. Urea (>45mg/dl)	01	2.5

**Discussion**

This observational study was conducted with an aim to find out the common clinical and biochemical abnormalities among the acute pancreatitis patients attended in CMH, Dhaka from 1st January 2013 to 30th June 2013. As all the

cases were taken from one tertiary level military hospital, so the findings cannot be considered as a representation from the whole community. Acute pancreatitis is a disease of the pancreas which is sometimes associated with a systemic inflammatory response that can affect the function of other organs or systems. The inflammation may resolve spontaneously or may lead to necro-inflammatory response in the pancreas or surrounding fatty tissue.<sup>10</sup> An early diagnosis and risk stratification of the patient will reduce the overall morbidity and mortality from acute pancreatitis.

This study revealed that highest number of cases belonged to the age group 20-39 years which is almost similar to the findings of Ahmed KU et al<sup>11</sup> who revealed that peak age of development of acute pancreatitis was at the fourth decade of life. They also found that in western countries alcohol predominate as an etiology of acute pancreatitis in fifth decade of life 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 years respectively. Similar study conducted in Bangladesh by Dutta IK et al showed that mean age of patient with acute pancreatitis was 44.3±2.7 years<sup>12</sup>. In this study, the lower age incidence of acute pancreatitis may be due to the fact that almost all the patients were from military background and occurrence of gallstone disease in the female in early age due to early marriage and multiple pregnancies. In this study, there was male preponderance which was similar to the findings of Ahmed KU et al.<sup>11</sup> The male predominance may be due to the fact that there is male dominance in the military in Bangladesh Armed Forces. In regards to the clinical presentations, all the 40 respondents presented with pain in the abdomen which was followed by nausea/vomiting (82.5%), abdominal distention (72.5%). Study conducted in Bangladesh by Musabbir N et al showed that epigastric pain was present in 77% cases, vomiting in 72% cases.<sup>13</sup> Findings of this study are also almost similar to the study conducted by Sánchez-Ramírez et al<sup>14</sup>, Mao-Meng T et al<sup>15</sup> and Alvarez et al.<sup>16</sup>

In this study, almost half (47.50%) of the respondents developed acute pancreatitis due to stone in the gall bladder which was followed by idiopathic origin (30.0%). This finding is almost similar to the study conducted by Ahmed KU et al.<sup>11</sup> In their study Pavlidis et al<sup>17</sup> revealed that the causes of acute pancreatitis were due to alcoholism (40%), Gallstone disease (30%), Hypocalcaemia (4%), Hypertriglyceridemia (2%) and Idiopathic (16%). In another study, Baig et al<sup>18</sup> reported that alcoholism (41.1%), gallstones (23.5%), trauma (17.6%), idiopathic (11.7%) were the main causes for mild pancreatitis whereas trauma (27.2%), idiopathic (18.1%), gallstones (18.1%), alcoholism (18.1%) were responsible for severe pancreatitis. Similar study in Bangladesh by Ahad MA et al<sup>19</sup> shown 18% of acute



pancreatitis was due to gall stone. The dissimilarities of findings in this study may be due to the fact that in western world alcoholism is a normal social phenomenon for them and also the study was conducted in a military hospital where only special group of people get the treatment.

In this study, 85% of patient had mild attack and 15% had severe attack. Zhang et al observed in their study that 17% of patients had severe pancreatitis. Pezzilli et al<sup>20</sup> revealed that out of 34 patients with acute pancreatitis 64.7% had mild attack whereas 35.3% had severe pancreatitis. Study conducted by Hussain MS in Bangladesh revealed that out of 100 patient of acute pancreatitis, 85% had mild disease, 13% patient were moderately severe and 2% patient had severe disease<sup>21</sup>. In regards to the basic biochemical findings, this study revealed that all the respondents had elevated serum amylase level and 82.5% had elevated serum lipase level. This finding is similar to the study conducted by Matull WR et al<sup>22</sup>.

## Conclusion

Acute pancreatitis is a disease that varies in severity ranging from mild and self-limiting illness to a very severe and rapidly progressive condition leading to multiple organ failure and eventually to death. It mostly affect young adult male. Most common clinical presentations are upper abdominal pain, nausea/vomiting and abdominal tenderness. It is one of the important cause of upper abdominal pain. Therefore it is very important to have high index of suspicion for acute pancreatitis in assessing the patient of upper abdominal pain.

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