

# A Hospital Based Observational Assessment of the Clinico-Pathological Profile and Immediate Hospital Outcome of Acute Pancreatitis Patients

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## Abstract

**Aim:** The study was designed to assess the clinico-pathological profile and to estimate immediate hospital outcome of acute pancreatitis patients admitted into a tertiary care hospital.

**Methods:** This study was done in Department of General Medicine, BMIMS, Pawapuri, Nalanda, Bihar, India for one year. Informed written consent from the patient or relatives were taken. It was a Cross-sectional type of observational study. Consecutive sampling was used. Total 100 patients were included in the study.

**Results:** Among 100 patients, mean age was  $42.5 \pm 11.3$  years. Highest age was 68 years and minimum age was 22 years. Majority of the patients (40%) were from age group 31-40 years. All of the patients complained abdominal pain. 45% patients had vomiting and 32% had fever. The common location of pain was in epigastric region (75%) with radiation to back in 20% patients. Pain was severe agonizing in nature in 75% cases. Laboratory findings of study population showed that, all the patients had leukocytosis and raised C-reactive protein. Hypocalcemia was prevalent in 35% patients. Total duration of hospital stays were found 3 to 16 day.

**Conclusion:** Acute pancreatitis patients most commonly present with abdominal pain, abdominal distension along with anorexia. Although a larger portion of the patients had no identifiable cause but gall stone was the most common etiology. Pain commonly located in epigastric region with radiation to back.

**Keywords:** Acute pancreatitis, Clinico-pathological profile, Gallstone pancreatitis, Hospital outcome.

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## Introduction

Acute pancreatitis is a common disease with wide clinical variation and its incidence is increasing. The average mortality rate in severe acute pancreatitis approaches 2-10 %. [1] Severe acute pancreatitis (SAP) develops in about 25%

of patients with acute pancreatitis. Severe acute pancreatitis is a two phase systemic disease. The first phase is characterised by extensive pancreatic inflammation and/or necrosis and is followed by a systemic inflammatory response syndrome (SIRS) that may lead to multiple organ

dysfunction syndrome (MODS) with in the first week. About 50% of deaths occur within the first week of the attack, mostly from MODS. The formation of infected pancreatic necrosis or fluid collection occurs usually in the second week. The factors which cause death in most patients with acute pancreatitis seem to be related specifically to multiple organ dysfunction syndrome and these deaths account for 40-60% of in-hospital deaths in all age groups. Respiratory failure is the most common type of organ failure in acute pancreatitis. [2]

According to the severity, acute pancreatitis is divided into mild acute pancreatitis (absence of organ failure and local or systemic complications, moderately severe acute pancreatitis (no organ failure or transient organ failure less than 48 hours with or without local complications) and severe acute pancreatitis (persistent organ failure more than 48 hours that may involve one or multiple organs). [3] Initial evaluation of severity should include assessment of fluid loss, organ failure (particularly cardiovascular, respiratory, or renal compromise), measurement of the APACHE II score and systemic inflammatory response syndrome (SIRS) score. [4,5]

Routine abdominal computed tomography (CT) scan is not recommended at initial presentation because there is no evidence that CT improves clinical outcomes and the complete extent of pancreatic and peripancreatic necrosis may only become clear 72 hours after the onset of acute pancreatitis. [6] Several other scoring systems also exist to predict the severity of acute pancreatitis based upon clinical, laboratory, radiologic risk factors, and serum markers but can be used only 24 to 48 hours after disease onset and have not been shown to be consistently superior to assessment of SIRS or the APACHE II score. Early organ dysfunction predicts disease severity and patients require early

intensive care treatment. Antibiotic prophylaxis is usually ineffective and early enteral feeding results in reduction of local and systemic infection. [6,7] Management of acute pancreatitis has changed significantly over the past years. Early management is nonsurgical, solely supportive and patients with infected necrosis with worsening sepsis need intervention. Early intensive care has definitely improved the outcome of patients. [8]

The study was designed to assess the clinico-pathological profile and to estimate immediate hospital outcome of acute pancreatitis patients admitted into a tertiary care hospital.

### Materials and Methods

This study was done in Department of General Medicine BMIMS, Pawapuri, Nalanda, Bihar, India for one year. Informed written consent from the patient or relatives were taken. It was a Cross-sectional type of observational study. Consecutive sampling was used. Total 100 patients were included in the study. Severity classification of acute pancreatitis was defined as follows- Mild: AP without organ failure (OF), Moderate: AP without OF, but with local complications, Severe: Early severe acute pancreatitis (SAP)-A. Fulminant: OF within 72 hours, B. Sub fulminant: OF within 4–7 days. Late SAP – OF or infected pancreatic necrosis (IPN) after 7 days. Critical AP: Persistent OF + IPN. Following admission, patient diagnosed as acute pancreatitis according to Atlanta classification and patients were classified into mild, moderate and severe acute pancreatitis and Glasgow scoring, CT severity index (CTSI), complete hemogram were done for all the patients and Contrast-enhanced computed tomography (CECT) abdomen was done when indicated.

After confirmation all the AP cases were selected in according to the inclusion and exclusion criteria. Statistical significance was set as 95% confidence level at 5%

acceptable error level. Patients' characteristics were reported as percentages or mean  $\pm$  standard deviation when variables were continuous while categorical variables were expressed with count (percentage). Statistical analysis was

done by Chi Squared test and t-test. Data was analyzed by the SPSS 22 Windows version and graph & chart were expressed by using SPSS 22 and MS Excel. The result was presented with tables and charts.

## Results

**Table 1: Age distribution of study population**

Age groups	N%
18-30 years	9 (9)
31-40 years	40 (40)
41-50 years	28 (28)
51-60 years	15 (15)
>60 years	8 (8)

Among 100 patients, mean age was  $42.5 \pm 11.3$  years. Highest age was 68 years and minimum age was 22 years. Majority of the patients (40%) were from age group 31-40 years.

**Table 2: Clinical profile of patients with acute pancreatitis of study population**

Clinical features	N	%
<b>Symptoms</b>		
Abdominal pain	100	100
Vomiting	45	45
Fever	32	32
Nausea	17	17
Anorexia	48	48
<b>Signs</b>		
Abdominal tenderness	100	100
Anaemia	58	58
Abdomnal distension	45	45
Dehydration	44	44
Paralytic ileus	35	35
Pleural effusion	30	30
Jaundice	18	18
Respiratory distress	17	17

All of the patients complained abdominal pain. 45% patients had vomiting and 32% had fever.

**Table 3: Character of abdominal pain in the studied patients**

Abdominal pain	N	%
<b>Location</b>		
Epigastric	75	75
Diffuse	25	25
<b>Character</b>		
Severe agonizing	75	75
Dull aching	24	24
Radiation to back	20	20
Relieved by forward bending	55	55
Exacerbated by taking heavy meal	50	50
Total duration of pain: Mean $\pm$ SD (days)	3.88 $\pm$ 1.55	

The common location of pain was in epigastric region (75%) with radiation to back in 20% patients. Pain was severe agonizing in nature in 75% cases.

**Table 4: Laboratory findings in patients with acute pancreatitis**

Lab parameters	Value
Mean amylase (IU/L)	577.12±292.92
Mean lipase (IU/L)	464.04±303.26
CRP (mg/L)	113.84±44.91
Raised	100 (100%)
Mean calcium (mg/dL)	8.66±1.28
Hypocalcemia	35 (35%)
Normal Calcium	65 (65%)
Leukocytosis	100 (100%)

Laboratory findings of study population showed that, all the patients had leukocytosis and raised C-reactive protein. Hypocalcemia was prevalent in 35% patients.

**Table 5: Clinical course in acute pancreatitis**

Clinical course and outcome	Mean	Std. Deviation	Min- Max
Hospital stays (days)	8.97	3.65	3-16
NPO (days)	4.89	1.92	2-10
Time to alleviation of symptoms (days)	3.89	1.65	1-7

Total duration of hospital stays were found 3 to 16 day.

**Table 6: Association between APACHE-II and Glasgow score with outcome of patients with acute pancreatitis**

APACHE-II	Outcome		P Value
	Alive	Died	
<8 (Mild)	70	0	<0.001
≥8 (Severe)	10	20	
Glasgow score			
<3 (Mild)	70	0	0.001
≥3 (Severe)	10	20	

Association between APACHE-II and outcome of the patients with acute pancreatitis showed that death was significantly more ( $p < 0.001$ ) prevalent in patients with APACHE-II  $\geq 8$ . Association

between Glasgow score and outcome of the patients with acute pancreatitis showed that death was significantly more ( $p < 0.001$ ) prevalent in patients with Glasgow score  $\geq 3$ .

**Table 7: Association between mean serum biochemical parameters and outcome of patients with acute pancreatitis**

Biochemical parameters (Mean ± SD)	Outcome		P Value
	Alive	Died	
Serum amylase (IU/L)	538.86±276.98	764.14±304.53	0.003
Serum lipase (IU/L)	445.55±306.89	554.40±275.05	0.166
CRP (mg/L)	102.12±38.58	171.11±25.62	<0.001
Serum calcium (mg/dL)	9.03±1.01	6.82±0.76	<0.001

Mean serum amylase and CRP level was significantly higher in dead patients

( $p = 0.003$  and  $< 0.001$ ) with acute pancreatitis. Serum lipase level is higher in

dead patients but the study was nonsignificant ( $p=0.166$ ). Mean serum calcium level was significantly higher in alive patients than dead ( $p<0.001$ ).

### Discussion

Acute pancreatitis (AP) is a severe inflammation of the pancreas presented with sudden onset and severe abdominal pain with a high morbidity and mortality rate, if accompanied by severe local and systemic complications. It is the most common gastrointestinal cause of hospitalization [9], associated with high financial burdens. [10] The severe necrotizing form of acute pancreatitis is a life-threatening condition with high morbidity. Mortality may increase, especially if bacterial contamination of the pancreatic necrosis occurs. An improved outcome in the severe form of the disease is based on early identification of disease severity and subsequent focused management of these high-risk patients. Despite the availability of several clinical (Ranson's criteria, APACHE II score, Glasgow scoring system) and radiological scoring systems (CTSI /Balthazar scoring system), accurate prediction of the best treatment strategies and outcome after acute necrotizing pancreatitis remains enigmatic. These scoring systems could be used as triaging tools for appropriate management.

Acute pancreatitis (AP) is a relatively common disease with incidence of 5–80 per 1,00,000 members of the population and the number of new cases has shown a steady increase in recent years. [11] Most patients with AP show spontaneous resolution without complications; however, 10 %-20 % of patients experience a severe attack with increased risk of mortality up to 25%. [12] In this study, the age range of patient was 22 to 68 years with a peak incidence is in the fourth decade (31-40 years) followed by 41-50 years (28.3%). Mean age was  $42.5\pm 11.3$  years. This is comparable to the studies done by Raghu M G et al. and Negi

et al. where it was  $42.9\pm 15.9$  years and  $42.89 \pm 12.53$  years respectively. [13,14] Abdominal pain is the cardinal symptom of acute pancreatitis. It occurs in 95% of cases and usually it is generalized to upper abdomen. All of the patients in this study complained abdominal pain, especially epigastric pain (75%). Among them, 20% had radiation to back. Pain exacerbated by taking heavy meal in 50% cases and in 55% cases the pain was relieved by forward bending.

Serum amylase measurement showed that the mean value was  $577.12\pm 292.92$  IU/L which is many times higher than normal. Similarly, mean serum lipase level was  $464.04\pm 303.26$  IU/L which is also higher than normal value. CRP was raised in 100% cases. It is an acute phase protein, raised in many condition eg. Major trauma, sepsis, acute pancreatitis. CRP is of no value in the diagnosis of acute pancreatitis but sharply rises in pancreatic necrosis and that is a useful early marker of severity of pancreatitis. [15] CRP levels  $> 150$  mg/L at 48 hours predict disease severity. Serum calcium levels fall in about 34% of cases, and that signifies severe pancreatitis. Association between Glasgow score and APACHE-II score with outcome of the patients showed that death was significantly more prevalent in high APACHE-II and high Glasgow score. Mean hospital stay was  $8.97\pm 3.65$  days with mean NPO  $4.89\pm 1.92$  days. The longer the hospital stay and NPO, the severe the disease. But acute pancreatitis has an overall low mortality, of approximately 1%. [16] The risk of death increases with age, co-morbidities, and severe disease; in a recent meta-analysis, the risk of death was the highest among patients with both organ failure and infected necrosis. [17] In this study 20% people died. This is approximately double the findings of Ahad A. and colleagues. [18,19]

### Conclusion

Acute pancreatitis patients most commonly present with abdominal pain, abdominal distension along with anorexia. Although a larger portion of the patients had no identifiable cause but gall stone was the most common etiology. Pain commonly located in epigastric region with radiation to back. Of all the cases, more than sixty percent of the patients had mild pancreatitis estimated by APACHE II score and Glasgow score. Mean hospital stays were about 9 days and nothing per oral was about 5 days. Overall mortality rate was 20%.

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