

Original Research Article

CLINICAL PROFILE, AETIOLOGY, COMPLICATIONS AND LABORATORY PARAMETERS IN ACUTE PANCREATITIS: A PROSPECTIVE HOSPITAL-BASED STUDY IN TIRUPPUR, SOUTH INDIA

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ABSTRACT

Background: Acute pancreatitis has a variable clinical course, ranging from mild disease to severe illness with organ failure and local or systemic complications. Describing local aetiology, clinical presentation and laboratory associations may help characterize the burden of disease in individual hospitals. The objective is to describe the socio-demographic and clinical profile, aetiology, CT severity and complications of acute pancreatitis, and to find out the associations with various sociodemographic and laboratory parameters.

Materials and Methods: This hospital-based prospective cross-sectional study included 204 patients admitted with acute pancreatitis from April to July 2026 with clinical/ laboratory/ radio-logical findings suggestive of acute pancreatitis.

Results: The most common age group was 31–40 years (44.6%), and majority 88% of participants were male. Abdominal pain was reported by 99.0%, vomiting by 58.3%. Alcohol was the most frequently recorded aetiology (70.6%), followed by idiopathic disease (18.1%) and gallstones (7.8%). CT severity was classified as mild in 71.6%, moderate in 19.1% and severe in 9.3%. In our study there is significant association between sex and aetiology, complication status and CT severity. On comparing patients without complications, those with complications had higher mean serum bilirubin and lipase, amylase levels.

Conclusion: In this single-centre study, acute pancreatitis predominantly affected men aged 31–40 years Alcohol and idiopathic cause were the leading cause of acute pancreatitis which should prompt us to look with further studies for identifiable new etiologies in the idiopathic group. Alcohol was the most common cause in this geographical location. Complications were associated with bilirubin, amylase and lipase levels so this can be used as predictors of severity.

Keywords: Acute pancreatitis; aetiology; complications; serum lipase; albumin;

INTRODUCTION

Acute pancreatitis (AP) is an inflammatory disorder of the pancreas with a highly variable clinical course. The disease may remain confined to the pancreas or extend to surrounding tissues and distant organ systems. Clinical manifestations range from a self-limiting episode to pancreatic necrosis, organ dysfunction and, in severe cases, death.^[1,3] Morphologically, AP is classified as interstitial oedematous pancreatitis or necrotizing pancreatitis.

The revised Atlanta classification categorizes clinical severity as mild, moderately severe or severe. Mild AP is not accompanied by organ failure or local or systemic complications. Moderately severe AP involves transient organ failure resolving within 48 hours and/or local or systemic complications without persistent organ failure. Severe AP is characterized by organ failure persisting for more than 48 hours.^[3-5]

Gallstones and alcohol are major causes of AP, although their relative contribution varies across populations.^[6,7] Other causes include hypertriglyceridemia, hypercalcaemia, medications and trauma or postoperative states. Management includes diagnosis, supportive care, individualized fluid therapy, nutritional support, monitoring for organ dysfunction and timely recognition of complications.^[2,8]

The distribution of causes, clinical presentations and outcomes may differ between settings. This study was undertaken to describe the aetiological profile and clinical features of AP, document complications, and examine associations between sex, disease characteristics and selected laboratory parameters among patients admitted to a tertiary care hospital in Tiruppur, Tamil Nadu.

MATERIALS AND METHODS

Study design and setting: A hospital-based prospective cross-sectional study was conducted from April 2026 to July 2026 in the Department of General Surgery and General Medicine, Government Medical College and Hospital, Tiruppur, Tamil Nadu, India.

Study population: A total of 204 eligible patients of any age and either sex who were admitted with acute pancreatitis during the study period were included.

Eligibility criteria: Patients were eligible if they were admitted with acute pancreatitis and fulfilled at least two of the three diagnostic criteria described in the revised Atlanta classification. Patients who did not provide consent, those with chronic pancreatitis and those with pancreatic malignancy were excluded.

Case definition and severity classification: Acute pancreatitis was diagnosed when at least two of the following were present: (1) acute onset of persistent, severe epigastric pain, often radiating to the back; (2) serum amylase and/or lipase at least three times the upper limit of normal; or (3) imaging findings characteristic of AP on ultrasonography, computed tomography (CT) or magnetic resonance imaging. Disease severity was categorized according to the

Revised Atlanta classification: mild, moderately severe or severe.

Data collection and investigations: After written informed consent, demographic details, relevant history, presenting symptoms, examination findings, laboratory results, imaging findings, treatment details, complications and clinical outcomes were recorded using a structured study proforma. Laboratory parameters included serum amylase, serum lipase, renal function tests, blood glucose, serum triglycerides, serum calcium and hemogram. Abdominal ultrasonography and abdominal X-ray were used as initial investigations as clinically appropriate. Contrast-enhanced CT was performed when indicated to assess pancreatic inflammation, necrosis and local complications.

Ethics: Permission to conduct this study was obtained from the Institutional Ethics Committee, Government Medical College, Tiruppur, and that written informed consent was obtained from participants.

Statistical analysis: All the statistical analyses were performed using SPSS version 25 software. Categorical variables were summarized as frequencies and percentages. Continuous variables were summarized using means and standard deviations. Associations between categorical variables were assessed using Pearson's chi-square test and Fisher's exact test. A p-value of <0.05 was treated as statistically significant.

RESULTS

Sociodemographic characteristics: A total of 204 patients who were presented with acute pancreatitis were included in the study. Out of them most patients were male (180; 88.2%). The mean age of patients was 44±13.08 years and range of age was 18-76 years. The largest age group was 31–40 years (91; 44.6%), followed by 21–30 years (19.1%) and 41–50 years (15.7%). More than half were classified as upper-lower socioeconomic status (51.5%), and 61.3% were from rural areas. [Table 1]

Table 1: Sociodemographic characteristics (N = 204)

Characteristic	Category	n	%
Age	<20 years	9	4.4
	21–30 years	39	19.1
	31–40 years	91	44.6
	41–50 years	32	15.7
	51–60 years	25	12.3
	61–70 years	6	2.9
	71–80 years	2	1.0
Sex	Male	180	88.2
	Female	24	11.8
Socioeconomic status	Upper-middle	3	1.5
	Lower-middle	59	28.9
	Upper-lower	105	51.5
	Lower	37	18.1
Residence	Rural	125	61.3
	Urban	79	38.7

Clinical presentation and hospital stay: Abdominal pain was reported by 202 patients (99.0%), vomiting by 119 (58.3%) and fever by 24 (11.8%). A hospital stay shorter than 7 days was

recorded for 124 patients (60.8%); hospital stay greater than 7 days noted in 80 (39.2%) patients. [Table 2]

Table 2: Clinical presentation and hospital stay (N = 204)

Variable	Category	n	%
Abdominal pain	Yes	202	99.0
	No	2	1.0
Vomiting	Yes	119	58.3
	No	85	41.7
Fever	Yes	24	11.8
	No	180	88.2
Hospital stay	≤7 days	124	60.8
	>7 days	80	39.2

Aetiology, CT severity and complications: Alcohol was the most frequently recorded aetiology (144; 70.6%) followed by idiopathic pancreatitis in 37 cases (18.1%), and gallstone-related pancreatitis in 16 (7.8%). CT severity was mild in 146 patients

(71.6%), moderate in 39 (19.1%) and severe in 19 (9.3%). Pancreatic and/or extra-pancreatic complications were recorded in 68 patients (33%). [Table 3, 4]

Table 3: Etiological distribution of acute pancreatitis. (N = 204)

Aetiology	Male	Female	%	p value
Alcohol	142	2	70.6	p<0.001
Idiopathic	2	14	18.1	
Gallstones	31	6	7.8	
Trauma	0	2	1.0	
Hypertriglyceridaemia	2	0	1.0	
Drug-induced	1	0	1.0	
Hypercalcaemia	1	1	0.5	
Total	180	24	100.0	

Table 4: CT severity grade and complication status

Variable	Category	n	%
CT severity	Mild	146	71.6
	Moderate	39	19.1
	Severe	19	9.3
Complication status	Complications recorded	68	33
	No complications recorded	136	67

Associations between sex and disease characteristics: A significant association was observed between sex and recorded aetiology (p<0.001). Alcohol-related aetiology was recorded in 142 of 180 male patients and two of 24 female patients, whereas gallstone aetiology was recorded in two males and 14 females. Complications were

recorded in 115/180 males (63.9%) and 21/24 females (87.5%); this association was statistically significant (p=0.021). CT severity grade also differed by sex (p=0.001). A stay longer than 7 days occurred in 59.4% of males and 70.8% of females, with no statistically significant association between sex and hospital-stay category (p=0.375). [Table 5, 6]

Table 5: Complication status by sex

Sex	Complications n (%)	No complications n (%)	Total	p value
Male	115 (63.9)	65 (36.1)	180	p =0.021
Female	21 (87.5)	3 (12.5)	24	
Total	136 (66.7)	68 (33.3)	204	

Table 6: Association between sex and hospital stay and CT Grade

Variable	Category	Sex		p value
		Male	Female	
Hospital Stay	≤7days	107	17	p=0.375
	>7days	73	7	
CT Grade	Mild	128	18	p=0.001
	Moderate	39	0	
	Severe	13	6	

Laboratory parameters and complications: Mean serum bilirubin, mean serum amylase and Mean serum lipase was higher in the complications group than that of the group with no complications and

these differences were statistically significant ($p < 0.05$). No, statistically significant between-group differences were reported for the other listed laboratory parameters ($p > 0.05$). [Table 7]

Table 7: Selected laboratory parameters by complication status

Laboratory parameter	Complications: Mean	No complications: Mean	P value
Haemoglobin	12.08	11.29	0.184
Total leucocyte count	12024	10342	0.681
Platelets	191630	310270	0.722
Blood urea	44.24	39.45	0.579
Serum creatinine	1.48	1.12	0.752
Serum bilirubin	1.9	0.87	0.024
Serum aspartate transaminase	80.67	105.64	0.76
Serum alanine transaminase	57.18	117.09	0.456
Serum alkaline phosphatase	121.61	113.64	0.916
Serum albumin	3.1	3.75	0.537
Serum globulin	3.04	3.09	0.73
Serum amylase	636.02	322.18	0.056
Serum lipase	591.96	144.45	<0.001
Serum Na ⁺	135.24	136.64	0.438
Serum K ⁺	4.19	4.41	0.324
Corrected Ca ⁺⁺	9.35	8.74	0.119
High-density lipoprotein	43.43	41.27	0.479
Low-density lipoprotein	99.69	112.82	0.298
Very low-density lipoprotein	37.31	31.55	0.231
Triglycerides	130.82	152	0.093

Other parameters reported as not significantly different included haemoglobin, total leucocyte count, blood urea, serum creatinine, aspartate transaminase, alanine transaminase, alkaline phosphatase, globulin, amylase, sodium, potassium, corrected calcium, HDL, LDL, VLDL and triglycerides.

DISCUSSION

AP is a relatively common disease among the population worldwide. The spectrum of the disease may vary from mild attacks with mild epigastric discomfort to multiorgan dysfunction and death. The mild attacks often go undiagnosed leading to recurrence. The overall mortality of AP is static at 1%–2% but increasing to 10%–30% in severe AP.^[4,9] Although its prevalence varies in different countries and even indifferent areas of a given country, there has been a significant increase in the number of cases in recent years. Early diagnosis and treatment are the mainstay of the therapy in AP to significantly decrease morbidity and mortality.

This single-centre study of 204 patients describes the clinical and aetiological profile of acute pancreatitis in a tertiary care hospital in Tiruppur. These findings describe the pattern in this hospital population; the single-centre design and they should not be generalised to all populations. The cases were predominantly male, with the largest age group being 31–40 years. A study conducted by Rajesh et al. in Tamil Nadu and Negi et al. had similar results.^[10,11] And also mean age of our study population was 44 years which is similar to Ramu et al.'s study conducted in Kerala.^[12] Alcohol was the most frequently recorded aetiology, while gallstone-

related and idiopathic cases accounted for smaller proportions. Similar results were observed in Kumar et al and Srinivas et al. 's study.^[6,13]

Even though the etiology of acute pancreatitis varies, alcohol consumption and gall stones predominate in most of the countries. Out of the Total 204 cases, alcohol induced pancreatitis was higher (70.6%) followed by idiopathic pancreatitis (18.1%). These results are consistent with the findings of Vengadkrishnan et al, from the study done at SRM Medical College, Chennai were alcohol induced pancreatitis was higher.^[12,14,15] And male predominance of alcoholism was found in the study which may be due to the fact that alcoholism is quite common among middle age men in South India. This was significant as alcohol induced pancreatitis was more often associated with recurrence and chronicity. Abdominal pain was almost universal, consistent with its central role in the clinical diagnosis of AP. In our study, abdominal pain was the common presenting complaint in almost all the patients (99%), and this is similar to what was reported by Negi et al. and Rao et al. also reported similar pattern of vomiting, fever as found in this study.^[11,16] In the study done by Sameer et al in Bhopal the triad of epigastric pain, nausea and vomiting was seen in 75% patients.^[17]

Most patients were classified as having mild CT severity 71.6% and severe CT severity in 9.3% and complications were recorded in approximately one-thirds of the cohort. Similar results were observed in Srinivas et al study, the severity of the disease was mild in 70.8% of cases and severe in 11.8%.^[6,15]

Females had a higher observed proportion of complications than males, and sex was associated

with CT severity and recorded aetiology these results were in line with Chen et al. study conducted in Taiwan.^[18] However, the female subgroup comprised only 24 patients. These findings should therefore be interpreted cautiously and confirmed in larger cohorts. No statistically significant association was found between sex and hospital-stay category. The laboratory comparisons showed that the complications were associated with higher serum bilirubin, amylase and lipase. The decreased mean value of serum albumin and low platelet count were observed in the complications group as compared to the no-complications group in our study, and this difference was statistically not significant ($P>0.05$). Our observations are comparable to a study by Xu et al., where decreased serum albumin was noted as an independent predictor for severe AP and in-hospital mortality in AP patients.^[19] Lower serum albumin is related to decreased oncotic pressure, third space fluid loss, and, hence, higher complications. Differences in the mean values of serum calcium, blood urea and serum creatinine were not statistically significant between the complications group and the no-complications group in our study. Increased mean values of serum lipase, amylase and serum total bilirubin were observed in the complications group as compared to the no-complications group. This increase in serum lipase, serum amylase and serum bilirubin levels was significantly associated ($P<0.05$) with an increase in pancreatic/extra-pancreatic complications our observation is comparable to Vengadakrishnan et al.'s study, where they have reported that raised serum lipase level is correlated well with poorer outcome.^[14]

Strengths and limitations: The study includes 204 patients from a defined tertiary-care setting and describes clinical, imaging and laboratory variables together. Limitations include the single-centre design, the relatively small number of female participants the results cannot be generalised to all population can be used in the same setting for better understanding of clinical profile. We need large population studies, multicentred data to generalize our findings.

CONCLUSION

In this cohort of 204 patients admitted with acute pancreatitis, most patients were men aged 31–40 years, alcohol was the most frequently recorded aetiology, and mild CT severity was the most common category. Pancreatic and/or extrapancreatic complications were recorded in one-thirds of patients. Complications were associated with higher serum bilirubin, amylase and lipase levels.

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