

Aetiology, presentation and outcomes of patients presenting with acute pancreatitis in a tertiary care hospital

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Abstract

Acute pancreatitis (AP) is a multi-causal disease with a high rate of hospitalisation. Only a few clinical studies have investigated the aetiological background, severity, and outcome of AP in Pakistan. Hence, this study was carried out to determine the aforementioned factors and correlate them with outcomes in a tertiary care setting. This was a cross-sectional, retrospective study conducted at the Department of Gastroenterology, Aga Khan University Hospital, Karachi, from January 1, 2022, to December 31, 2022. Data was analysed using statistical software SPSS version 25. Vomiting was the predominant presenting complaint and was seen in 139 (78.5%) patients. Gallstones were the predominant cause in 68 (37%) patients, followed by idiopathic pancreatitis in 22 (12%) patients. Thirteen (7.1%) patients expired. Patients with systemic complications were likely to suffer from severe disease ($p=0.02$), whereas those with local complications were at an increased risk of mortality ($p=0.04$). Due to lack of diagnostic facilities, the aetiology of a large number of AP cases remains unknown.

Keywords: Pancreatitis, Cholelithiasis, Idiopathic pancreatitis, Aetiology, Outcomes.

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Introduction

Acute pancreatitis (AP) is the inflammation of pancreas due to auto-digestion of the gland by its enzymes. It is one of the major differential diagnoses in patients presenting with acute abdomen in the emergency department and has a high rate of hospitalisation.¹ Its global prevalence has shown a 30% increase in 2016 as compared to 2006.² AP is a multi-causal disease with a broad-spectrum presentation and variable clinical course, ranging in severity from mild disease with complete recovery on conservative

management to severe disease associated with organ failure and significant mortality.³ Many conditions have been recognised to play a role in its pathogenesis, with gallstones being the most commonly observed aetiology with prevalence reported from 40% to 70%, followed by chronic alcohol abuse. Other causes include post-ERCP (Endoscopic retrograde cholangiopancreatography), drugs, infections, toxins, hypertriglyceridaemia, hypercalcaemia, idiopathic, genetics, and autoimmune and vascular diseases.⁴

Presentations of AP can be categorised as mild, moderately severe, or severe, based on the recently revised Atlanta classification.⁵ To date, only a few clinical studies have investigated the aetiological background, severity, and outcome of AP in Pakistan. The availability of this data is very crucial as it will help in understanding the burden of the disease, its predisposing factors, and outcome in our setup and serve as a guide to formulate hospital policies for better management of the disease.

Methods and Results

This cross-sectional, retrospective study was conducted at the Department of Gastroenterology, Aga Khan University Hospital, Karachi. The study was done for the duration of one year, from January 1, to December 31, 2022.

All patients older than 18 years presenting with the first episode of acute pancreatitis were included in the study. Patients with chronic pancreatitis were excluded.

The study was carried out after taking approval from the hospital's ethical review committee. Acute pancreatitis and its severity were defined according to World Society of Emergency Surgery guidelines.⁶ The diagnosis was made on the basis of two of the following three features:

Patients presenting with sudden onset of severe abdominal pain often radiating to the back; more than three-fold rise in serum lipase or amylase level from normal range (measured in our hospital laboratory); presence of pancreatic swelling detected on either computed tomography, magnetic resonance imaging (MRI), or ultrasonography.⁶

All patients fulfilling the inclusion criteria were enrolled in

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the study. Data was collected on a self-designed questionnaire which included socio-demographic information regarding age, gender, and co-morbidities. Symptoms on presentation, aetiology of AP, severity according to revised Atlanta classification,⁶ serum amylase, lipase, white count, creatinine, local/systemic complications, and outcomes in terms of patient discharge or in-hospital mortality were also recorded.

Data was analysed using statistical software SPSS version 25. Categorical variables were expressed as frequencies and percentages whereas quantitative variables were described using median (IQR). The correlation of categorical variables was done using chi-square whereas for quantitative variables, Mann Whitney U test was used. A $p < 0.05$ was considered statistically significant unless stated otherwise.

The data was collected from 184 patients. Majority, i.e. 92(50%) of the patients were between the ages of 41-60 years; there were 100 (54.3%) females, with diabetes being the most common co-morbidity in 71 (38.8%) cases.

Vomiting was the predominant presenting complaint, seen in 139 (78.5%) patients, whereas gallstones were the most frequently seen aetiology, i.e. in 68 (37%) patients, followed by idiopathic pancreatitis in 22 (12%) patients. The socio-demographic characteristics and aetiology of pancreatitis are further described in Table 1.

More than half of the patients, i.e. 124 (68.1%), had mild pancreatitis, whereas moderate and severe pancreatitis was seen in 40 (22%) and 18 (9.9%) patients, respectively. The median (IQR) of amylase and lipase levels was calculated to be 368.0 (775.0) I.U/L and 638.0 (1759.5) U/L, respectively. Local complications were seen in 66 (39.8%) patients and systemic complications were seen in 71 (41.3%) patients. The median (IQR) duration of hospital stay was 3.0 (5.5) days. The details of quantitative parameters have been further elaborated in Table 2.

Based on severity, the patients were divided into two groups: mild/moderate (165, 89.6%) and severe (19, 10.4%) pancreatitis and chi-square test was done for analysis. It was seen that the presence of systemic complications was related to an increased risk of developing severe pancreatitis ($p=0.02$). Correlation between the disease severity and other confounding variables has been detailed in Table 1.

In terms of outcomes, it was observed that local

complications were associated with mortality ($p=0.04$) as 7(10.6%) patients with local complications expired whereas

Table-1: Demographic factors, clinical features, and aetiology of mild/moderate and severe acute pancreatitis.

Demographic parameters	Total (n=184) n (%)	Mild/Moderate Pancreatitis (n=165) n (%)	Severe pancreatitis (n=19) n (%)	p-value
Age (year)				
18-40	70 (38.0)	68 (97.1)	2 (2.9)	0.01
41-60	92 (50.0)	80 (87)	12 (13)	
>60	22 (12.0)	17 (77.3)	5 (22.7)	
Gender				
Female	100 (54.3)	87 (87)	13 (13)	0.19
Male	84 (45.7)	78 (92.9)	6 (7.1)	
Co-morbidities				
Diabetes	71 (38.8)	65 (91.5)	6 (8.5)	0.49
Hypertension	63 (34.4)	54 (85.7)	9 (14.3)	0.21
Chronic kidney disease	13 (7.1)	10 (76.9)	3 (23.1)	0.12
Aetiology				
Gallstone	68 (37)	66 (97.1)	2 (2.9)	
Idiopathic	22 (12)	21 (95.5)	1 (4.5)	
Alcohol	20 (10)	19 (95)	1 (5)	
Cardiogenic shock/ MODS / Abdominal sepsis/Tuberculosis	18 (9.8)	11 (61.1)	7 (38.9)	
Autoimmune	13 (7.1)	13 (100.0)	0	
Hyperlipidaemia	1 (6)	11 (100.0)	0	
Neoplasm	10 (5.4)	7 (70.0)	3 (30)	
Uraemia/drug-induced	9 (4.9)	6 (66.7)	3 (33.3)	
Viral infection	5 (2.7)	4 (80.0)	1 (20)	
Latrogenic/traumatic	5 (2.7)	4 (80.0)	1 (20)	
Hypercalcemia	3 (1.6)	3 (100.0)	0	
Complications				
Local	66 (39.8)	58 (87.9)	8 (12.1)	0.26
Systemic	71 (41.3)	58 (81.7)	13 (18.3)	0.002
Outcomes				
Discharged	171 (92.9)	165 (96.6)	6 (3.5)	<0.0001
Expired	13 (7.1)	0	13 (100.0)	

Table-2: Description of Quantitative Parameters.

Parameters	Total Patients (n=184) Median (IQR)	Mild/Moderate Pancreatitis (n=165) Median (IQR)	Severe Pancreatitis (n=19) Median (IQR)	p-value
Duration of symptoms (days)	3.0	3 (6)	4 (11)	0.20
Hospital stay (days)	3.0 (5.5)	3 (6)	4 (5)	0.06
Vitals				
Systolic pressure(mmHg)	129.0 (26.5)	129.0 (24.2)	130.0 (59.0)	0.84
Heart rate (bpm)	90.0 (21.5)	90.0 (20.0)	105.0 (21.0)	0.05
Respiratory rate (breaths/min)	20.0 (2.0)	20.0 (2.0)	22.0 (6.0)	0.008
Temperature ©	37.0 (0.5)	37.0 (0.7)	37.0 (0)	0.05
Lab parameters				
Amylase (I.U/L)	368.0 (775.0)	365.0 (864.7)	417.0 (434.0)	0.73
Lipase (U/L)	638.0 (1759.5)	652.5 (1789.5)	598.0 (1231.0)	0.74
White cell count(x10 ³ /µL)	10.7 (7.8)	10.5(7.8)	14.2 (6.9)	0.07
Creatinine (mg/dl)	1.0 (0.7)	1.0 (0.60)	1.4 (2.2)	0.14

6(5.0%) patients expired in the absence of local complications. Worsening severity of the disease was also observed to be related to mortality ($p < 0.0001$).

Mann Whitney test between the disease severity and quantitative variables (amylase, lipase, white count, creatinine levels) showed no significant correlation (Table 2).

Conclusion

This study was done to assess the severity and causes of acute pancreatitis in a tertiary care setting with a focus on the Southeast Asia. Gallstone and idiopathic pancreatitis emerged as the most common causes. A mortality rate of 2.5% was noted which suggests that inspite of low resources in our low middle-income setting, optimum management is being given. The presence of local complications was noted to be a major predictor of mortality in our. A high prevalence of idiopathic pancreatitis was seen in our study (12%) which may be due to a lack of diagnostic facilities. Hence, more prospective studies are needed to further investigate the actual cause of AP in such patients so appropriate management guidelines can be formulated.

Disclaimer: This study has not been submitted to any other journal. However, it has been presented in the 14th Health Science Research Assembly 2023 held by Aga Khan University (abstract book page 253) and the Liver week Korea 2023 (abstract book page 753).

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Author Contribution:

ZS: Data collection, literature search, writing and questionnaire design.

HS: Data collection analysis and writing.

NI: Data collection questionnaire design and writing.

HM: Data collection and writing

OP: Study concept, supervision and writing