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Clinical Profile and Outcome of Acute Pancreatitis in a Tertiary Health Care Center of Nepal

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ABSTRACT

Introduction

Acute pancreatitis is the inflammation of pancreatic parenchyma that can cause local and systemic manifestations. This study aimed to find the clinical profile and an outcome of acute pancreatitis among patients attending the Department of Gastroenterology in a tertiary care center.

Methods

A cross-sectional hospital based study comprising of 75 patients of acute pancreatitis, enrolled between August 2022 to June 2023. Clinical profile, complications and outcomes including in hospital mortality were studied. Revised Atlanta classification and modified CT severity index were used for diagnosis and classification. Data entry and analysis were done SPSS-17.

Results

Most common age group was 40-60 years (50.7%). The most common etiology was alcohol (46.7%) and almost all presented with abdominal pain (97%) and abdominal tenderness was present in 80%. Majority were mild pancreatitis (54.7%), followed by moderately severe (32%) and severe pancreatitis (13.3%). Factors that are significantly associated with prolonged stay at hospital and mortality were pleural effusion, necrotizing pancreatitis, acute kidney injury, BISAP score ≥ 2, high total leucocyte count, shock, severe CT severity score, multi organ dysfunction syndrome (MODS), acute respiratory distress syndrome (ARDS)($p \leq 0.05$).

Conclusions

Acute pancreatitis is predominant in male gender and 40-60 years age group. It is associated with significant complications and mortality. Different parameters including high BISAP score, pleural effusions, acute kidney injury, leucocytosis and high CRP level on presentation were useful markers to predict outcome.

Keywords: pancreatitis; clinical profile; mortality; CT severity score.

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INTRODUCTION

Acute pancreatitis (AP) is an inflammatory process of the pancreas which can cause local and systemic complications.[1,2] Most cases of acute pancreatitis fall in to the mild category with favorable recovery. However, 15% to 20% cases of acute pancreatitis are severe and may result in prolonged hospitalization and local as well systemic complications like systemic inflammatory response syndrome (SIRS), multi-organ system failure and death.[3]

The diagnosis of acute pancreatitis requires two of the following three features: abdominal pain (acute onset of persistent, severe, epigastric pain often radiating to the back), serum lipase and / or amylase at least three times greater than the upper limit of the normal and characteristic finding of acute pancreatitis on trans-abdominal ultrasonogram, contrast enhanced computed tomography (CECT) and rarely magnetic resonance imaging (MRI).[4]

Revised Atlanta classification is most widely accepted criteria where acute pancreatitis is classified as mild, moderately severe, and severe. Where moderately severe pancreatitis has transient local or systemic complications which resolve within 48 hours and severe pancreatitis has complications with persistent organ failure beyond 48 hours.[5]

Early diagnosis of pancreatitis and its complication is so crucial for better outcome. As clinical profile, response to therapy and prognosis of acute pancreatitis may be different in different parts of the world, [6] this study was conducted to know the clinical profile and outcome including in hospital mortality of acute pancreatitis in patients presenting to College of Medical Sciences, Bharatpur, Nepal.

METHODS

This is a hospital based, analytical, cross-sectional study that was conducted on college of medical sciences teaching hospital, Bharatpur, Nepal. Total 75 acute pancreatitis patients admitted at college of medical sciences teaching hospital, Gastroenterology department from August 2022 to June 2023, who fulfilled the inclusion criteria were included in this study. The study was approved by the institutional review committee (COMSTH-IRC/2022-083). Informed consent was obtained from patients or patient relatives. Patients, aged 18 or older, diagnosed with acute pancreatitis (2 of the 3 criteria- abdominal pain, serum amylase or lipase level >3 Upper normal limit, characteristic radiological findings) were included in this study. Patients with chronic pancreatitis, pancreatic malignancy, those with incomplete records and those who failed to give consent were excluded from the study. A study conducted by Poudel et al.[7] shows the prevalence of acute pancreatitis as 5%. By considering this as a prevalence with 95% confidence interval and 5% margin of error. Sample size was calculated by using this formula $(n)=z^2pq/e^2=1.96x1.96x0.1x0.9/0.05x0.05=74$. History, physical examination and data including demographic variables, clinical features, complications, laboratory and radiological findings were studied. Complete hemogram, liver function tests, renal function tests, serum amylase, serum lipase, random blood sugar, lipid profile, serum calcium, LDH, C-Reactive protein and arterial blood gas analysis were done for all the patients. Ultrasound of the abdomen was done at emergency at the time of presentation and repeated within next 48 hours when needed. Contrast enhanced computed tomography (CECT) abdomen done after 3-5 days of admission and modified CT severity index was calculated. Data were collected on a structured proforma. Data was entered and analyzed by using SPSS-17. All categorical data were expressed in number and percent while continuous data were expressed in mean±SD. Chi-squared test was used to test for significant

difference of proportions (categorical data). p-value of <0.05 was considered statistically significant.

RESULTS

A total of 75acute pancreatitis patients were enrolled for the study. This study included 56 (74.7%) males with male to female ratio of 2.95:1. In the present study, the most common age group of patients was 40-60 years (38 patients, 50.7%), followed by <40 years (22 patients, 29.3%) and >60 years (15 patients, 20%). Total 8 (10.7 %) patients were under 30 years of age. The mean age for all studied patients was 49.2 ± 16.6 years (Table 1).

in 16 (21.3%) andascites in 14(18.7%). Among laboratory parameters, more than 3 folds raised amylase and/or lipase were seen in 62 (82.7), whereas more than 10 folds rise in amylase and/or lipase were seen in 26 (34.7%) of patients. Leucocytosis was seen in 46 (61.3%) and TLC of more than 14000 cmm3 were seen in 19 (25.3%) of patients. Serum transaminitis, raised LDH and raised CRP were seen in 41 (54.7%), 17 (22.7%) and 33 (44.7%) patients respectively. Low serum calcium (<8.5 mEq/L) was seen in 15 (20%) cases. Blood urea and serum creatinine were raised in 24 (32%) cases and raised hematocrit level was seen in 23 (30.7%). Radiological studies showed USG features suggestive of acute pancreatitis

Table 1. Age groups and gender distribution of studied acute pancreatitis patients (n = 75).

Gender	Age Group (Years)		
	< 40	40-60	>60
Male	17 (77%)	29 (76%)	10 (67%)
Female	5 (23%)	9 (24%)	5 (33%)

(mean ± SD of age for all studied patients was 49.2 ± 16.6 years).

The most common etiology of acute pancreatitis in this study was alcohol in 35 (46.7%), followed by gall stone in 18 (24%), hypertriglyceridemia in 8 (10.7%), and unknown etiology in 14 (18.6 %) of cases.

in only 28 (37.3%) cases, CT severity index was 0-3 in 25 (33.3%), 4-6 in 39 (52%) and 7-10 in 10 (13.3%) cases. Local complications like peri-pancreatic fluid collection/pseudocyst were seen in 15 (20%) cases and necrotizing pancreatitis

Table 2. Etiological factors of patients with AP (n = 75).

Etiology	Gender		Total
	Male (n = 56)	Female (n = 19)	
Alcohol	33 (94%)	2 (6%)	35 (47%)
Gall stone	10 (55%)	8 (45%)	18 (24%)
Hypertriglyceridemia	8 (100%)	-	8 (11%)
Unknown etiology	5 (36%)	9 (64%)	14 (18%)

In this study, the most common presentation seen in patients with acute pancreatitis was abdominal pain in 73 (97%) followed by vomiting in 50 (66.7%) and fever (17.3%). Abdominal tenderness was present in 60 (80%), jaundice

was seen in 11 (14.7%) cases. In this study, majority 41 (54.7%) were mild pancreatitis, 24 (32%) cases were of moderately severe and 10 (13.3%) cases were severe pancreatitis (Table 3).

Table 3. Association of different parameters/complications associated with outcome (n = 75).

Parameters (total number)	Discharged (%)	Mortality (%)	p-value
Pleural effusion (34)	28	6	0.024
MODS (22)	15	7	<0.001
BISAP ≥2 (32)	25	7	0.001
CT severity score 4-6 (39)	36	3	0.617
CT severity score >7 (10)	7	3	0.015
TLC 11000-14000 (27)	24	3	0.696
TLC > 14000 (19)	15	4	0.043
Acute kidney injury (24)	17	7	< 0.001
Increased hematocrit (23)	19	4	0.114
Shock (10)	6	4	<0.001
ARDS (5)	1	4	<0.001
Raised LDH (17)	13	4	0.022
High CRP (33)	27	6	0.019
Low calcium (15)	12	3	0.115
Necrotizing pancreatitis (11)	8	3	0.027
Peripancreatic fluid (15)	13	2	0.558

Table 4. Association of different parameters associated with outcome (n = 75).

Parameters (total number)	Hospital stay		
	≤7days	>7 days	p-value
Pleural effusion (28)	11	27	0.003
BISAP >/= 2 (25)	8	17	<0.001
MODS (15)	5	10	0.015
CT severity score 4-6 (36)	18	18	0.067
CT severity score >7 (7)	3	4	0.327
TLC 11000-14000 (24)	14	10	0.811
TLC > 14000 (15)	4	11	0.002
Acute kidney injury (17)	6	11	0.015
Increased hematocrit (19)	13	6	0.401
Shock (4)	0	4	0.011
ARDS (2)	0	2	0.079
Raised LDH (13)	6	7	0.253
High CRP (27)	15	12	0.524
Low calcium (12)	4	8	0.036
Necrotizing pancreatitis (8)	2	6	0.03
Peripancreatic fluid (13)	6	7	0.253

Pleural effusion was most common complication seen in 34 (45.3%), followed by acute kidney injury in 24 (32%), MODS in 16 (21.3%), shock in 10 (13.3%) and ARDS in 5(6.7%) cases. In this study, mortality was seen in 7 (9.3%) cases. Among 68 (90.7%) discharged patients, 41(60.3) cases were discharged within 7 days and 27 (39.7%) cases needed more than 7 days of hospital stay. The most important complications associated with prolonged stay at hospital and mortality were pleural effusion, necrotizing pancreatitis, acute kidney injury, BISAP score≥2, high total leucocyte count, shock, severe CT severity score, multi organ dysfunction syndrome (MODS), acute respiratory distress syndrome (ARDS) (Table 3). Clinically significant association was observed between these variables and mortality (p=<.005) (Table 4).

DISCUSSION

A total of 75 acute pancreatitis patients were enrolled for the study. This study included 74.7% male and 25.3%with male to female ratio of 2.95:1. Mean age of the study was 49.2 ± 16.6 years. Similar to this study, the mean age of acute pancreatitisis 44±10.87 years and 45±10 years in study by Bhattrai et al. and Manandhar et al. respectively. Bhattrai et al.,[8] Manandhar et al.[9] from Nepal and Negi et al.[10] and Vengadakrishnan et al.[11] all demonstrated male predominance, which is similar to our study. Gender disparity in this study is most likely due to most common etiology being alcohol, which is largely consumed by male gender compare to female in our part of the world. The most common etiology of acute pancreatitis in this study was alcohol (46.7%), followed by gall stone disease 24%, hypertriglyceridemia (10.7%), and unknown etiology (18.6 %). Similar to this, other study in Nepal also showed alcohol as most common etiology (53.2%) followed by gall stone disease (37.1%) in study by Bhattrai et al.[8] and Alcohol (59.34%) followed by gallstone (32.52%) in the study by Negi et al.[10] Contrastto our study, Gall stone disease (40%) was most common etiological factor followed by alcohol (38%) in study by Raghuwanshi et al.[12] These differences can be partly due to ours being the department of medical gastroenterology.

Similarly, theetiology of alcohol as the commonest cause of acute pancreatitis in Nepal could be due to large consumption of alcohol and easy availability. Our study showed higher incidence of hypertriglyceridemia induced pancreatitis, which highlights the necessity of routine test of triglyceride in suspected pancreatitis cases in absence of common etiological findings. The most common presentation in our study was abdominal pain (97%) followed by vomiting (66.7%) and fever (17.3%). Pain abdomen (100%) followed by vomiting (42.27%) by Negi et al.,[10] abdominal pain (100%) followed by nausea (83.9%), vomiting (66.1%)by Bhattrai et al.[8] and abdominal pain (79%), vomiting (71.4%) and fever (23.8%) by Reid et al.[13] all studies on acute pancreatitis showed presenting symptoms similar to our study. More than 3 folds raised amylase and/or lipases were seen in 82.7 of patients. Similar to this study, more than 3 folds rise in amylase/lipase was seen in 87.1%, 81% and 82% in study by Bhattrai et al.,[8] Reid et al.[13] and Rao et al.[14] respectively. Leucocytosis was seen in 61.3% in our study, this is similar to study by Rao et al. (60%)[14] and Bhattrai et al. (67%).[8] In this study blood urea and serum creatinine were raised in 24 (32%) cases which is higher than study by Bhattrai et al.[8] (19.4%) and Rao et al. (25%).[14] In this study, Evidence of acute pancreatitis in USG was seen in 37.3% of cases which is similar to the study by Bhattrai et al.(38 %)[8] and significantly higher than study of Reid et al. (21%),[13] disease severity was mild in 61.1%, moderately severe in 26.7%, and severe in 12.2% of patients in the study by Reid et al.[13] Local complications like peri-pancreatic fluid

collection/pseudocyst were present in (20%) cases and necrotizing pancreatitis in (14.7%). Similarly, Bhattrai et al.[8] reported pancreatic necrosis (21%) and pancreatic collection (13%) and Reid et al.[13] reported pancreatic necrosis in 15% of cases. Those studies including ours showed these local complications are not uncommon. Current study showed, 32% of cases were of moderately severe pancreatitis and 13.3% cases were severe pancreatitis. Similar to our study was the finding of Reid et al. moderately severe in 26.7% and severe in 12.2%. Whereas only 9.7% cases of moderately severe and 17.7% cases of severe pancreatitis in study by Bhattrai et al.[8] Our study reported higher incidence of pleural effusion (45.3%) compared to previous studies by Bhattrai et al. (17%) [8] and Negi et al. (21%),[10] this can be partly due to finding of effusion was also taken from CT scan (CT abdomen was done in most of our patients) and similar to our findings study by Gattinoni et al.[15] reported pleural effusion in 50% of cases. In current study, mortality was seen in 9.3% of cases, which was almost similar to study by Bhattrai et al. (6.5%)[8] and Vengadakrishnan et al. (8.1%).[11] Mortality rates were lower; 5.6% and 2.2% in the studies by Negi et al.[10] and Manandhar et al.,[9] but it was higher in Rao et al. (12.7%).[14] Also, 39.7% of cases needed more than 7 days of hospital stay in this study, which is comparable to 12 days average stay of Bhattrai et al.,[8] 9.5 days of Reid et al. and 8.1 days of Negi et al.[10] Complications associated with prolonged stay at hospital and mortality were presence of pleural effusion, necrotizing pancreatitis, acute kidney injury, BISAP score ≥ 2, high total leucocyte count (TLC >14000), shock , severe CT severity score , multi organ dysfunction syndrome (MODS), acute respiratory distress syndrome (ARDS), which is almost similar to study by Bhattrai et al.[8] Whereas, high CRP, high LDH, high lipase, MODS and high modified CT severity index were the only indices of increased mortality in the study by Vengadakrishnan et al.[11] However, contrast to other studies high lipase level, low calcium, increased hematocrit and leucocytosis (TLC <14000), collection of peripancreatic fluid is not associated with mortality and prolonged hospital stay. We observed complication and mortality rate varied across studies, this could be due to trend of late presentation in tertiary care centre in our part of the world as well as differences in available resources.

CONCLUSIONS

Acute pancreatitis is predominant in male gender and 40-60 years age group. Pain abdomen was predominant symptom and it is highly associated with increased amylase and lipase level. Majority of the patients improved without complications, however mortality and prolong hospital stay among the discharged patients is not uncommon and factors such as high BISAP score, pleural effusions, acute kidney injury, leucocytosis and high CRP level on presentation as well as high CT severity score and necrotizing pancreatitis can serve as useful markers to predict outcome. This study also highlights the importance of preventive measures, early detection, and medical attention for possible better outcome.

Conflict of interest: None

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