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Original Research Article

Etiology, clinical profile and outcome of acute pancreatitis in a tertiary care teaching hospital in rural South India: a ten year retrospective study

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ABSTRACT

Background: Acute pancreatitis is a complex condition with diverse local and systemic complications, dealt by the surgeons all over the world. There were no previous detailed studies regarding the etiology, clinical profile and outcome of acute pancreatitis in rural Kerala.
Methods: This is a hospital based study by retrospective chart analysis of all acute pancreatitis cases from the past 10 years in this tertiary care centre which have clinical/ laboratory/ radiological findings suggestive of acute pancreatitis.
Results: Among 436 cases studied 318 (72.9%) were males and 118 (27.1%) were females. Epigastric pain without radiation to the back (51.6%) was the most common clinical presentation. Alcohol was the most common etiological factor seen in 42.4% followed by idiopathic pancreatitis (IP) (36.9% cases) and then by gallstone/biliary pancreatitis (14.5%). Acute fluid collection was the most common local complication seen in 29.1% cases and respiratory system involvement was the most common organ involvement seen in 16.5% of cases.
Conclusions: Epigastric pain without radiation to the back was the most common clinical presentation. Incidence of alcoholic pancreatitis (42.4%) and idiopathic pancreatitis (36.9%) was slightly higher in our study, which should prompt us to look with further studies for identifiable new aetiologies in the idiopathic group. This work provides the first known regional description of the etiology, clinical profile and outcome of acute pancreatitis. Due to institutional and population similarities, this may represent the status of developing countries in general. This will help in formulating a hospital policy which would be beneficial.

Keywords: Acute pancreatitis, Etiology, Clinical profile, Outcome

INTRODUCTION

Acute pancreatitis is one of the commonest presentations of acute abdomen to hospitals, which can have variable clinical presentations and outcomes from mild to severe life threatening multi-organ dysfunction. Dealing with the clinical course of acute pancreatitis and the management of severe acute pancreatitis is limited by the ambiguities regarding the pathogenesis and multi organ involvement of the disease, uncertainties to predict outcome and a few effective treatment modalities.[1]

According to revised Atlanta classification 2012, the diagnosis of acute pancreatitis requires two of the following three features.

- Abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back);

- Serum lipase activity (or amylase activity) at least three times greater than the upper limit of normal; and
- Characteristic findings of acute pancreatitis on contrast-enhanced computed tomography (CECT) and less commonly magnetic resonance imaging (MRI) or transabdominal ultrasonography.[2]

The etiological spectrum of acute pancreatitis includes the most common gallstones, alcohol, trauma, idiopathic, drug induced, metabolic disorders (hyperlipidemia, hypercalcemia), post-ERCP, congenital anomalies such as pancreas divisum to the rarest scorpion sting.[3] The management strategies vary from medical supportive measures to surgical management in complicated cases when indicated. The etiological factors are greatly affected by geography, cultural and socioeconomic background. For example, alcoholic pancreatitis and tropical pancreatitis which are more endemic in certain areas.[3]

There are several predictors of severity of Acute Pancreatitis which include clinical predictors (age, sex, alcoholic pancreatitis, obesity and organ failure), laboratory predictors (hemoconcentration, CRP, serum creatinine, BUN etc.), Radiological predictors (CT scan, MRI, MRCP). In our study, we are using CT severity index (Balthazar scoring) to assess the severity and compare it with the outcome.[4] Experimental and clinical observations reveal that development of pancreatic necrosis is accompanied by an increase of local and systemic organ complications, increasing the risk of morbidity and mortality.[5,6]

As there has been no detailed study about the demographic pattern of pancreatitis in rural central Kerala we propose this study as we mostly cater to patients from rural Kerala.

METHODS

The first step was obtaining Institutional Review Board and Institutional Ethics Committee approval with waiver of informed consent. This is a hospital based study by retrospective chart analysis of all acute pancreatitis cases from the past 10 years in this tertiary care centre which have clinical/ laboratory/ radiological findings suggestive of acute pancreatitis.

Study design

This was a cross-sectional study by retrospective chart analysis.

Study sample

Sample size was calculated as 436.[3,4]

$$n=\frac{2[(Z1-\frac{\alpha}{2})+(Z1-\beta)]^2\,PQ}{d^2}$$

$P=\frac{P_1+P_2}{2}$; Q=1-P

Where,

P_1 –Anticipated proportion of event in group 1

P_2–Anticipated proportion of event in group 2

d – Clinically significant difference (P_1-P_2)

$(Z_1-\frac{\alpha}{2})$ = 1.96 (5% α error)

$(Z_1-\beta)$= 0.84 (80% power)

Study area

The study was done in the Department General surgery and Gastroenterology in this tertiary care teaching hospital in rural South India

Study permission

Permission to conduct this study obtained from the medical superintendent of this medical college. Approval received from the institutional review board and ethical committee. As the investigator will not come in contact with the patient and the study involves only review of hospital records, exemption from review from the Institutional Ethics Committee was obtained.

Study period

The study duration was May 1st –June 30th 2018.

Study instruments

Case study forms were used to collect required data from the patient charts.

Inclusion criteria

Patients of any age group with clinical, laboratorial and radiological findings (CECT abdomen) suggestive of acute pancreatitis were included in the study.

Exclusion criteria

Exclusion criteria were patients with chronic pancreatitis; patients with other pancreatic pathologies like pancreatic malignancies, cyst; any previous pancreatic surgery; patients contraindicated for contrast enhanced CT abdomen (renal failure, contrast allergy, pregnancy etc.).

Ethical issues

Institutional review board and ethics committee approval will be obtained and permission from the medical superintendent to conduct the study. As the investigator will not come in contact with the patient and the results of the study will in no way affect the patient we will request waiver of informed consent. All data will be stored anonymously and will be handled only by the investigator and authorized personnel.

Data analysis

The data collected will be tabulated in SPSS software version 24 for analysis.

Data collection

Data collected from case records of AP patients referred to Department of Surgery, MOSC Medical College Hospital from April 2011 to April 2018. Patient details to be formulated for this study includes age, sex, clinical presentation, etiology, CT severity in CTSI, outcomes (length of hospital stay, need for surgical intervention for local complications, organ failure, and death)..

RESULTS

Of the 436 cases studied incidence of acute pancreatitis was found to be higher among males (72.935%) than females (27.064%). The mean patient age was 43.45 years (median 41 years) and range 3-94 years.

Epigastric pain without radiation to the back (51.605%) was the most common clinical presentation in our study population while epigastric pain radiating to the back was present in 29.128% cases. Nausea and vomiting was noted in majority of the cases (70.183%) (Figure 1).

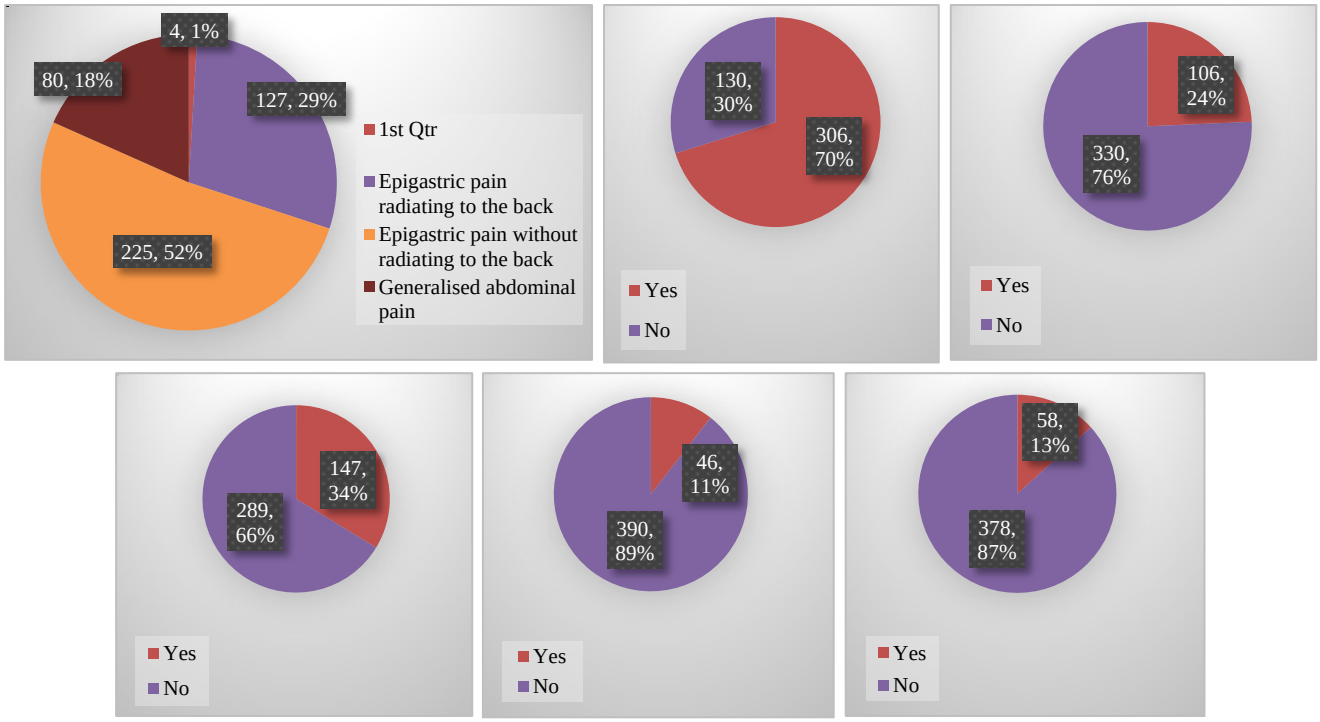

Figure 1: (A) Abdominal pain; (B) nausea and vomiting; (C) guarding; (D) acute fluid collection; (E) decreased urine output; (F) breathing difficulty.

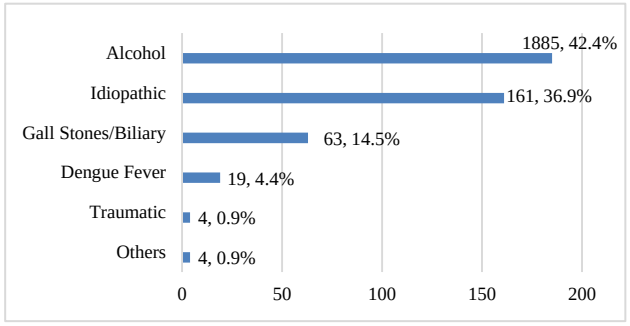

Figure 2: Etiology.

Local complications, defined as the presence of acute peripancreatic fluid collection, pancreatic pseudocyst, pancreatic necrosis were observed in 40.8% of cases. Incidence of each complication is given in Table 1.

Metabolic complications such as acidosis, hypoal-buminemia, hypocalcemia was present in 28.89% of cases (Table 2).

Organ involvement was present in 37.614% of cases and the most common among them was respiratory system involvement (Table 3).

Table 1: Local complications.

	No. of patients	Percentage (%)
Acute fluid collection	127	29.1
None	258	59.2
Pancreatic necrosis	26	6
Pseudocyst	25	5.7
Total	436	100

Table 2: Metabolic complications.

	Frequency	Percentage (%)
Acidosis	5	1.1
Hypercalcemia	4	0.9
Hypoalbuniemia	2	0.5
Hypocalcemia	115	26.4
None	310	71.1
Total	436	100

Table 3: Organ involvement.

	No. of patients	Percentage (%)
Cardiac	7	1.605
Hematological (Hemorrhage, deranged INR)	4	0.917
MODS	51	11.697
Renal	30	6.88
Respiratory	72	16.513

Length of hospital stay exceeded 7 days in 47.2% of cases (Table 4).

Table 4: Length of hospital stay.

	No. of cases	Percentage (%)
Less than 7 days	230	52.8
More than 7 days	206	47.2
Total	436	100

Out of the 14 patients expired, 6 (42.8% of dead patients; 1.376% of total study population) died due to alcoholic pancreatitis (Figure 3).

There was a mortality of 6.7% (4 out of 59 patients) in patients with gallstones/biliary etiology whereas patients with alcohol as etiology had a mortality of only 3.3%, which denotes almost double mortality with biliary/gallstones than alcohol (Table 5).

Of the expired patients, 8 patients (57.14%) had multi organ dysfunction syndrome.

Figure 3: Mortality.

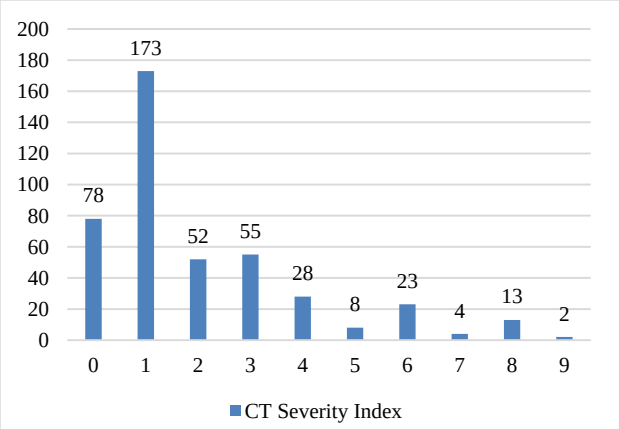

Figure 4: CT severity index.

Table 5: Cause of mortality.

		Alcoholic pancreatitis	Idiopathic pancreatitis	Biliary pancreatitis	Dengue and others
Mortality	No	179	157	59	27
	Yes	6	4	4	0

Table 6: CT severity index.

Severity	No. of patients	Percentage (%)
Mild	358	82.1
Moderate	59	13.5
Severe	19	4.4
Total	436	100

We have performed chi square test/ Fisher's exact test to know is there any association between etiology and outcomes such as metabolic, local or organ complications, length of hospital stay and death. It is observed that none of these outcomes are significantly associated with etiology (p>0.05).

Disease severity was mild in 82.1% of cases and severe in 4.4% of cases (Figure 4, Table 6).

DISCUSSION

Acute pancreatitis is the most common gastrointestinal condition requiring acute hospital admission.[7] In this study the male preponderance of 2.7:1 is in concordance with study done at Jamaica where a male preponderance of 4:1 was noted.[8]

Even though the etiology of acute pancreatitis varies alcohol consumption and gall stones predominate in most of the countries. Out of the Total 436 cases, alcohol induced pancreatitis was higher (42.431%) followed by idiopathic pancreatitis (36.926%). These results are consistent with the findings of Vengadakrishnan et al, from the study done at SRM Medical College, Chennai were alcohol induced pancreatitis was higher (51%).[4] Casas et al., in their study of 148 patients, found the causes of acute pancreatitis as gall stones in 57%, alcohol consumption in 21% which is in contrast to present study.[9] Similar results were obtained in Victorian study.[10] This can be explained by the greater incidence of alcohol intake in the Indian population. All cases with history of alcoholism were male. The high idiopathic pancreatitis rate in our study population should be studied in detail.

Abdominal pain is the cardinal symptom of acute pancreatitis.[11] In the study done by Sameer et al in People's college of medical sciences and research centre, Bhopal the triad of epigastric pain, nausea and vomiting was seen in 75% patients.[12] In our study triad of epigastric pain, nausea and vomiting was present in 256 (58.715%) of cases. Abdominal pain was present in all cases which were in concordance with the study done by Reid et al where abdominal pain was present in 96.7% cases.[3] Nausea and vomiting was present in 70.183% cases. Similar results was obtained in the study done by Reid in Jamaica (71.8%).[3] Acute fluid collection was present in 33.715% of cases and this is in concordance with the results of Sameer et al in a study at bhopal where acute fluid collection was found in 34% of patients and Banday et al in a study conducted at Jammu where it was found to be 36%.[12,13] Respiratory system involvement was the most common systemic complication (16.5%). This was in concordance with the studies done by Reid and Raghuvanshi.[3,12] Disease severity was mild in 82.1% of cases and severe in 4.4% of cases. Similar results were obtained in the study done in North India by Ahlawat et al where 82% cases were classified as mild.[14]

CONCLUSION

This is the first known study on demographic pattern of acute pancreatitis in rural central Kerala. While current published literature strongly suggests epigastric pain with radiation to the back as the most common presentation, epigastric pain without radiation to the back was the most common presentation in our study population. Out of 436 cases studied incidence of alcoholic pancreatitis was higher. This can be explained by the greater incidence of alcohol abuse in India. Lifestyle modification and public education are recommended for prevention. While some other studies show 10-30% of idiopathic pancreatitis, our study had a slightly higher proportion (36.926% cases). A possible explanation for this could be because EUS and/or ERCP with manometry were not used in the evaluation of our patients labelled as IP. Among the study population respiratory system involvement was the most common morbidity. Among the dead patients the most common etiological factor was alcohol and majority of them died due to MODS. This requires further studies to establish proper hospital policies for the management of alcoholic pancreatitis and for the treatment of MODS. Although there was a small number of patients analyzed in this single center study, to our knowledge this work provides the first known regional description of the etiology, clinical profile and outcome of acute pancreatitis. Due to institutional and population similarities, this may represent the status of developing countries in general. This will help in formulating a hospital policy which would be beneficial to our patients.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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