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Original Research Article

Evaluation of clinical profile of acute pancreatitis in a tertiary centre

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ABSTRACT

Background: Acute pancreatitis is a disease for which patients are in large numbers, etiology, clinical presentation and examinations are varied. Disease may be mild or severe, may lead to multi organ failures and death. Most common cause is biliary tract diseases. Other causes are alcohol consumption, post ERCP, trauma, idiopathic and drugs, viral infections, genetic mutations and connective tissue disorders.
Methods: This is a prospective observational study conducted at SGT medical college, Budhera, Gurugram, Haryana, from January 2017 to June 2019 in 100 consecutive patients. Data collection included detailed recording of demography of patient, clinical presentation, any history of biliary tract disease, alcohol consumption, trauma, ERCP, comorbidities. Data was also collected about investigations done, treatment, recovery, complications and any intervention.
Results: Most of the patients were from age group 41-55 years. Female patients were more than male patients. Etiology was mostly gall stone, alcohol, idiopathic, post ERCP and trauma. Pain, distention abdomen, vomiting, fever and jaundice were presenting features. Serum amylase, serum lipase, USG abdomen and CECT abdomen were diagnostic investigations. Complications included local and systemic. Mortality was 7%.
Conclusions: Acute pancreatitis is mild in most of the cases and recovery is good. Severe cases should be meticulously treated as mortality rates are higher. They should be treated in ICU under the guidance of intensivist. Our study results show that patients with severe diseases should be meticulously monitored clinically, biochemically, haemodynamically and radiologically.

Keywords: Acute pancreatitis, Serum amylase, CECT abdomen, Mortality

INTRODUCTION

The etiology and clinical manifestations of pancreatitis have great variations. Acute pancreatitis is an acute inflammation of pancreas. It is usually reversible and there are increased levels of pancreatic enzymes in blood and urine.[1] "Acute pancreatitis is the most terrible of all the calamities that occur in connection to the abdominal viscera. The suddenness of its onset, the illimitable agony which accompanies it and the mortality attendant upon it, renders it the most formidable of catastrophes." Moynihan (1925).[2] Acute pancreatitis is most commonly secondary to biliary tract disease and alcohol abuse, but other causes may include viral infections, trauma, drugs, metabolic and connective tissue disorders and genetic mutations.

Most recent studies suggest that acute pancreatitis is a disease having three phases. In initial phase, there is intra pancreatic digestive enzyme activation and there is injury of acinar cells. Activation of trypsin is due to lysosomal hydrolases such as cathepsin B. In the second phase there

is activation, chemo attraction and sequestration of leucocytes and macrophages in the pancreas causing an itrapancreatic inflammatory reaction. In the third phase there are effects of proteolytic enzymes and cytokines released by pancreas, on distant organs. Trypsin activates other enzymes, e.g. phosphorylase A2 and elastase. These enzymes and cytokines then digest cellular membranes and cause proteolysis, interstitial oedema, vascular damage, coagulation necrosis, fat necrosis and cause multi organ system damage. Mortality ranges from 2% to 9%.[3] Many genetic factors can cause increase in severity of acute pancreatitis.[4]

Major symptoms of acute pancreatitis are pain epigastrium or in periumbilical region. Pain may vary from mild discomfort to severe, constant and incapacitating distress. Pain may radiate to flanks, back, chest and lower abdomen. Abdominal distension, nausea, vomiting, chemical peritonitis and mild degree of obstructive jaundice may be characteristic feature.[4] Physical examinations frequently may reveal a distressed or anxious patient with low grade fever, tachycardia, and hypotension. Abdominal distension and muscle rigidity may be present. Bowel sounds are usually diminished. Diagnosis is based on combination of characteristic abdominal pain, elevation of pancreatic enzymes more than three times the normal limit and characteristic findings in CECT.[5] Acute pancreatitis is broadly categorised into mild and severe variety. Acute mild pancreatitis is usually self-limiting with a mortality of about 9%. In severe cases mortality may be about 39%.[6]

Management of acute pancreatitis is mainly conservative with relief of pain, nasogastric aspiration, nutritional support and calcium supplement etc. Use of prophylactic broad spectrum antibiotics reduces infection rate in CT proven necrotising pancreatitis, but may not improve survival.[7] Randomized multicentre clinical trial demonstrated that Imipenum significantly reduces the incidence of pancreatic sepsis in patients with necrotising pancreatitis.[8,9] Most of the patients are well managed with conservative treatment. Surgery is indicated if in spite of good conservative treatment, condition of patient deteriorates; if there is infected necrosis; in severe necrotizing pancreatitis, as a trial to save the life of patient.

Assessment of severity

The bedside index of severity in acute pancreatitis (BISAP), is a good clinical indicator. It has 5 clinical and laboratory parameters obtained within the first 24 hours of hospitalisation. These parameters are as below

1) BUN>22mg/dl 2) impaired mental status 3) SIRS≥2 of 4 present 4) age>60 years 5) pleural effusion

This BISAP score is useful in assessing severity. BISAP score of ≥3 is associated with increased risk. In general, it has been found that if BISAP score is low, and haematocrits and BUN respond to initial management, then chances of complications are less and patients can be managed in general ward. If SIRS is not present at 24 hours, patient is unlikely to develop organ failure. If BISAP score is high, haematocrit and BUN do not respond to initial treatment, patient should be treated in an intensive care unit.

Complications of acute pancreatitis can be divided into local and systemic complications. Local complications include necrosis, walled off necrosis, pseudocyst of pancreas, ascites, disruption of main pancreatic duct etc. Systemic complications include involvement of pulmonary, cardiovascular, haematological, gastrointestinal, renal and metabolic system and fat necrosis.

Thus acute pancreatitis is a disease for which patients are in large numbers, clinical presentation is highly variable, examinations may reveal different pictures, disease may be mild or severe, may lead to multi organ failures and death. Further the etiology of disease varies. Most common cause is biliary tract diseases, but in areas where alcohol consumption is high, incidence of etiology due to alcohol increases. Hence our aim is to evaluate the clinical profile of acute pancreatitis in our tertiary care centre catering for the patients of South Haryana so that we can understand this disease in a better way and can treat patients in a better way. Further this study will provide a tool for further research.

METHODS

Study design

This is a prospective observational study conducted at SGT medical college, Budhera, Gurugram, Haryana, from January 2017 to June 2019.

Study population

Patients admitted in department of general surgery SGT medical college with diagnosis of acute pancreatitis.

Operational definition

Acute pancreatitis: It is considered when at least 2 of the 3 criteria are there.

(1) characteristic abdominal pain. (2) elevation of pancreatic enzymes>3 times of upper normal limit (3) characteristic finding in CECT i.e. oedema of pancreas, altered fat and fascial planes, fluid collection, necrosis (non-enhancement area>30% or 3 cm), bowel distention, mesenteric oedema and haemorrhage.

Sample size

A total 100 consecutive patients were taken for study.

Sampling procedure and data collection

In the patients admitted with diagnosis of acute pancreatitis, detailed history of abdominal pain and other features was taken. History was also recorded for possible etiology i.e. biliary tract disease, alcohol consumption, trauma and ERCP etc. History of comorbidities was also recorded. Routine investigations i.e. CBC, kidney function tests, liver function tests, urine complete examination, x-ray chest PA view, ECG, viral markers and investigations to support the diagnosis i.e. serum amylase, serum lipase, USG abdomen and CECT abdomen were done. Serum lipase and CECT abdomen was done in selected cases to support or confirm the diagnosis. Severity of patients was assessed clinically by BISAP scoring system. Patients having BISAP score of<3 were managed in general ward and patients with score≥3 were treated in intensive care unit.

Patients were managed conservatively. The patients who had acute pancreatitis because of CBD stone, in them ERCP was done. Such patients were further advised to have cholecystectomy at the earliest, subjected to their fitness for surgery. Surgery was done where indicated e.g. if in spite of good conservative treatment condition of patient deteriorated; if there was infected necrosis; if there was severe necrotizing pancreatitis surgery was done as a trial to save the life of patient. Patients were followed up every month for a period of 6 months. Patients were advised to come early if they had any problem. Those patients in whom acute pancreatitis was because of alcohol consumption, they were counselled properly to stop consuming alcohol. If need was felt, help of the psychiatrist was taken. Data collection included detailed recording of demography of patient, clinical presentation, data about any biliary tract disease, alcohol consumption, trauma, ERCP and comorbidities. Date was also collected about investigations done, treatment given, recovery, complications if any, and if any intervention was done. Severity of patients was assessed clinically by BISAP scoring system.

Analysis plan

The data were collected properly on a performa sheet, data was tabulated and master chart was prepared, entries were made, and statistical analysis was carried out using simple mathematical expressions like, percentage. The data was subjected to appropriate statistical tests wherever applicable. Analysis was made using software SPSS for windows 7. Chi square test and probability (p) value were used to establish status of significance. Quality of study was assured at each and every step.

Ethical considerations

Before starting the study, approval for this study was obtained from the Institute Ethics Committee for research on human subjects. Written informed consent was obtained from each subject interviewed after asking them to go through the subject information sheet printed in Hindi language (in which subjects were well versed) and a verbal explanation by the interviewer. Confidentiality of the information provided was maintained.

RESULTS

This prospective observational study was performed in 100 consecutive patients of acute pancreatitis admitted at SGT Medical College, from January 2017 to June 2019. Detailed history was taken, physical examination was done, investigations were done, treatment was given and results were found. Observations made were as below.

Table 1: Age distribution.

Age (in years)	Number of patients (%)
15-25	6 (6)
26-40	32 (32)
41- 55	36 (36)
>55	26 (26)

Table 2: Sex distribution.

Sex	Number of patients (%)
Female	53 (53)
Male	47 (47)

Table 3: Etiology.

Etiology	Number of patients (%)
Gall Stone	56 (56)
Alcohol	25 (25)
Idiopathic	15 (15)
Post ERCP	3 (3)
Trauma	1 (1)

The age in our study varied from 15 years to 82 years. Most of the patients 36 (36%) were from age group 41-55 years, followed by 32 (32%) from age group 26-40 years, followed by 32 (32%) from age group 26-40 years. Minimum patients 6(6%) were from age group 15-25 years (Table 1). Female patients were more than male patients. Female: male ratio was 1: 0.79 (Table 2). Etiology in most of the patients 56(56%) was gall stone, followed by alcohol in 25 (25%), followed by idiopathic causes in 15 (15%). Post ERCP patients were 3 (3%) and trauma was the cause in only 1 (1%) patient (Table 3).

In acute pancreatitis due to gall stone, diseases were mild in 40 (71.42%), severe in 16 (28.58%) in patients. When alcohol or idiopathic were the aetiologies, mild disease was present 80.00% and severe disease was in 20.00% patients. In post ERCP and in trauma, all patients had mild disease only (Table 4). Patients actually presented with pain. Thus pain was in all the patients. Distention abdomen, vomiting, fever and jaundice were found in 58 (58%), 65 (65%), 28 (28%), 12 (12%) respectively (Table 5).

Table 4: Etiology with severity.

Etiology	Number of patients (%)	Mild diseases (%)	Severe diseases (%)
Gall Stone	56 (56)	40 (71.42)	16 (28.58)
Alcohol	25 (25)	20 (80.00)	5 (20.00)
Idiopathic	15 (15)	12 (80.00)	3 (20.00)
Post ERCP	3 (3)	3 (100)	Nil
Trauma	1 (1)	1 (100)	Nil

In our study, serum amylase was done in all the patients and was more than 3 times the normal limit in 57 (57.00%) patients. Serum lipase was done in 26 (26.00%) patients and provided diagnosis in 22 (84.61%) patients. USG was done in all patients, provided clue to diagnosis in 80 (80.00%) patients. In 38 (38.00%) patients there was problem in diagnosis, in all these patients, CECT was done which confirmed the diagnosis (Table 6).

Table 5: Clinical features.

Clinical features	Number of patients (%)
Pain	100 (100)
Distention Abdomen	58 (58)
Vomiting	65 (65)
Fever	28 (28)
Jaundice	12 (12)

Table 6: Investigations.

Investigations	Test done in numbers of patients (%)	Provided diagnosis (%)	Did not provide diagnosis (%)
Serum amylase	100 (100)	57 (57.00)	43 (43.00)
Serum lipase	26 (26.00)	22 (84.61)	4 (15.39)
USG	100 (100)	79 (79.00)	21 (21.00)
CECT abdomen	38 (38.00)	38 (100)	Nil

Table 7: Severity and mortality profile of acute pancreatitis w.r.t. serum calcium, PO2 and total leukocyte count (TLC).

Parameters		Profile in patients with mild disease (%)	Profile in patients with severe disease (%)	Number of deaths n= total no. of deaths
Serum calcium (mg/dl)	>8	69 (92.00)	6 (24.00)	Nil
	<8	6 (8.00)	19 (76.00)	5 (n=7)
PO_2 (mmHg)	>60	70 (93.33)	4 (16.00)	Nil
	<60	5 (6.67)	21 (84.00)	5 (n=7)
Total leucocyte count (TLC) (cmm)	<18000	66 (88.00)	2 (8.00)	Nil
	>18000	9 (12.00)	23 (92.00)	4 (n=7)

Table 8: Clinical outcome.

Severity of disease	Patients discharged (%)	Left against medical advice (%)	Referred to higher centre (%)	Death (%)
Severe (25 patients)	20 (80.00)	2 (8.00)	3 (12.00)	6 (24.00)
Mild (75 patients)	72 (96.00)	1 (1.33)	2 (2.67)	1 (1.33)

Table 9: Local complications.

Complication	Number of patients (%)	Mortality
Pseudocyst	10 (10)	0
Necrosis	5 (5)	0
Infected Necrosis	1 (1)	1

The present study revealed that if serum calcium level was<8mg/dl or PO2 was<60 mmHg or TLC was>18000, then the percentages of patients with severe disease were 76%, 84% and 92% respectively (Table 7). Most of the

patients 20 out of 25 (80%) and 72 out of 75 (96%) were discharged. Few left against medical advice, a few were referred to higher centres. Mortality was in 6 (24%) patients in severe diseases and in 1 (1.33%) patient of mild disease (Table 8).

So far as local complications are concerned, our 10 (10%) patients had pseudocyst formation, 5 (5%) had necrosis and 1 (1%) patient had infected necrosis (Table 9). Among systemic complications, we had pleural effusion in 8 (8%) patients. Out of these 6 (75%) patients had mild effusion and 2 (25%) patients had severe effusion. These patients fared well. Acute renal failure (ARF) occurred in 5(5%) patients. Out of this 1 (20%) patient had mild problem and 4(80%) patients had severe form of disease and there was mortality in 4 patients. Our 3 (3%) patients had acute respiratory distress syndrome, out of them 2 (67%) patients had mild form of problem and 1 (33%) patient had severe problem and this patient died despite all possible efforts (Table 10).

Table 10: Systemic complications.

Systemic complication	Number of patients (%)	Mild (%)	Severe (%)	Mortality
Pleural effusion	8 (8%)	6 (75%)	2 (25%)	0
ARF	5 (5%)	1 (20%)	4 (80%)	4
ARDS	3 (3%)	2 (67%)	1 (33%)	1

DISCUSSION

The etiology and clinical manifestations of pancreatitis have great variations. Acute pancreatitis is an acute inflammation of pancreas. It is usually reversible and there are increased levels of pancreatic enzymes in blood and urine. Acute pancreatitis is most commonly secondary to biliary tract disease and alcohol abuse, but other causes may include viral infections, trauma, drugs, metabolic and connective tissue disorders and genetic mutations.

Table 11: Mortality.

Study	Overall mortality (%)
Study from Edinburgh university (1983)	15.1
South UK Audit (1999)	9.2
National study from Taiwan (2011)	2.7
Imrie et al (1975)	11.5
UK guidelines (2005)	<10
Present study	6

Table 11: Local complications.

Study	Percentage of patients with local complications*
National study from Taiwan (2011)	0.8%
Study from Edinburgh university (1993)	33.3
Present study	27%

*Pseudocyst, pancreatic necrosis, infected necrosis.

We conducted this prospective observational study at our SGT medical college, Budhera, Gurugram, Haryana, from January 2017 to June 2019. 100 consecutive patients admitted in department of general surgery, SGT medical college with diagnosis of acute pancreatitis were taken for the study. Acute pancreatitis is considered when at least 2 of the 3 criteria are there i.e. a) characteristic abdominal pain b) elevation of pancreatic enzymes>3times of upper normal limit c) characteristic finding in CECT i.e. oedema of pancreas, altered fat and fascial planes, fluid collection, necrosis (non-enhancement area>30% or 3 cm), bowel distention, mesenteric oedema and haemorrhage.

In present study maximum patients were from age group 41 to 55 years (Table 1), median age was 49 years. In the study from Edinburgh university (1993), South UK audit (1991) and national study from Taiwan (2011), the median age had been 58, 54 and 53 years respectively.[10-12] Thus our study is comparable to these studies. In our study female: male ratio is 1.0:0.79 (Table 2). Our study is comparable to study by Imrie et al (1975).[13] In present study maximum numbers of cases had gall stone as etiology followed by alcohol consumption, idiopathic causes, post ERCP and trauma (Table 3).[13] Gall stones as etiology in maximum number was found in studies e.g. Study from Sweden by Appelros et al and Study from New Delhi by Garg et al.[14,15] Our study reveals that patients with acute pancreatitis with gall stone as etiology had more percentage of patients having severe disease than that of alcohol as etiology. In idiopathic, post ERCP and trauma patients, disease was mainly mild in nature (Table 4). We have found that the first and foremost presentation is pain abdomen, distention abdomen, vomiting, fever and jaundice are other characteristics, which patients present (Table 5). In our study diagnosis could be made on the basis of characteristic clinical presentation and serum amylase levels in most of the patients. In some patients support of serum lipase, USG and CECT abdomen was taken (Table 6). We found that in most of the patients having severe diseases, serum calcium level was<8 mg/dl, PO2 was <60 mmHg and TLC was>18000/cmm (Table 7). In these patients mortality was also high. Out of 25 patients, who had severe illnesses, 6 died despite all efforts. In 75 patients with mild illnesses, 1 patient died. Overall mortality is 7% in our study (Table 8).

Overall mortality in different studies (Table 11) varies from 2.7% to 11.5%. Thus our results are quite comfortable and it is probably due to meticulous care at all steps. We had local complications rate of 16% in our study (Table 9).

This rate varies from 0.8% to 33.3% in different studies (Table 12). We had 16% rate of systemic complications (Table 10). Our results are comparable to the study by Imrie et al.

CONCLUSION

Acute pancreatitis is mild in most of the cases and recovery is good but still we should be careful as mortality in mild cases does exist. Severe cases should be meticulously treated as mortality rates are higher. They should be treated in ICU under the guidance of intensivist. Pain, vomiting and distension abdomen are common clinical presentations. Most of the patients are diagnosed by serum amylase levels and USG abdomen, in some patients serum lipase levels and CECT abdomen are required to establish the diagnosis. Our study results show that patients with severe diseases should be meticulously monitored clinically, biochemically, haemodynamically and radiologically.

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