

Original research article

Rural Perspectives on Diagnosis and Management of Acute Pancreatitis

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Abstract

Acute pancreatitis is an acute inflammatory process of the pancreas with variable involvement of the pancreas, regional tissues around the pancreas, or remote organ systems. Acute pancreatitis is one of the most common causes of epigastric pain and numbers of studies have suggested that the disease may be increasing in incidence. The last two decades have seen the emergence of significant evidence that has altered certain aspects of the management of acute pancreatitis. While most cases of acute pancreatitis are mild, the challenge remains in managing the severe cases and the complications associated with acute pancreatitis. Gallstones are still the most common cause with epidemiological trends indicating a rising incidence. The surgical management of acute gallstone pancreatitis has evolved. The present study includes 60 cases of acute pancreatitis admitted in a tertiary care centre. The reason for this conduct was for the evaluation of the etiology, presenting symptoms, investigations, management and complications of acute pancreatitis in a rural set up. Once the diagnosis is made, clinical efforts should simultaneously concentrate on investigating for the underlying etiology and managing the condition by anticipating its complications. Management of acute pancreatitis is largely supportive.

Key words : Acute pancreatitis, Etiology, Complications ,Management

Introduction

Acute pancreatitis is an acute inflammatory process of the pancreas with variable involvement of the pancreas, regional tissues around the pancreas, or remote organ systems¹. Acute pancreatitis is one of the most common causes of epigastric pain. The clinical course may range from mild discomfort with minimal pancreatic inflammation to severe necrotizing pancreatitis, complicated by multiorgan system failure and death². The most common etiologies are gallstones and alcohol abuse. Alcohol-induced acute pancreatitis is more common in middle-aged men. Idiopathic acute pancreatitis accounts for 20%–34% of cases and its incidence is similar in both men and women.³ In acute pancreatitis, the pancreatic enzymes amylase, lipase, elastase, and trypsin are simultaneously released into the bloodstream. As the clearance of each of these enzymes varies, the timing of the blood sampling from the onset of acute pancreatitis affects the test's sensitivity.⁴ Lipase has a higher diagnostic accuracy compared to amylase as the serum lipase levels are elevated for a longer period.⁵

Diagnostic criteria utilized till now were of clinical scoring system which is based on clinical

and routine lab investigations. However, considering the severity and progression of disease newer serological methods for early diagnosis are utilized. CT has got its own importance in terms of early diagnosis, prognostication of disease, prediction of probable outcome and early diagnosis of complications. Conservative line of management is utilized in mild as well as sterile necrotic pancreatitis. Surgical management is found to be reserved for progressive form of acute pancreatitis and pancreatic necrosis. The reason for this conduct was for the evaluation of the etiology, presenting symptoms, investigations, management and complications of acute pancreatitis in a rural set up.

Material and Methods

The present study includes 60 cases of acute pancreatitis admitted in a tertiary care centre N.K.P Salve institute of medical sciences and Lata Mangeshkar Hospital, Nagpur during the period from August 2010 to January 2013. Informed consent was obtained after explaining all the patients regarding the disease outcome and possible complications related to the treatment.

Inclusion criteria

All age groups

- Abdominal pain suggestive strongly of acute pancreatitis (Acute onset of a persistent, constant epigastric pain often radiating to the back)
- Serum amylase and / or lipase activity at least 3 times greater than the upper limit of normal (Although the amylase or lipase activities are usually much greater than three times increased)
- Characteristic findings of acute pancreatitis on ultrasound and CT scan

Exclusion criteria

- None.

Mode of Selection

This study included all the age groups and both the sex. When evaluating a patient suspected of having acute pancreatitis, four sequential steps have been followed:

1. Establishing the diagnosis acute of pancreatitis, excluding other abdominal conditions that have similar clinical features;
2. Identify the aetiology of acute pancreatitis;
3. Assess the severity of the disease, classify and scoring as per norms;
4. Detect any complication at the time of presentation or during the course of hospital stay.

Diagnosis of acute pancreatitis was suspected in patients presenting with severe pain localized to upper abdomen, which radiated to back on both sides of spine. Other presenting clinical features were vomiting, abdominal distension, fever, and jaundice. A detailed history was taken, which included information regarding alcohol intake, cigarette smoking, hypertriglyceridaemia, hypercalcemia, infection, trauma, surgery, ERCP, drugs, family history and HIV infection. General examination of patient was done to record temperature, BP, pulse rate, respiratory rate, icterus, edema feet and body weight. General examination was followed by abdominal examination. Abdominal examination included assessment of abdominal distension, tenderness, rebound tenderness, rigidity / guarding, presence of any abdominal lump/lumps in the region of pancreas or epigastrium, ascites and paralytic ileus. If history and clinical profile of patient led to suspicion of acute pancreatitis then biochemical / serological and radiological investigations were done to confirm the diagnosis as well as to assess the severity of the disease.

Following hematological investigations were done: Haemoglobin percentage, TLC/cu mm (To assess presence of infection), ESR (To assess presence of infection), PCV (To assess haemconcentration), Serum Bilirubin (To rule out hepatic involvement), blood urea (To assess renal status), serum creatinine (To assess renal status), AST (To assess hepatic status), Blood glucose (To assess pancreatic insufficiency), Serum amylase (For diagnosis of acute pancreatitis), Serum lipase (For diagnosis of acute pancreatitis), Serum calcium (To assess severity of the disease), C – reactive protein.

Radiological investigation were carried out which include X-ray chest, X-ray abdomen, USG abdomen in all patients (To know the condition which precipitates acute pancreatitis). CT scan was done when diagnosis was uncertain; symptoms persisted for 2 – 3 days; and when complications developed. Once the diagnosis of acute pancreatitis was confirmed by biochemical/ serological and radiological investigations, severity was assessed. The most reliable predictors of severity are CRP levels, pleural effusion, obesity and ascites. Prognosis was determined using Ranson's criteria, CT severity index and APACHE II score.

Management of Acute Pancreatitis

In our study, we have classified patients into following groups (Atlanta Classification) based on clinical features and biochemical investigations.

Mild Acute Pancreatitis:

Criteria for diagnosis of Mild Pancreatitis:

- Ranson Criteria Score < 3
- APACHE II Score < 8

Management of Mild acute pancreatitis

Analgesic administration

Ryle's tube

Administration of intravenous crystalloids and colloids:

Maintenance of oxygen saturation:

Severe Acute Pancreatitis:

Criteria for diagnosis of Severe Pancreatitis:

- Ranson Criteria Score > 3
- APACHE II Score > 8

Management of Severe acute pancreatitis:

Careful monitoring of the patient:

Relief of pain:

Volume Replacement:

Correction of metabolic abnormalities

Control of pancreatic enzyme secretion:

Support to other organ systems: Respiratory support , Renal support:

Nutritional support

Antibiotics

Outcome of the patients were recorded as recovery, complications, relapse or death. Such an approach is cost effective and reasonably accurate. It reduced cost, saved valuable time and gave a satisfactory yield in terms of number of cases accurately assessed.

These observations are derived from a study conducted on 60 cases of acute pancreatitis admitted in N.K.P Salve institute of medical sciences and Lata Mangeshkar Hospital, Nagpur

during the period from August 2010 to January 2013. The observations have been shown in the form of charts and tables for ease of understanding.

Results

The present study shows that acute pancreatitis is seen in all age groups. The peak of incidence of acute pancreatitis was seen in the age group of 30 – 39 years.

In our study 85% patients were males and 15% were females.

Table 1 : Distribution of subject according to Etiology

Disease	No. of Subject(%)	
	Yes	No
Alcohol	36(60)	23(38.3)
Gall Stone	12(20)	48(80)
Trauma	1(1.7)	59(98.3)
Other	11(18.3)	49(81.7)

In the present study, alcohol was the most common etiologic factor, followed by gall stones and trauma. 61.7 % patients were alcoholics, 20% had gall stones and 1% had a history of trauma.

All patients reported with chief complaint of pain in abdomen. Other complaints included fever (41.6%), vomiting (68.3%), distension (36.6%), lump in abdomen (18.3%) and jaundice (15%). Personal history of subjects revealed that 60% patients were alcoholic, 60% patients were smoker and 18.3% had high risk behavior.

Tenderness was seen in 100% patients followed by rigidity / guarding (75%), paralytic ileus (51.6%), distension (36.6%), abdominal lump (20%) and ascites (18.3%).

Table 2 : Distribution according to Blood Investigation

Haemoglobin		
Values	<10gm%	>10gm%
No. of Subject	37	23
TLC		
Values	<16000cu mm	>16000cu mm
No. of Subject	33	27
Serum Bilirubin		
Values	<1.5mg	>1.5mg
No. of Subject	51	9
AST		
Values	<250 u	>250 u

No. of Subject	37	23
BSR		
Values	<200mg	>200mg
No. of Subject	37	23
Blood Urea		
Values	<40	>40
No. of Subject	42	18
Serum Creatinine		
Values	<2	>2
No. of Subject	42	18
Serum Amylase		
Values	<4 times normal	>4 times normal
No. of Subject	11	49
CRP		
Values	<150mg	>150mg
No. of Subject	46	14
Serum Calcium		
Values	<8 mg	>8mg
No. of Subject	39	21
Serum Lipase		
Values	<4 times normal	>4 times normal
No. of Subject	0	60

In the present study, serum lipase was positive in 49 cases of acute pancreatitis and serum amylase was positive in 60 cases of acute pancreatitis. However, serum amylase was negative in 11 cases of acute pancreatitis. These cases constitute the false negative results given by serum amylase. Hence, it shows that serum lipase is a more sensitive diagnostic test for acute pancreatitis.

Table 3 : Significance of Serum Amylase and Lipase

	Serum Amylase	Serum Lipase
True Positive Results	49	60
True Negative Results	-	-
False Positive Results	-	-
False Negative Results	11	-

Table 4 : Distribution according to X-ray

X-ray	No. of Subject(%)		
	Normal	Paralytic Ileus	Sentinal Loops
Chest	36(60)		24(40)
Abdomen	26(43.3)	31(51.7)	3(5)

Table 5 : Distribution according to CTSI Score

	No.of Subject(%)					
	1	2	3	4	5	6
CT score	14(23.3)	8(13.3)	11(18.3)	8(13.3)		
Necrosis score	19(31.6)	2(3.3)	15(25)	0(0)	5(8.3)	
CTSI	10(16.7)	1(1.7)	11(18.3)	3(5)	6(10)	10(16.7)

CTSI score was used to assess the severity of the disease. This scoring revealed that those with higher score had severe form of the disease.

Table 6 : Distribution according to complication

Complication	No. of Subject(%)	
	Present	Absent
Paralytic Ileus	31(51.6)	29(48.3)
Pseudocyst	12(20)	48(80)
Acute Fluid Collection	21(35)	39(65)
Pleural Effusion	24(40)	36(60)
Ascitis	11(18.3)	49(81.7)
Necrosis	20(33.3)	40(66.7)
Abscess	0(0)	60(100)
Internal Fistula	0(0)	60(100)
External Fistula	1(1.7)	59(98.7)
Vascular Complications	5(8.3)	55(91.7)

Paralytic ileus (51.6%) was the most common complication in the present study. Other complications were acute fluid collections (35%), Pleural effusion (40%), necrosis (33.3%),

pseudocyst (20%) and ascites (18.3%).

Distribution according to Atlanta Classification (1990) : 47 patients suffered from oedematous pancreatitis and 13 patients suffered from necrotizing pancreatitis.

Table 7: Distribution according to Treatment

Treatment	No. of Subject(%)
Conservative	43(71.6)
Surgical	17(28.3)

In our study, 17 (28.3%) out of 60 were managed surgically and 43 (71.6) out of 60 were managed conservatively.

In our study early oral feeding was given to 13 (21.6%) out of 60 patients, nasogastric feeding was given to 11 (18.3%) out of 60 patients, total Parenteral Nutrition (TPN) was given in 36 (60%) out of 60 patients, and feeding jejunostomy was given in 5 out of 60 patients.

Table 8: Distribution according to Nutrition

Nutrition	No. of Subjects
Oral Feeding	13 (21.6%)
Nasogastric	11 (18.33%)
Total Parenteral Nutrition	36 (60%)
Feeding Jejunostomy (In Post Operative period)	5

Table 9 : Distribution according to Period of hospitalization

Days	No. of Subject(%)
1-5	11(18.3)
6-10	17(28.3)
11-20	16(26.7)
21-30	12(20)
30-40	4(6.7)
Total	60
Average	14.36 Days

Mean period of hospitalization was 14.36 days.

Table 10: Distribution of subject according to Outcome

Outcome	No. of Subject(%)
Recovered	35(58.3)
Relapse	10(16.7)
Expired	15(25)

58.3% patients recovered after the prescribed treatment. However, 16.7% patients had a relapse and 25% expired.

Discussion

The present study was done to assess age incidence, sexual predilection, aetiology, clinical manifestations, severity, efficacy of biochemical and radiological investigations, management and outcome in patient of acute pancreatitis. The present study shows that acute pancreatitis is seen in all age groups. The peak of incidence of acute pancreatitis was seen in the age group of 30 – 39 years. Thus, the results of our study correlate with the study done by Rutherford et al in 2004.⁶ In the present study, alcohol was the most common etiologic factor, followed by gall stones and trauma. 60 % (36 out 60) patients were alcoholics, 20% (12 out 60) had gall stones and 1.7% (1 out of 60) had a history of blunt abdominal trauma. Jennifer K. Carroll et al found that the most common risk factors for acute pancreatic are gallbladder disease (often caused by cholelithiasis) and chronic alcohol consumption. All patients reported with chief complaint of pain in abdomen. Other chief complaints included fever (41.6%), vomiting (68.3%), distension (36.6%), lump in abdomen (18.3%) and jaundice (15%). Thus, the two most common presenting complaints in our study were pain and vomiting. This finding correlates with the findings of Ranson et al's study where they found pain and vomiting to be the most common presenting complaint.⁷ Severity of acute pancreatitis was evaluated in the present study by using Ranson's score, APACHE II score and CTSI score. 71.7% patients had Ranson score < 3 and 28.3% had Ranson score > 3. 71.7 % patients had APACHE II score of < 8 and 28.3 % patients had APACHE II score of > 8. Out of 17 patients who had Ranson score of > 3 and APACHE II Score of > 8, 17.6% patients died. Our study correlates with JENNIFER K. CARROLL et al who also used Ranson's criteria and APACHE II to predict severity. Strong association was found between Ranson's criteria and APACHE II scale scores and mortality. In our study, 13 out of 60 (21.7%) patients were diagnosed as having necrotizing pancreatitis. Out of these 13 patients, 8 patients had pleural effusion. This finding correlates with the findings of a study done by Talamini et al. This study indicated that higher incidence of pleural effusion was seen in patients with severe and necrotizing form of acute pancreatitis. Due to close correlation between pleural effusion and acute pancreatitis, it has been postulated that the formation of pleural effusion may also bear indirect sign of the risk of bacterial translocation probably from the GIT to other organs including pancreas.⁸ In the present study, amylase and lipase were used for assessment. Amylase levels were raised in 49 patients and lipase levels were raised in all patients. Thus, our study indicates that lipase levels are more sensitive indicator of acute pancreatitis. Thus, the above findings made by Abilio Munoz et al⁹ match with the results of our study. CT scan was found to be more specific than ultrasonography. Paralytic ileus was the most common complication in the present study. Other complications were acute fluid collections, Pleural effusion, necrosis, pseudocyst, ascites, MODS. 43 patients suffered from mild pancreatitis and 17 suffered from severe pancreatitis in our study. 43 patients were treated conservatively while 5 patients had to undergo surgical intervention in our study while 12 patients underwent deferred surgery was done for gall bladder disease. Early

enteral feeding is associated with reduction in both infectious complications and mortality.

In our study, 35 (58.3%) out of 60 patients recovered, 10 (17%) out of 60 had relapse during the hospital stay and 15 (25%) out of 60 expired. Our study shows 27.9% (12 out of 43) mortality in the patients managed conservatively and 17.6% (3 out of 17) overall mortality in patients managed surgically. Mortality in patients who underwent necrosectomy was 40% (2 out of 5) and 8.3% (1 out of 12) in patients who underwent cholecystectomy. In our study, the mean hospital stay of patients of acute pancreatitis was 14.3 days, which matches with other studies. The cause of death in 15 (25%) out of 60 patients in our study of acute pancreatitis includes multiple organ dysfunction syndrome.

Conclusion

Acute pancreatitis is frequently encountered on the emergency surgical take. Once the diagnosis is made, clinical efforts should simultaneously concentrate on investigating for the underlying etiology and managing the condition by anticipating its complications, which can be aided by using any of the severity scoring systems described. Management of acute pancreatitis is largely supportive. There is still no consensus on the ideal type and regimen of fluid for resuscitation, but goal-directed fluid therapy is associated with better outcomes. Early enteral nutrition modulates the inflammatory response and improves outcomes by decreasing infective complications of acute pancreatitis. Antibiotics should be used judiciously as prophylactic antibiotics have not shown any benefit in preventing infective complications of acute pancreatitis.

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