Original Article

# Acute pancreatitis: A prospective study in tertiary medical care center in India

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## Abstract

**Background:** Acute pancreatitis is sudden inflammation of the pancreas leading to mild to severe complications and high mortality inspite of treatment. **Aim:** To study the Incidence, Prevalence, Causative factors, Clinical pattern and Conservative management of Acute Pancreatitis in rural area. **Material an Method:** 50 Cases of Acute pancreatitis were studied in tertiary care center, D.Y., Patil medical college over a period of 3 years. The study was done to find out the ageand sex incidence, causative factors, clinical presentation. All Acute pancreatitis patients were treated conservatively in intensive care unit and their outcomes were observed. All these patients were followed up for 3 months to 1 year for further evaluation of recurrence. **Result:** In Present study there was high incidence of male patients suffering from Acute pancreatitis, Around (60%) of cases comprised of Alcoholic pancreatitis followed by (32%) of Gall stone pancreatitis. In Acute pancreatitis Aggressive management, close monitoring in ICU and conservative management was promising, very safe and beneficial. **Conclusion:** Advances in diagnostic and therapeutic interventions have led to promising outcomes of Acute pancreatitis leading to decrease in mortality rate. A number of conditions are known to cause this disorder, Chronic Alcohol abuse and Gallstones were found very common cause in this rural area which definitely requires health education programs to make awareness about the disease.

**Keywords:** Acute pancreatitis, Alcoholic pancreatitis, conservative management.

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## INTRODUCTION

Incidence of acute pancreatitis is approximately 185,000 cases per year. It is common, the incidence in recent European studies varies between 20 to 70 cases per 100,000 population with an overall mortality of between 3% and 8%[3-4]. Acute pancreatitis begins in acinar cells and leads to the premature, intra-acinar forms (eg. Trypsinogen to Trypsin) accumulation of large vacuoles in acinar cells, inflammation and parenchymal cell death through apoptosis and necrosis[1]. The activated pancreatic enzymes cause autodigestion. These inflammatory process leads to collection of fluids in and around the pancreas. In acute period, the fluid collection is not well defined, and it is often associated with tissue odema. After 4 weeks the fluid collection is much more organized with definite wall and is described as pseudocsyt. According to latest classification, these can be divided in to acute or delayed depending on whether such a collection is less than or more than4 weeks duration[2]. The enzyme rich fluid and necrotic collections if persistent will eventually develop fibrosis around its periphery leading to WOPN ( walled off pancreatic necrosis ) after necrosis three potential outcomes exists: Resolution, pseudocyst, WOPN or formation of abscess or infected necrosis. The infected pancreatic necrosis leads to severe complication with high mortality rate with multiorgan failure and sepsis[3]. The objective of the study were to find out age and sex incidence, prevalence of causative factors, investigative findings and to determine the benefits of conservative treatment in management of acute pancreatitis.

## MATERIAL AND METHODS

The present study was conducted between 2011- 2014 in the Department of surgery, D.Y.Patil Medical college, Kolhapur, Maharashtra, India, which prorvides Tertiary

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health facilities. All these 50 patients were referral cases admitted as emergency with severe abdominal pain in epigastric region. On admission each patients detailed analysis regarding age, sex, history regarding alcohol and smoking were asked. After Medical history, physical examination and diagnosing clinically the Laboratory investigations including routine and special investigations like serum amylase, serum lipase, serum urea, Serum creatinine, serum calcium, liver function tests, serum blood sugar level, Arterial blood gas were done. X-ray chest and USG abdomen was also done at early stage. CT abdomen was done for all patients after 4-5 days after admission to the hospital to evaluate the status of acute changes of pancreas and a repeat CT was done after three to four weeks. Patients with perforated peptic ulcer, Acute cholecystitis, pneumonia, pleural pain, myocardial infarction were excluded in this study. After thorough investigation diagnosis were confirmed with elevated serum amylase, abdominal pain and nausea and vomiting. All these patients were treated in surgical ICU conservatively by keeping all these patients nil by mouth, Ryles tube ( nasogastric tube ) was inserted, and were treated with pain relieving agents, restoring fluid and electrolyte losses intravenously. Intravenous antibiotics were started immediately after diagnosing clinically and serum hematocrit reports. All these patients were closely monitored in cases of haemodynamic, respiratory, renal insufficiency with diuresis of < 0.5 ml/kg/n inspite of adequate fluid resuscitation were managed in Intensive care unit. ERCP (Endoscopic retrograde cholangiopancreatography) were done on biliary etiology. Laproscopic cholecystectomy were done to all these 16 patients within 1-2 weeks. Follow up of all 50 patients were done for 3 months to 1 year.

## OBSERVATION AND RESULT

Highest incidence of age group were between 31- 40 years (56%) followed by age between 21-30 years (20 %). Highest incidence were observed in 3 rd decade followed by 2nd decade. Male incidence with acute pancreatitis were more (86%) and female were (14%). The youngest patient was 12 years female child and eldest was 53 years old male patient as shown in Table 1

**Table 1:** Age and Sex Incidence

| Age | No. of Cases | | Total | Percentage |
|---|---|---|---|---|
| | Male | Female | | |
| 10-20 | 0 | 1 | 1 | 2 |
| 21-30 | 9 | 1 | 10 | 20 |
| 31-40 | 25 | 3 | 28 | 56 |
| 41-50 | 4 | 2 | 6 | 12 |
| 51 and above | 5 | 0 | 5 | 10 |
| **Total** | **43(86%)** | **7 (14%)** | **50(100%)** | **100** |

All 50 patients were admitted with severe epigastric pain (100%), nausea and vomiting (54.0%) and around (36%) of patients had fever, Ascites was present in (56.0%) of patients and pleural effusion was present in (54%) of patients. Jaundice was present in (50%) of cases as shown in Table 2.

**Table 2:** Signs and Symptoms

| Signs and Symptoms | No. of Cases | Percentage |
|---|---|---|
| Severe epigastric pain | 50 | 100% |
| Nausea and vomiting | 27 | 54% |
| Fever | 18 | 36% |
| Jaundice | 25 | 50% |
| Ascites | 28 | 56% |
| Pleural effusion | 27 | 54% |

On admission all these patients laboratory investigations were done which revealed elevated W.B.C (100%), Serum amylase (100%), serum lipase (46%), serum glucose (76%), raised CRP (100%), abnormal liver functions in (40%) of patients. The USG abdomen findings revealed Acute pancreatitis in (100%) of cases, fatty liver in (60%) while ascites was present in (30 %) of cases. CT abdomen of all patients were done after 3-4 days of admission to know the exact status of pancreatic pathological inflammation and severity of glands. On CT (100%) had diffusely enlarged pancreas, (24%) of patients had pancreatic abnormality and peripancreatic inflammation, fluid collection in single location of pancreas were observed in 3 (6%) patients and multiple location in 2(4%) of cases, gall stones in 16 (32%) and pancreatic necrosis around 30% were present in (10%) of cases. Table 3 highlights the Investigative findings.

**Table 3:** The Investigation Findings

| Laboratory Findings | No. of cases | Percentage |
|---|---|---|
| BLOOD | | |
| Leucocytosis | 50 | 100 |
| Elevated blood glucose level | 38 | 76 |
| Elevated serum amylase | 50 | 100 |
| Elevated serum lipase | 23 | 46 |
| Elevated CRP | 50 | 10 |
| Abnormal LFT | 20 | 40 |
| USG FINDINGS | | |
| Acute pancreatitis | 50 | 100 |
| Ascites | 15 | 30 |
| Gall stones | 16 | 32 |
| Fatty lever | 30 | 60 |
| CT FINDINGS | | |
| Diffusely enlarged pancreas | 50 | 100 |
| Pancreatic gland abnormality and pancreatic inflammation | 12 | 24 |
| Fluid collection in single location | 3 | 6 |
| Fluid collection in multiple location | 2 | 4 |
| Gall stones | 16 | 32 |
| Necrosis around 30% | 5 | 10 |

The Prevalence of Alcoholic pancreatitis were very common in this rural area (60%) followed Gall stones (32%), post ERCP (4%), Idiopathic pancreatitis (4%).The causative factors are highlighted in Table 4.

**Table 4:** Causative factors observed in this study

| Causative factors | No. of cases | Percentage |
|---|---|---|
| Alcoholic pancreatitis | 30 | 60% |
| Gall stone pancreatitis | 16 | 32% |
| Post ERCP pancreatitis | 2 | 4 % |
| Idiopathic pancreatitis | 2 | 4% |
| **Total** | **50** | **100%** |

Patients with alcoholic, post ERCP, Idiopathic pancreatitis were managed by conservative treatment with close monitoring in ICU with adequate intravenous fluid and pain management, while all the Gall stone pancreatitis patients were managed by ERCP ( Endoscopic retrograde cholangiopancreatography ) and laproscopic cholecystectomy on the same admission. All these patients were given prophylactic antibiotics and nutritional support to prevent the infectious complications of pancreas. Complications developed in patients are as follows Ascites (60%), Jaundice (50%), Pleural effusion (54%), ARF(10%), Hypoglycemia (14%), pseudocyst formation of pancreas (4%). All patients were followed up for 3 months to 1 year. Surprisigly 2 patients were again admitted with reccurence of same disorder and both of them were chronic alcoholics.

## DISSCUSSION

Acute pancreatitis can occur in any age, the youngest patient in this series was 12 years female child and oldest was 53 year old male. In this study acute pancreatitis were common in 3rd and 4th decade. In present series Alcoholic pancreatitis were more prevalent in 60% of cases, followed by 32% gall stone pancreatitis. In Recent study Whitcomb D C *et al*[8] suggested 44% patients have alcohol as the primary risk factor for acute or chronic pancreatitis. Incidence of male patients were 86% while female were14%, difference in sexual predilection are based on the difference in the frequency of causative factors of the pancreatitis. Men have alcohol induced pancreatitis while women are more likely to have gall stone pancreatitis. Acute pancreatitis is an acute inflammation of the pancreas that in western countries is mainly caused by gall stones 40%-50% and alcohol abuse 10%-40% and other causes 20%-30%, include medication ERCP, hypertriglyceridemia and surgery in around 10% etiology remains unknown[5,6]. Even this study matches with Yadav *et al*[5] and Neoptolemons NP *et al*[6] with consideration of causative factors. Diagnosis of acute pancreatitis requires at least 2 of the following 3 features

- Abdominal pain typically epigastric
- Elevated serum amylase or lipase 2-3 times the upper limit of normal.
- Characteristic findings of acute pancreatitis on USG or on CT abdomen.

In most of the cases clinical diagnosis and Laboratory findings accurately provide the diagnosis and no diagnostic image is required[7] This study is similar to the study of Sandr Van Brunschot *et al*[7], all patients had abdominal pain (100%), Elevated serum amylase (100%), Elevated serum lipase (46%), Elevated CRP (100%) and abnormal LFT (40%),on USG finding acute pancreatitis were (100%). In present study CT abdomen of all patients were done after 4-5 days of admission to find out the underline pathology of pancreas. A CT abdomen with initial 3-4 days of acute pancreatitis might underestimate or miss the amount of necrosis according to Forsmak CE *et al*[9] and Bollen *et al*[10]. According to Arvanitakis M *et al* CT is considered the gold standard in diagnostic imaging for Acute pancreatitis[11]. In predicting the prognosis of acute pancreatitis there are several scoring Indices such as Ransons criteria, Glasglow criteria, APACHE II (Acute physiology and chronic health evaluation), Balthazar"s scoring and BISAP score. Ransons criteria is a clinical prediction rule for predicting the severity of acute pancreatitis and it was introduced in 1974[15]. Ransons is also applicable to both alcoholic pancreatitis and Gall stone pancreatitis. In the present study Ransons criteria was applied. According to Ranson *et al* on admission patients age in years less than 55 years, Leucocytosis >16000 cells/mm3, Blood glucose >10mmol/L (> 200mg/dl), serum AST >250 IU/L and serum LDH>350IU/L and at 48 hrs calcium<2.0 mmol/L, Hematocrit fall > 10mmol/l, hypoxemia PO2 < 60mm of Hg, BUN increased by 1.8 mmol/L, and sequestration of fluids > 6 L. Interpretation criteria of Ransons was if the score > 3 then severe pancreatitis is likely if the score < 3 severe pancreatitis is unlikely or score 0 to 2 : 2% mortality, score 3 to 4 : 15% mortality, score 5to 6 :40% mortality, score 7 to 8 :100% mortality. The present study with Ranson criteria (60%) of cases had mild attack less than 3 signs, ( 24%) of patients had more than 3 signs, (10%) of cases had 3-4 signs while (4%) of patients had 5-6 signs. USG abdomen was done in all patients within 6 hrs on admission. Around (100%) of patients had acute pancreatitis with (60%) fatty liver and ascites in (30%) of cases. Gallstones were found in (32%) of cases immediate ERCP was done within 24 hrs to 72 hrs. According to Apostolakos *et al*[16] early ERCP performed within 24 hrs to 72 hrs of presentation is known to reduce morbidity and mortality. CT scan study were conducted after 4-5 days of admission to the hospital in all 50 patients to determine the severity of acute pancreatitis. Emil. J. Balthazar *et al*[17] developed in the early 1990s the

Computed Tomography Severity Index (CTSI) which is a grading system used to determine the severity of acute pancreatitis. In present study the Balthazars criteria was applied, diffuse enlargement of pancreas were present in (100%) of patients, 1 point according to Balthazar score while pancreatic gland abnormality and peripancreatic inflammation were present in (24%) of patients which indicate 2 points while fluid collection in single location were present in (6%)of cases which indicates 3 points, (4%) of multiple fluid collection indicating 4 points, pancreatic necrosis around 30% were present in (10%) of patients indicating 2 points of score. The CTSI staging definitely determined the severity of acute pancreatitis. CTSI staging of acute pancreatitis severity has been shown by a number of studies to provide more accurate assessment than APACHE II, Ranson and CRP level[18,19]. Initial management of acute pancreatitis is mainly conservative management which consists of supportive care with fluid resuscitation, pain management, frequent monitoring of clinical course, nutritional support and supportive measures for organ failure. In the initial stages within the first 12 hrs to 24 hrs aggressive hydration at a rate of 5 to 10 ml/kg per hour of Normal saline or Ringer lactate solution were administered to all patients with acute pancreatitis. Fluid requirements were reassessed at frequent levels in the first 6 hrs of admission and for the next 24 to 48 hrs. The rate of fluid resuscitation were adjusted based on clinical assessment, haematocrit and blood urea nitrogen values. In the initial stages (within first 12 to 24 hrs) of acute pancreatitis fluid replacement has been associated with reduction in mortality and morbidity[20,21]. All patients were kept nil by mouth with nasogastric tube to achieve bowel rest. Anagelsia play an important role in treatment of pancreatitis, intravenous/intramuscular analgesia were administered to all patients. Opioids are safe and effective at providing pain control in patients with acute pancreatitis as suggested by Basutro Ona *et al*[22]. Intravenous antiboitcs were started to all patients in order to avoid future development of complications of acute pancreatitis. Duber H *et al*[23] suggested that there are isolated case reports of patients with pancreatic infection surviving with medical treatment alone[23]. Even our study observed that conservative management of acute pancreatitis using early antibiotics were safe and effective. Out of 50 patients 33 (66%) were conservatively managed and 16 patients (32%) needed ERCP and laproscopic cholecystectomy. 5 patients developed 30% pancreatic necrosis which were managed by conservative treatment, only one patient did not respond to this treatment, needed surgical intervention open necrostomy was done. Systemic complications in the present study observed were Ascites (56%), Jaundice (50%), Pleural effusion (54%), Hyperglycemia (14%), ARDS (10%), Pseudocyst formation (4%). All these patients were treated conservatively with vigorous and aggressive management in ICU. There was no mortality in this study, this may be due to trail of study with early antibiotic treatment against acute pancreatitis. In severe cases Meropenum, Imipenum were used to prevent severe infections of pancreas which significantly proved more effective. According to Eland IA *et al*[4] Incidence of acute pancreatitis increased from 12.4 to 15.9 % per 100,000 annually from 1985 to 1995. In Europe however mortality remained stable as a result of better outcomes[24].

## CONCLUSION

The standard goal of treating acute pancreatitis is to improve pancreatic inflammation and to correct underlying causes. In present study there was high incidence of alcoholic pancreatitis, health education regarding the disease and risk factor about alcohol must be made aware to the patients in this rural area. The purpose of this study definitely increased the knowledge in assessing the clinical presentation, causative factors and diagnosis of acute pancreatitis. The study also confirmed that the conservative treatment using early antibiotics were safe and effective. In the present study inspite of promising results, the study was conducted in a very small group it is worthwhile to conclude that there is need for many more clinical trials with larger sample size.

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