

**A STUDY OF CORELATION OF CLINICAL PROFILE WITH BIOCHEMICAL & RADIOLOGICAL INVESTIGATIONS IN ACUTE PANCREATITIS****Dr. Santosh Dalavi and Dr. Swapnil Chopade\***

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**ABSTRACT**

**Introduction:** Acute pancreatitis is a common condition involving the pancreas. Gall stone disease and alcohol account for greater than 80% of all patients with acute pancreatitis, with biliary disease accounting for 45% and alcohol found in 35% of patients.<sup>1</sup> Acute pancreatitis includes a wide spectrum of disease, from one with mild self-limiting symptoms, to fulminant processes with multiorgan failure and high mortality. Given the wide spectrum of disease seen, the care of patients with pancreatitis must be highly individualized.

**Primary Objective:** To study of correlation of clinical profile with biochemical & radiological investigations in acute pancreatitis. **Secondary Objective:** To study the outcome of treatment and complications of acute pancreatitis. **Methods:** After admission to the hospital, a detailed clinical history and examination of the patient was done. Routine investigations like Complete hemogram, Blood urea, Serum amylase; serum lipase were performed. USG Abdomen and contrast CT ABDOMEN. The patients were classified as having mild acute pancreatitis or severe acute pancreatitis. The treatment plan was focussed on adequate initial resuscitation and supportive care, early detection of complications and definitive treatment of the associated biliary disease. **Observations & Results:** Serum Lipase was the diagnostic test with a sensitivity of 0%. Serum amylase is a strong indicator of development of pseudocysts as 70% of patients with levels more than twice the upper limit developed pseudocysts. Ultrasonography visualized pancreas on about 92% patients with findings of acute bulky oedematous & bulky hypoechoic pancreatitis whereas CT visualized pancreas in 100% patients. CT is a confirmative investigation in diagnosis and staging of Acute pancreatitis. CT Severity Index is prognostic score in assessing severity & outcome of disease. **Conclusion:** Acute pancreatitis is a clinical diagnosis supplemented by serum amylase, serum lipase, Ultrasonography & CECT. Ultrasonography visualized pancreas on about 92% patients and its limitations were overcome by CECT.

**INTRODUCTION**

Acute pancreatitis is a common condition involving the pancreas. Gall stone disease and alcohol account for greater than 80% of all patients with acute pancreatitis, with biliary disease accounting for 45% and alcohol found in 35% of patients.<sup>1</sup> Alcohol is the most common etiology, approximately 70% of patients had alcohol abuse as the etiology. Acute pancreatitis includes a wide spectrum of disease, from one with mild self-limiting symptoms, to fulminant processes with multiorgan failure and high mortality. Most experience relatively minor episodes of disease characterized by mild parenchymal edema without distant organ dysfunction and an uneventful recovery. Severe episodes, however, may involve a progression to extensive pancreatic necrosis, development of the systemic inflammatory response syndrome (SIRS), multiorgan failure, rapid clinical deterioration, and even death. Although the overall mortality rate for acute pancreatitis is 2–10%, this is related primarily to the 10–30% of patients with severe disease characterized by pancreatic and peripancreatic

necrosis.<sup>2</sup> Given the wide spectrum of disease seen, the care of patients with pancreatitis must be highly individualized. Patients with mild acute pancreatitis generally can be managed with resuscitation and supportive care. Etiologic factors are sought and treated, if possible, but operative therapy essentially has no role in the care of these patients. Those with severe and necrotizing pancreatitis require intensive therapy, which may include wide operative debridement of the infected pancreas or surgical management of local complications of the disease. Whereas early aggressive debridement was used commonly for all patients with pancreatic necrosis in the past, now most pancreatic surgeons have adopted a more conservative algorithm of selective and delayed pancreatic debridement.<sup>3</sup>

**AIM**

To study correlation of clinical profile with biochemical & radiological investigations in acute pancreatitis.

## OBJECTIVES

To study signs and symptoms of acute pancreatitis  
 To study the role of biochemical investigations in acute pancreatitis.  
 To study the role of radiological investigations in acute pancreatitis.  
 To study the role of CT severity index with clinical manifestation.  
 To study the outcome of treatment and complication of acute pancreatitis.

## MATERIALS AND METHODS

Total 50 patients of acute pancreatitis were studied after approval from institutional ethical committee and informed written consent. After admission to the hospital, a detailed clinical history and examination of the patient was done. Relevant investigations were undertaken to make the diagnosis.

Four sequential steps have been followed.

- Establishing the diagnosis of pancreatitis, excluding other abdominal conditions that have similar clinical features,
- Identify the presence of biliary tract disease, excluding other possible etiologies of the acute pancreatitis,
- Assess the severity of the disease,
- Detect any complications.

Routine investigations like Complete hemogram, Blood urea, Serum amylase; serum lipase were performed. USG Abdomen was done routinely to confirm the diagnosis, for evaluation of the biliary tract and for detecting any complications. Contrast enhanced CT Abdomen was undertaken when the diagnosis was doubtful, when USG was not confirmative and when patient failed to improve beyond 72 hours.

The patients were classified as having,

**Mild acute pancreatitis** if, it is associated with transient organ failure (<48 hours), no local complications and an uneventful recovery.

**Severe acute pancreatitis** if, it is associated with organ failure (>48 hours) and/or local complications, such as necrosis, abscess, or pseudocyst.

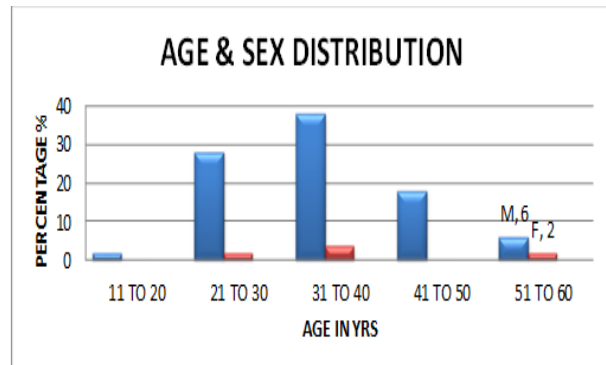
The treatment plan was focussed on adequate initial resuscitation and supportive care, early detection of complications and definitive treatment of the associated biliary disease. Data like clinical symptoms and signs, results of investigations, complications, surgical procedures if any, duration of hospital stay, recurrence if any were carefully recorded.

## RESULTS

### Age and Sex distribution

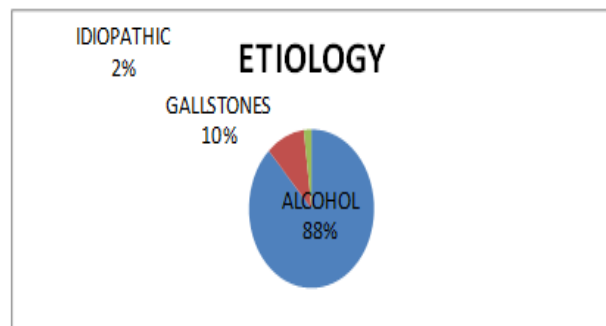
Study shows analysis of age and sex distribution. In study, the youngest was 20 years old and the eldest was 58 years old. The highest incidence was noted in

the age group of 31-40 years, accounting for 42% of the patients. The mean age of presentation was 36.1 years. In our present series, we had a male predominance who accounted for 92% of the patients and the females accounted for 8% of the total patients with a male to female ratio of 11.5:1.



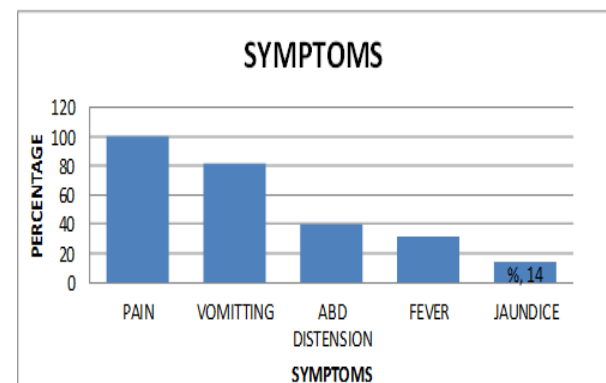
## COMPARISON OF ETIOLOGY

In our present study alcoholism was the main etiological factor accounting for 88% of the cases, 10% of patients had biliary pancreatitis and the cause was unknown in 2% of patients.



## Comparison of clinical features

In our study 100% of the patients presented with pain abdomen, 84% with Nausea/vomiting, 40% with abdominal distension, 32% with fever and 14% with jaundice.

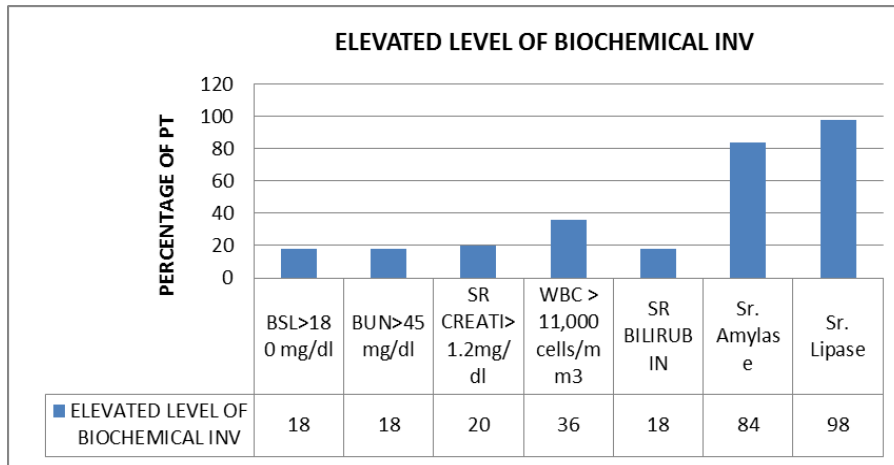


## Biochemical investigations

In our present study 18% of patients presented with hyperglycemia, 18% had raised blood urea nitrogen

(BUN), 20% had raised creatinine, 18% had raised bilirubin & 36% had a WBC count of more than 11,000cells/mm<sup>3</sup>, While serum Amylase supported

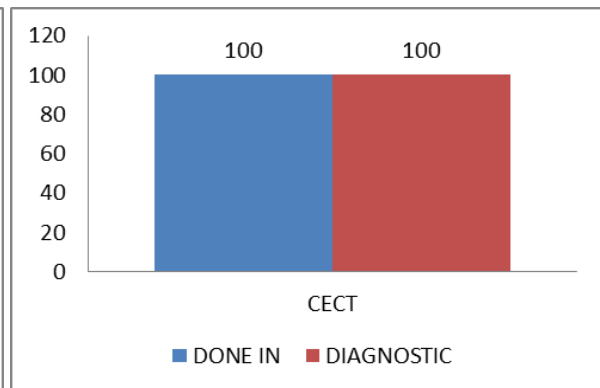
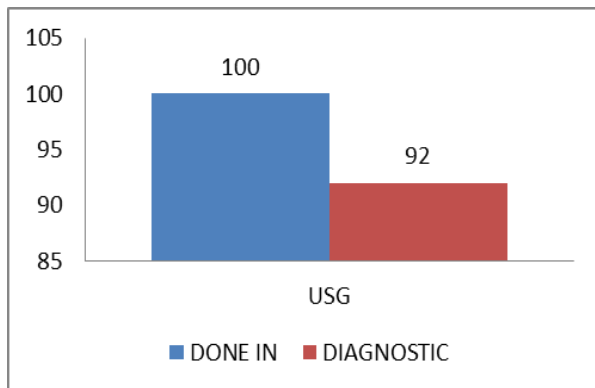
diagnosis in 42 cases (Sensitivity 84%) and serum Lipase supported the diagnosis in 49 cases (Sensitivity 98%).



**Radiological Investigations**

X-rays of the abdomen were routinely done. Ultrasonography (USG) of the abdomen was done in all cases and it supported the diagnosis in 46 cases (92%).

Contrast Enhanced Computed Tomography (CECT) was done in all patients and it supported the diagnosis in all the cases in which it was done.

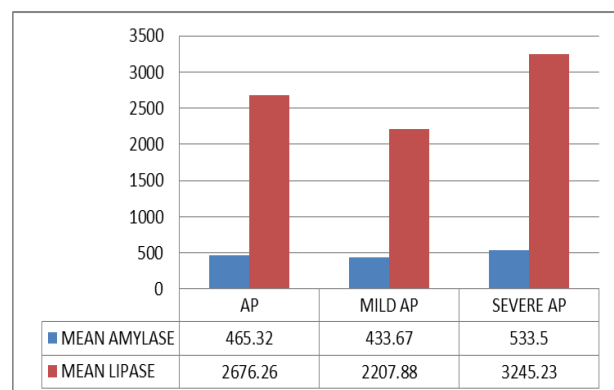
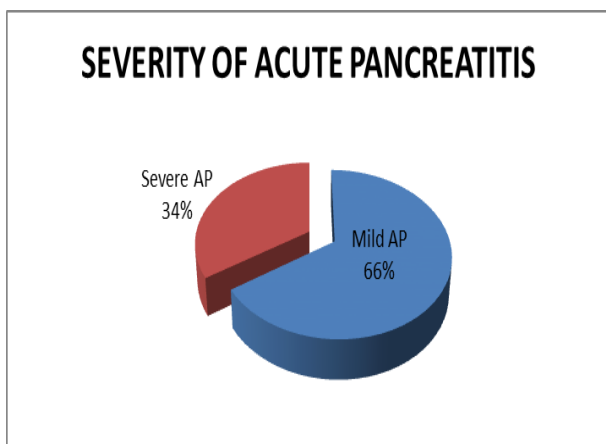


**SEVERITY BY ATLANTA CLASSIFICATION**

All cases were classified into mild or severe according to the Atlanta classification. 33 (66 %) patients had a mild disease while 17 (34%) had a severe attack.

**Severity of Acute Pancreatitis with Mean Amylase & Lipase**

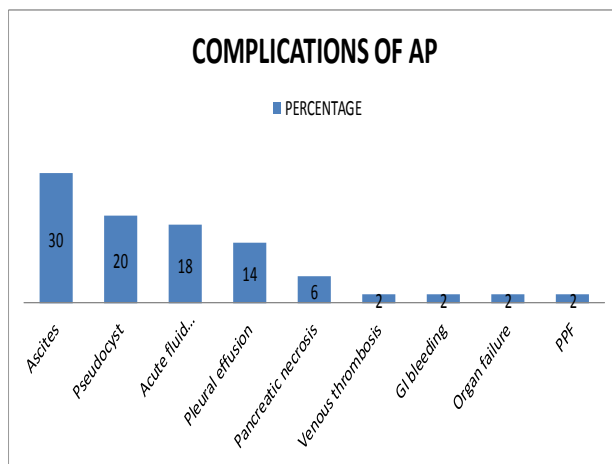
In our study 17 (34%) patients developed various complications enumerated below and were classified as severe acute pancreatitis with raise avg amylase 533.5 & avg lipase 3245.23 and rest 33 (66%) patients had mild acute pancreatitis. with avg amylase 433.67 & avg lipase 2207.23.



### Complications of Acute Pancreatitis

In our study of the total 17(34%) patients developing complications 15(30%) had ascites, 9(18%) had acute fluid collections, 10(20%) had pseudocyst, 7(14%) had pleural effusion, 3 (6%) had pancreatic necrosis, 1 (2%) had portal vein thrombosis, 1 (2%) had GI bleed and 1 (2%) had organ failure. & 1(2%) had Pancreatico-pleural fistula.

All the complications were conservatively managed except for two patient with pseudocyst for whom cystogastrostomy was done. One patient with GI bleed died.



### DISCUSSION

Patients with severe acute pancreatitis demand considerable resources in the form of imaging, endoscopy, surgery and intensive care.<sup>[4]</sup>

In this study, analysis of clinical presentation of acute pancreatitis was done. Relevant investigations were carried out and patients appropriately managed depending upon the etiology and severity of acute pancreatitis.

### AGE

The mean age of presentation in our study was 36.1 years and is comparable to the study by Kashid A et al.<sup>[5]</sup> Other studies had late presentation in the 5<sup>th</sup> and 6<sup>th</sup> decade.

This is probably because alcohol was the main etiological factor in our study which presents usually in the younger age group.

### Sex

There was a male predominance in our study with males accounting for 92% of patients with a M:F ratio is 11.5:1. The other studies although had a higher percentage of males the ratio of M:F was low. This again could be attributed to alcohol which was the main etiologic agent and which is more common in male population of low socioeconomic status in India.

### Etiology

Alcohol was the main etiological factor in our study and present in about 88% of patients.

### Clinical Features

The clinical features in the present study were comparable to the study by Kashid A et al.<sup>[5]</sup> Pain in epigastric region is the most common symptom of acute pancreatitis followed by nausea/vomiting, abdominal distension, fever & jaundice

### Accuracy of amylase and lipase levels

The current British Society of Gastroenterology guidelines for the management of acute pancreatitis suggest that clinical presentation with elevation of plasma concentration of pancreatic enzymes, preferably lipase levels, is the cornerstone of diagnosis. Various studies have demonstrated that serum lipase levels have better sensitivity and specificity compared to serum amylase levels in diagnosing pancreatitis. Apple *et al.* observed that the sensitivity and specificity of serum lipase levels in the diagnosis of acute pancreatitis were 85% to 100% and 84.7% to 99.0%, respectively.

Although Agrawal and co-workers observed a high sensitivity of serum amylase in the diagnosis of pancreatitis of 95 – 100%, the specificity (70%) was poor. The groups of Agrawal and Thomson reported a higher sensitivity and specificity in serum lipase levels for the diagnosis of acute pancreatitis when compared to serum amylase levels. Overall sensitivity and specificity of serum lipase and amylase levels in diagnosing acute pancreatitis was similar to previous published results. Although the majority of patients with acute pancreatitis had raised levels of both amylase and lipase, raised lipase levels with associated normal amylase concentrations was observed in an additional 12% patients with pancreatitis. Hence, patients with pancreatitis would have potentially been missed if serum amylase alone was measured.<sup>[6]</sup>

According to present Study Sensitivity of Amylase & Lipase is 84% & 98% respectively.

### Accuracy of Usg Abdomen

USG was diagnostic in 92% of patients in our study and this was comparable to the study by Ammori et al.<sup>7</sup> because USG is operator dependent and also because the view can be obscured by overlying bowel gas.

### ACCURACY OF CECT

#### Scan Abdomen

Acc to Panda S et al<sup>[8]</sup> Int Surg J. Diagnostic accuracy of CT scan in detecting acute pancreatitis came about 93% which is comparable to present study having 100% diagnostic accuracy.

### Severity of Acute Pancreatitis Acc to Atlanta Classification

66% of the patients had a mild disease in our study where as the other studies had a higher proportion of severe disease.

### Complications

In our study ascites(30%) & pseudocyst (20%) which was higher compared to other studies. The rate of pancreatic necrosis was more in other studies as against 6% in our study. Organ failure was seen in 2% of our patients whereas there is no pancreatic abscess in our study.

### Procedure

Only 2 (4%) patient with biliary pancreatitis underwent open cholecystectomy, 2 (4%) patients undergo cystogastrostomy and the others were managed conservatively. This low rate of intervention in our study was because, majority of our patients had mild disease, and also because alcohol was the most common etiology. Patients in the other studies underwent various procedures like ERCP with sphincterotomy, open and laparoscopic cholecystectomy, pancreaticojejunostomy for pancreatic fistula, and open drainage for pancreatic abscess.

### CONCLUSION

Acute pancreatitis is a common acute abdominal condition with peak incidence in 4th decade more common in male with alcoholism as the most common etiological factor.

Acute pancreatitis is a clinical diagnosis supplemented by serum amylase, serum lipase, Ultrasonography & CECT. Serum Lipase assessment is the gold standard diagnostic test at present, especially the values above 5 folds the upper limit in Acute pancreatitis. Persistently elevated serum amylase is a strong indicator of the development of pseudocyst which is the most common complication of acute pancreatitis.

Radiological assessment by ultrasonography shows acute bulky oedematous & bulky hypoechoic pancreatitis to be the predominant type. Ultrasonography visualized pancreas on about 92% patients, but due to bowel gas the pancreas may not be visualized. Extra pancreatic spread of inflammation and vascular complications may not be picked up by Ultrasonography. These limitations are overcome by CECT. CECT is excellent diagnostic modality to stage the severity of inflammatory process, detect pancreatic necrosis, detect local complication & grading of severity of acute pancreatitis.

Thus it is seen that both Ultrasonography and CT have roles to play in the diagnosis of pancreatitis and both are complementary to each other.

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