



A CLINICAL STUDY ON CORRELATION BETWEEN BIOCHEMICAL MARKERS AND CECT ABDOMEN IN PATIENTS WITH ACUTE PANCREATITIS

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ABSTRACT

A clinical study on correlation between biochemical markers and CECT abdomen in patients with acute pancreatitis.

Inclusion criteria: Patients of more than 12 years of age with CECT suggestive of acute pancreatitis.

Exclusion criteria:

Patients of chronic pancreatitis
Pseudocyst of Pancreas

KEYWORDS : Acute pancreatitis, Balthazars index

INTRODUCTION:

The incidence of acute pancreatitis in England, Denmark. and the United States varies from 4.8 to 58 per 100,000 patients.¹ In our country incidence of acute pancreatitis was found to be 7 in 1000 patients admitted with pain abdomen. However, estimates of incidence are inaccurate because the diagnosis of mild disease may be missed, and death may occur before diagnosis in 10% of patients with severe disease.

Definitions:

Acute pancreatitis is an acute inflammatory process of the pancreas with varying involvement of other regional tissues or remote organ systems. Pancreatitis is classified as acute unless there are computerized tomography (CT) or endoscopic retrograde cholangiopancreatography (ERCP) findings of chronic pancreatitis. Then pancreatitis is classified as chronic pancreatitis, and any episode of "acute pancreatitis" is considered an exacerbation of inflammation superimposed on chronic pancreatitis.

On CT scan it is a low-attenuation mass with poor margins and no capsule. Intrapaneatic fluid collection volumes are smaller than 3cm. Acute fluid collections occur in 30% to 50% of cases of acute pancreatitis, and most resolve spontaneously.¹ A *pseudocyst* is a fluid collection that persists for 4 to 6 weeks and becomes encapsulated by a wall of fibrous or granulation tissue. A *pancreatic abscess* is a circumscribed intra-abdominal collection of pus after an episode of acute pancreatitis or pancreatic trauma; it usually develops close to the pancreas and contains little pancreatic necrosis.

MATERIALS AND METHODS:

Duration of study: 2 years (Nov 2016 – Oct 2018)

Study Design: This study is a descriptive, prospective, hospital-based study involving patients from admission to final outcome at the time of discharge.

All the patients of age above 12 years presenting to the hospital from November 2016 to October 2018 with pain in abdomen within 72 hours underwent clinical examination. The diagnosis of AP was based on typical symptoms, including acute abdominal pain and a serum amylase level that was three times higher than the reference limit. The patients also underwent below mentioned investigations following which information regarding the type of presentation,

signs and symptoms, treatment offered will be collected in the pre-tested, semi-structured proforma cum observational checklist.

Informed consent was obtained from each patient on the day of admission.

RESULTS : 150 cases of acute pancreatitis were considered. Out of 150 cases, 128 in surgical wards 22 cases of acute pancreatitis were taken from medical wards.

In a total of 150 patients, 127 were males and 23 females. M: F nearly 5.4: 1. Minimum age of the study group was 13 years and the maximum were 70 years with a mean of 37.80 years. Youngest male was 27 years, and youngest female was of 13 years.

Majority of the patients were falling between the age groups of 21 to 30 – (34%) and 31 to 40 yrs – (28%)

In the present study the most common cause was alcoholism (76%) in males followed by gall stone disease (12%) in females.

Both serum amylase and lipase were analyzed in all the 150 patients. All the patients showed significant elevations of the enzyme (three-fold higher than the upper limit of normal) Magnitude of the enzyme elevation bear no correlation with the severity of the disease.

Present study didn't show any difference between the elevations in the three etiologies.

The sample size of gall stone disease group (24) was small to draw definite conclusion. However, the average lipase value was higher than the average amylase value in all the groups.

RANSON SCORES – SCORE	< / = 2	or = 3
No. of cases	144	6
Percentage	96 %	4%
Grading	MILD	SEVERE

prediction of severity:

In the present study, mortality rate was zero. All the 150 patients were treated conservatively though some of the biliary pancreatitis were referred to higher centers for ERCP. Of the 10 cases who underwent ERCP, elective laparoscopic cholecystectomy was done in 6 patients. In the remaining, ERCP was found to be normal. There

was no gold standard therapy for acute pancreatitis except for conservative management. Amongst the various clinical scoring systems, the most feasible one, i.e., Ranson's score was calculated and was compared with the Balthazar CT severity index.

In our study Ranson's score was ranging from a minimum of 1 to a maximum of 3.6 cases were severe as per the Ranson scores, both achieved a score of 3 (4%). Majority of the cases, (96%), were mild cases with a Ranson score of less than or equal to 2. Amongst the 6 severe cases, 2 were gall stone disease and other 4 were due to alcoholism.

Balthazar ct severity index –

CECT abdomen was done in all the 150 cases with and without I.V contrast. The most common finding on CT was edema of pancreas with enlargement and peripancreatic fat stranding.

CT severity index	0-3	4-6	7-10
No. of cases	138	9	3
Percentage	92%	6%	2%
Grading	Mild	Moderate	Severe

According to the CT severity index, 98% of the cases were mild, and only three cases (2%) were severe with a score of 8. These cases were also severe as per the Ranson score. In present study, there was a fair correlation between the Ranson and Balthazar CT severity index. 144 cases share a common grading of mild disease in both the scores. 3 cases were severe in both the scoring systems.

As per this study, Mean S. Lipase levels were 609.92 with standard deviation of 158.7654

As per this study, Mean S. Amylase levels were 570.72 with standard deviation of 110.7498 Mean CT grade is 1.70 The R value of the correlation is 0.716049.

As per this study, Mean S. Amylase values in patients with Gallstones is 551.809. Mean S. Amylase values in patients without gallstones is 573.798

The P value of the correlation is 0.263704393 – NS

As per this study, Mean S Lipase values in patients with Gallstones is 582.2857

Mean S. Lipase values in patients without gallstones is 614.4186

The P value of the correlation is 0.314801542 – NS

As per this study, Mean CT grade in patients with Gallstones is 1.5714

Mean CT grade in patients without gallstones is 1.3720

The P value of the correlation is 0.164037919 – NS

CONCLUSION

Majority of the patients were falling between the age groups of 21 to 30 (34%) and 31 to 40 yrs – (28%).

There was a significant preponderance of males. M: F nearly 5.4:1

There was no difference between the mean age of patients between the alcoholic and biliary groups (37.23 and 35.61) The most common cause was the alcoholism (76%) followed by gallstone (12%) and followed by the other causes (12%). In males, alcohol was the most common, whereas in females gall stone disease was the most common etiology.

Our study didn't show any difference between the elevations of enzymes in the three etiologies. The average lipase value was higher than the average amylase value in all the groups. **severity of the disease** Majority of the cases, (96%), were mild cases with a Ranson score of less than or equal to 2. Amongst the two severe cases, one was biliary and other was idiopathic. Sensitivity of ultrasound is only 68% but the specificity is low. So, a negative

ultrasound doesn't rule out acute pancreatitis. Higher score on CT severity index was associated with more prolonged stay. In gall stone disease pancreatitis, laparoscopic cholecystectomy was performed after patient has undergone ERCP.

DISCUSSION:

There was no difference between the mean age of patients between the alcoholism and biliary stone disease groups (37.23 and 35.61)

Another study by Blarney SL et al have shown gall stone as etiological factor in 44% of cases, while alcohol accounted for 33% of cases and rest 24% being idiopathic. In contrast Park et al showed that biliary causes were responsible for 35% of cases and idiopathic etiology in 30% of cases.

While the study by Jacob ML et al shown biliary disease in 47% of cases and alcoholism in 31% of cases. These variations may be because of different culture socioeconomic group and less occurrence of gall stones in those places. Present study didn't show any difference between the enzyme elevations in the three etiologies.

In an Indian study done at St. John's medical college, Bangalore (n=1132), mean amylase and mean lipase values were significantly lower in alcoholic group than the biliary group. The sample size of gall stone disease group (24) was small to draw definite conclusion. However, the average lipase value was higher than the average amylase value in all the groups. This was consistent with the other studies (Bangalore and Korean studies).

The findings of this study were quite similar to the study by Reffaele et al (39) who found serum amylase to be elevated in 97% of cases and lipase in 100% of cases. All the 150 patients were treated conservatively though some of the biliary pancreatitis were referred to higher centers for ERCP. Of the 10 cases 6 who underwent ERCP, elective laparoscopic cholecystectomy was done. There was no gold standard therapy for acute pancreatitis except for conservative management.

Amongst the various clinical scoring systems, the most feasible one, i.e., Ranson's score was calculated and was compared with the Balthazar CT severity index. In our study Ranson's score was ranging from a minimum of 1 to a maximum of 3.

According to the CT severity index, 98% of the cases were mild, and only three cases (2%) were severe with a score of 8. These cases were also severe as per the Ranson score. There was a good correlation between the Ranson score and the CT severity index. According to KIM YS et al, who studied the correlation between pancreatic enzymes, Ranson and radiological severity in acute pancreatitis, (Korean study), published in the world journal of gastroenterology in April 21, 2008, "the estimation of severity through the Ranson's criteria is not precise and is not an appropriate method because it needs 48 hours to complete and has low specificity (77%) and sensitivity (75%). they did not find correlation between Ranson and radiological grade in their study".

In present study, there was a fair correlation between the Ranson and Balthazar CT severity index. 144 cases share a common grading of mild disease in both the scores.

As per this study, Mean CT grade in patients with Gallstones is 1.5714

Mean CT grade in patients without gallstones is 1.3720

The P value of the correlation is 0.164037919 – NS

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