



A COMPARATIVE STUDY OF SERUM LIPASE, SERUM AMYLASE AND CT SEVERITY INDEX BETWEEN ACUTE AND RECURRENT PANCREATITIS

Gastroenterology

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ABSTRACT

This study aimed to compare serum lipase, serum amylase, and CT severity index (CTSI) between acute and recurrent pancreatitis cases. The study was conducted retrospectively, analyzing the case records of patients diagnosed with pancreatitis in 2018 at the Government General Hospital in Guntur, India. The diagnosis of pancreatitis in all patients was established using biochemical markers, and the severity was assessed by CTSI at the time of admission. In total, 95 cases were analyzed, of which 55 were acute pancreatitis cases and 40 were recurrent pancreatitis cases. The mean age, serum lipase, serum amylase, and CTSI were compared between the two groups. Our study showed that there is no significant difference in serum lipase and amylase values between acute and recurrent pancreatitis groups, however, the acute pancreatitis group showed a significantly higher CT Severity Index than the recurrent pancreatitis group. So, we should be more cautious while managing acute pancreatitis patients.

KEYWORDS

Acute pancreatitis, Recurrent pancreatitis, amylase, lipase, CT Severity Index

INTRODUCTION

Acute pancreatitis is inflammatory process of the pancreas with involvement of pancreatic parenchyma and regional or remote organ systems. Early assessment of cause and severity of acute pancreatitis is of utmost clinical importance in instituting treatment with close monitoring of the patients, preferably in intensive care units. Diagnosis of acute pancreatitis is made by combination of clinical presentation, laboratory investigations and imaging. Serum amylase, lipase, liver function test, serum electrolytes with blood gas analysis are the commonly performed laboratory investigations which help to grade the severity and prognosis of acute pancreatitis based on several clinical criteria including BISAP.

Computed tomography is the most important imaging modality for diagnosis and staging acute pancreatitis. Based on CT findings of pancreatic enlargement along with pancreatic necrosis and adjacent collection helps in classify acute pancreatitis into mild and severe form and thereby predict the morbidity and mortality of the disease. Detection of necrosis and quantification of severity of acute pancreatitis is necessary to improve medical care and lower mortality rates.

AIMS AND OBJECTIVES

To compare serum lipase and amylase and CT severity index (CTSI) between acute and recurrent pancreatitis cases.

MATERIALS AND METHODS

- All the case records of patients diagnosed with Pancreatitis in the General medical wards III and VI during 2018 (January to December) were analyzed.
- The study was conducted in the Government General Hospital, Guntur.
- The diagnosis of pancreatitis in all the patients was established using the required biochemical markers and the severity assessed by CT severity index (CTSI) at the time of their admission.
- Ethical committee clearance obtained.

Study Design Retrospective study.

Inclusion Criteria

- All the cases of acute and recurrent pancreatitis were included.
- Recurrent pancreatitis is defined as more than or equal to 2 episode of acute pancreatitis attack.

Exclusion Criteria

Case records lacking computed tomography assessment.

Statistical Analysis

Data and tables were tabulated using MS Word 2016. Statistical analyses were made using SPSS 16.

RESULTS

Total of 95 cases were analyzed. 7 were females and 88 were males. Of the total cases, 55 were acute pancreatitis cases and 40 were recurrent pancreatitis cases.

The mean age, mean serum lipase, mean serum amylase and mean CTSI of Acute pancreatitis group were 34.418 ± 9.304 , 1048.327 ± 811.674 , 544.0909 ± 455.933 and 3.63 ± 2.24 respectively. The mean age, mean serum lipase, mean amylase, and mean CTSI of Recurrent pancreatitis group were 34.15 ± 9.028 , 877.225 ± 602.641 , 415.425 ± 338.125 and 2.775 ± 1.64 respectively [TABLE 1] [Fig. 1-4]

Table 1

	Mean Age	Mean Serum Lipase	Mean Serum Amylase	Mean CTSI
All Cases	34.3	976.2	489.9	3.2
Acute Pancreatitis	34.4	1048.3	544.0	3.6
Recurrent Pancreatitis	34.1	877.2	415.4	2.7

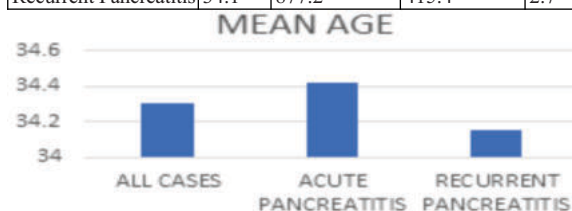


Fig. 1

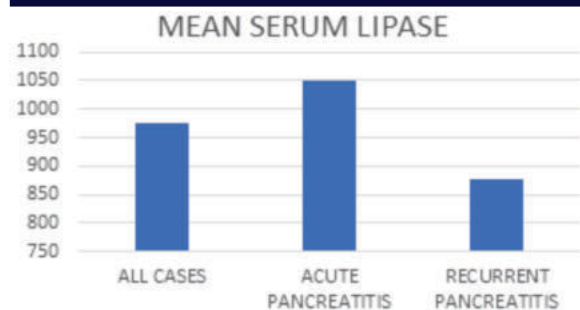


Fig. 2

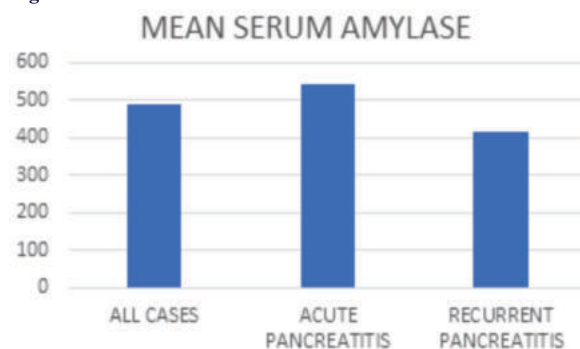


Fig. 3

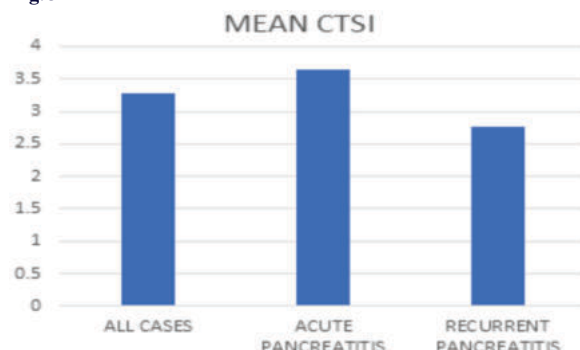


Fig. 4

The mean episode of recurrence in recurrent pancreatitis group was 2.85.

Student's unpaired T-test was then performed to study whether there is any significant difference with respect to serum lipase, serum amylase and CTSI between the acute pancreatitis group and recurrent pancreatitis group.

We found that there was no significant difference between acute pancreatitis group and recurrent pancreatitis group with respect to mean serum lipase and serum amylase levels. (P-values 0.2631 and 0.135 respectively) [TABLE 2]

Table 2

Acute Vs Recurrent Pancreatitis Groups	P-value
Mean Serum Lipase	0.2631
Mean Serum Amylase	0.135
Mean CTSI	0.0425

But we observed that there is a significant difference between acute pancreatitis group and recurrent pancreatitis group with respect to mean CTSI. (P-value 0.0425) [TABLE 2]

DISCUSSION

Lipase assay has a sensitivity and specificity of 80% and 60%, respectively [1, 2]. The serum concentration of lipase increases within 3–6 hours of onset of disease and peaks within 24 hours [3]. The increased serum level stays for around 7–14 days before it comes down to the normal level [3, 4]. In contrast to amylase, lipase is reabsorbed in renal tubules and stays for long at higher concentration, thereby giving greater sensitivity in patients with delayed presentation [3, 4]. Pancreatic lipase is four times more active than amylase and it is less

affected by exocrine pancreatic deficiency occurring in patients of chronic pancreatitis [4, 5]. Hypertriglyceridemia does not influence the serum lipase assay as happens in the case of serum amylase.

A raised level of serum amylase activity, at least three times the upper limit of normal, supports the diagnosis of acute pancreatitis. Its activity rises quickly within the first 12 hours after the onset of symptoms and returns to normal within three to five days. Serum amylase activities may be normal in 19–32% of cases at the time of hospital admission, as a result of delayed presentation or exocrine pancreatic insufficiency—for example, secondary to chronic alcohol abuse.

CTSI correlates well with the clinical severity [6] and therefore with prognosis [7].

In our study, the mean serum lipase level is higher in the acute pancreatitis group than the recurrent pancreatitis group, 1048.327 ± 811.674 and 877.225 ± 602.641 respectively. (Table 1)

Similarly, the mean serum amylase is higher in the acute than the recurrent pancreatitis group, 544.0909 ± 455.933 and 415.425 ± 338.125 respectively. (Table 1)

However, these differences are not statistically significant. (Table 2)

The mean CTSI of the acute and recurrent pancreatitis groups are 3.63 ± 2.24 and 2.775 ± 1.64 respectively (Table 1). This difference is statistically significant as evidenced by the p-value of 0.0425. (Table 2) Therefore, for a same level of serum lipase or amylase, the acute pancreatitis patients may have much severe underlying disease than the recurrent pancreatitis patients.

CONCLUSION

Our study showed that there is no significant difference in serum lipase and amylase values between acute and recurrent pancreatitis groups, however, the acute pancreatitis group showed a significantly higher CT Severity Index than the recurrent pancreatitis group. So, we should be more cautious while managing acute pancreatitis patients.

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