



A Clinical Study on the Prognostic Value of Serum Amylase and Lipase in Predicting Severity of Acute Pancreatitis at a Tertiary Care Hospital

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Abstract

Acute pancreatitis is an inflammatory condition of the pancreas with clinical outcomes ranging from mild self-limiting disease to severe life-threatening complications. Early prediction of disease severity remains a clinical challenge. Serum amylase and lipase are routinely used diagnostic markers; however, their prognostic significance is still debated. Aim: To evaluate the prognostic value of serum amylase and lipase levels in predicting the severity of acute pancreatitis. Materials and Methods: This cross-sectional observational study was conducted over a period of three months at a tertiary care hospital. Thirty patients diagnosed with acute pancreatitis were included. Serum amylase and lipase levels at admission were recorded and correlated with clinical severity, radiological findings, CT severity indices, hospital stay, complications, and outcomes. Results: Most patients presented with mild acute pancreatitis. Higher enzyme levels were observed in patients with moderate disease severity and radiological evidence of pancreatic enlargement or peripancreatic fluid. Increased serum lipase levels were associated with longer hospital stay and higher CT severity indices. Conclusion: Serum amylase and lipase levels show a positive association with disease severity in acute pancreatitis and may serve as useful, cost-effective adjuncts for early prognostic assessment, particularly in resource-limited settings.

Keywords: Acute pancreatitis, Disease severity, Serum amylase, Serum lipase

Introduction

Acute pancreatitis is an acute inflammatory disorder of the pancreas characterized by abdominal pain and elevated pancreatic enzyme levels in the blood^{1,2}. The clinical course varies widely, ranging from mild self-limiting inflammation to severe necrotizing pancreatitis associated with significant morbidity and mortality^{1,3}. Early identification of patients at risk for severe disease is crucial for timely intervention and improved outcomes^{2,10}.

Serum amylase and lipase are the most commonly used biochemical markers for diagnosing acute pancreatitis^{2,4,9}. While both enzymes indicate

pancreatic injury, their role in predicting disease severity remains controversial^{5,8}. Several studies have reported inconsistent correlations between enzyme levels and clinical outcomes^{8,10}.

Advanced severity scoring systems such as Ranson's criteria and APACHE II are helpful but require multiple parameters and time for assessment^{6,7}. In contrast, serum amylase and lipase are inexpensive, rapidly available, and easily measurable^{2,4}. Establishing their prognostic value could aid early triage and management decisions, especially in tertiary care and resource-constrained settings^{8,10}.

This study aims to evaluate the relationship between serum amylase and lipase levels at admission and the severity of acute pancreatitis in patients treated at a tertiary care hospital.

Objectives

1. To evaluate serum amylase and lipase levels in patients with acute pancreatitis.
2. To correlate enzyme levels with clinical and radiological severity.
3. To assess their association with hospital stay, complications, and patient outcomes.

Materials And Methods

Study Design-A cross-sectional observational study.

Study Period-Three months.

Study Setting-Department of General Surgery, MGM Medical College and Hospital, Navi Mumbai.

Study Population-Thirty patients diagnosed with Acute Pancreatitis.

Inclusion Criteria

1. Patients aged 18–80 years
2. Diagnosed with acute pancreatitis based on clinical and biochemical criteria\
3. Both male and female patients
4. Patients providing informed consent

Exclusion Criteria

1. Pregnant females
2. Immunocompromised patients
3. Patients with chronic pancreatitis or pancreatic malignancy
4. Patients unwilling to participate

Data Collection-

Detailed Clinical History, Demographic Data, Etiology, And Presenting Symptoms Were Recorded. Serum Amylase and lipase levels were measured at admission. Radiological findings from ultrasonography and computed tomography were documented. Severity was assessed using CT Severity Index (CTSI) and Modified CTSI. Duration of hospital stay, complications, and outcomes were recorded.

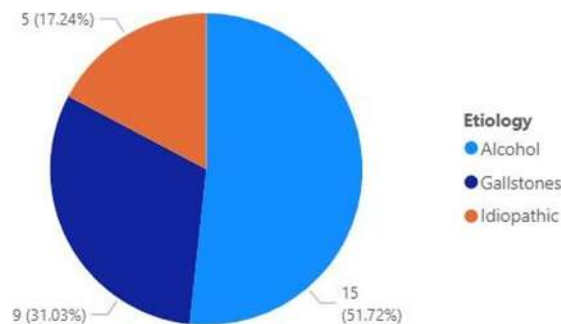
Statistical Analysis-

Data were analyzed using SPSS version 24. Pearson correlation and Chi-square tests were applied where appropriate. A p-value of less than 0.05 was considered statistically significant.

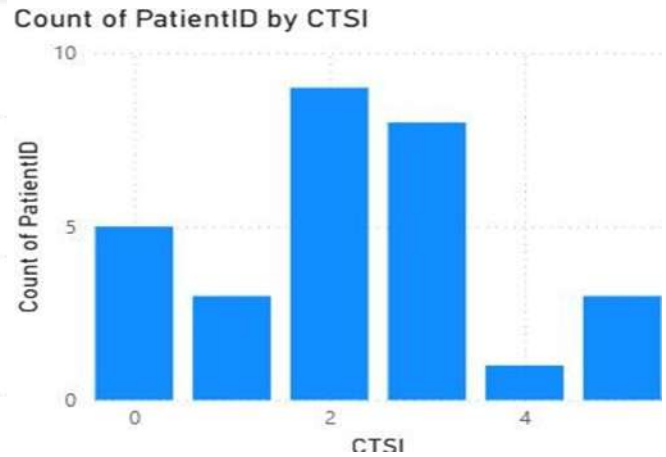
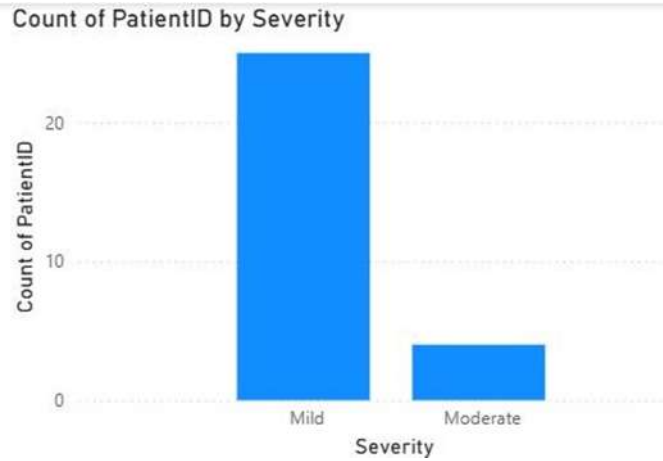
Results

A total of 30 patients with acute pancreatitis were included in the study. The majority were male patients, with alcohol being the most common etiological factor, followed by gallstone disease and idiopathic causes. Most patients presented with abdominal pain, while nausea and vomiting were common associated symptoms.

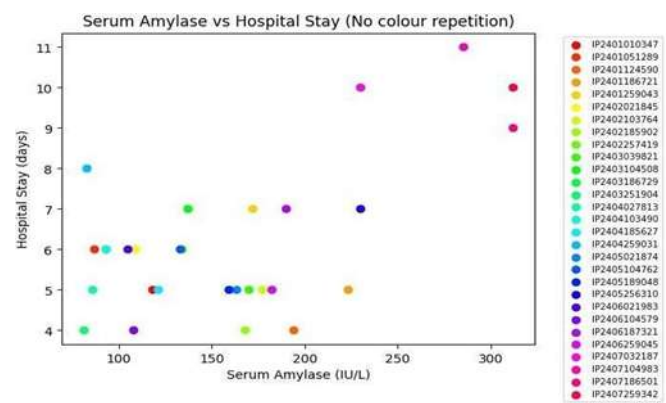
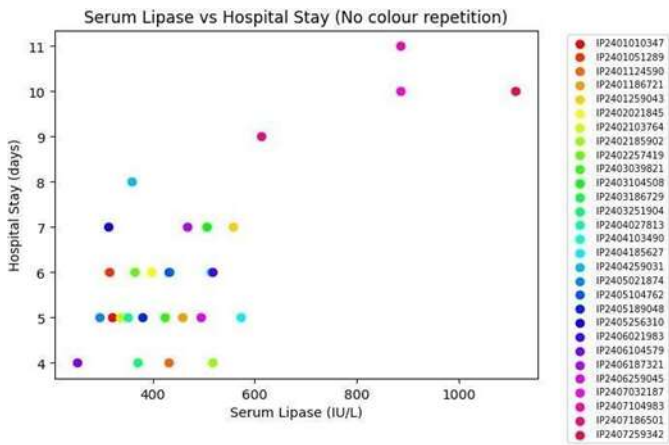
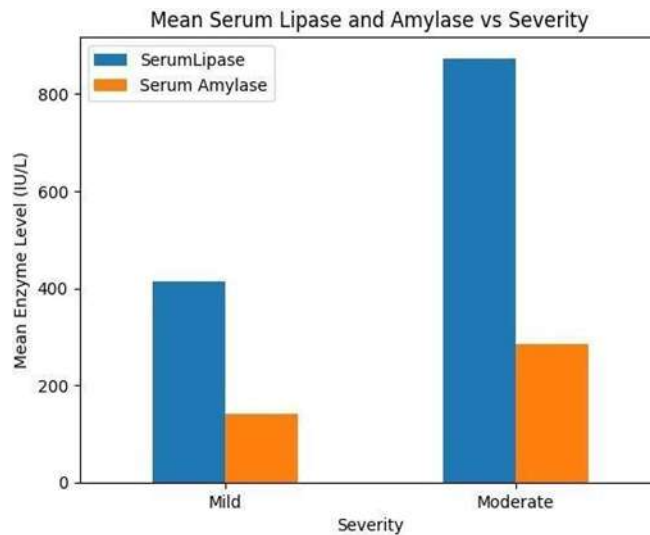
Count of PatientID by Etiology



Radiological evaluation revealed bulky or enlarged pancreas in most cases. Mild pancreatic edema and peripancreatic fluid collections were observed in patients with higher severity scores. Based on clinical and radiological assessment, most cases were categorized as mild acute pancreatitis, while a smaller proportion showed moderate severity.



Higher serum lipase levels were observed in patients with moderate disease severity, higher CT severity indices, and longer hospital stay. Complications were uncommon, and all patients recovered with appropriate medical management.



Discussion

Early prediction of disease severity in acute pancreatitis is essential for optimal management^{2,10}. In the present study, serum amylase and lipase levels

demonstrated a positive association with radiological severity and clinical outcomes. Patients with higher enzyme levels were more likely to exhibit pancreatic enlargement, peripancreatic fluid collections, and prolonged hospital stay.

Although serum amylase is widely used for diagnosis, its prognostic reliability has been questioned^{4,8}. Serum lipase, due to its higher specificity and longer half-life, showed a better correlation with disease severity in this study. These findings are consistent with previous literature suggesting that lipase may be a more reliable marker for assessing disease progression.

However, the small sample size and predominance of mild cases limit the generalizability of the results. Larger, multi-center studies are required to validate these findings.

Conclusion

Serum amylase and lipase levels, particularly serum lipase, show a meaningful association with disease severity in acute pancreatitis. These biochemical markers may serve as simple, rapid, and cost-effective tools for early prognostic assessment and clinical decision-making in tertiary care and resource-limited settings.

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