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RELEVANCE OF SERUM LIPASE AND AMYLASE RATIO IN DIFFERENTIATING ALCOHOLIC AND NON-ALCOHOLIC PANCREATITIS

General Medicine

Kasina Santosh Kumar M.D. General Medicine

KEYWORDS

INTRODUCTION

Acute Pancreatitis is a common disorder with potentially devastating consequences. It is a multifaceted disease with multiple etiologies. The incidence of Acute Pancreatitis is known to differ geographically due to differences in alcohol consumption or incidence of gall stones in different parts of the world. [1] It is generally perceived that Acute Pancreatitis runs a benign course in Asian countries and the etiology is different from the western population. [2]

MATERIALS AND METHODS

AIMS AND OBJECTIVES: To study the relevance of lipase to amylase ratio in differentiating between alcoholic and non-alcoholic pancreatitis.

INCLUSION CRITERIA: Patients presenting with acute abdomen confirmed to be of Acute Pancreatitis based on serum markers and radiological evidence.

EXCLUSION CRITERIA: Patients diagnosed to be of Chronic Pancreatitis.

METHODOLOGY:

Prospective and Observational study has been conducted in a period of 8 months from January 2018 to September 2019 which included 110 individuals. Patients presenting with acute abdomen having undergone Ultrasound and/or CT scan of the abdomen and serum markers are included in the study. Antecubital venous blood samples are drawn from the individual at the time of admission.

STATISTICAL METHODS

Statistical Analysis is performed with the help of SPSS version 21.0. The statistical significance level is fixed at p-value of <0.05

RESULTS

A total of 110 individuals are included in the study, of which 100 are male and 10 are female of gender. Majority of the patients are in their fourth decade and fifth decade with a percentage of 31.8% and 29% respectively, while the third and sixth decade stand at percentage of 17.2% and 15% respectively and the second decade being the least percentage of all at 7%. Of the 85 individuals who are alcoholic, 83 are male and 2 individuals are female. Out of 25 non- alcoholic individuals 17 are male and 8 are female. As far as the etiologies are concerned 85 are of alcoholic, 10 individuals are of gallstone, 1 individual of trauma, 1 individual of hypercalcemia and rest of the 13 individuals are of idiopathic etiology.

Serum Amylase is elevated to greater than 3 times upper limit of normal in 65 patients and the median value of Amylase is 576 U/L. Serum Lipase is elevated to greater than 3 times of upper limit of normal in 92 patients with median value of 992 U/L. Median value of amylase and lipase is 676 U/L, 1434 U/L respectively in alcohol etiology and 496 U/L, 1564 U/L respectively in idiopathic etiology and 835 U/L, 1656 U/L respectively in gall stone etiology.

In this study of 110 individuals of acute pancreatitis. The mean lipase to amylase ratio is 3.95, 3.5 and 3.3 of alcoholic, gallstone and the entire non-alcoholic etiology respectively.

The cut off value of 4 is used to differentiate alcoholic and non-alcoholic pancreatitis. In this study, lipase-to-amylase ratio cut off value of 4 is found to be not statistically significant in predicting alcoholic and non-alcoholic causes of acute pancreatitis.

DISCUSSION

Serum Amylase and Lipase levels are usually elevated within 24 hours of onset and remain so for a period of 3-7 days. Patients with Acute Pancreatitis have a threefold or higher elevated serum Lipase and Amylase levels.

There are limitations to the serum levels as they maybe normal if the samples are delayed from the point of presentation for a period of 2-5 days and also if the patient has hypertriglyceridemia or renal failure.

Earlier studies show that Amylase levels are significantly lower in Alcoholic Acute Pancreatitis than with Biliary Pancreatitis.[3-5] This finding is found to be of clinical significance as the study conducted by Gumaste et al showed that the Lipase/Amylase ratio of >5 is exclusively seen in alcoholic group and >3 is strongly suggestive of other etiologies.[3] Similar study conducted by Tenner and Steinberg has similar results.[6]

Later studies conducted by Pezelli et al [7] and King et al [8] found that there is no accurate clinical differentiation. E Ansari et al [9] has conducted a similar study and found that serum Amylase levels are lower in alcoholics than those with non-alcoholics and only slightly lower levels of lipase are noted in alcoholic vs non-alcoholic patients, proving that there is no clinical significance with a possible explanation that in alcoholics destruction of pancreatic tissue has already taken place, resulting in less production of enzymes in the acute phase compared to non-alcoholics, as the attack occurs in a previously normal gland.[10,11]

Recently Anitha Devnath et al in St. Johns Medical College, bengaluru has conducted study with a cut-off value of 4 is found to be sensitive in predicting the alcoholic from biliary and idiopathic causes.[12]

In the present study, comparison of alcoholic and non-alcoholic pancreatitis is done considering a cut-off value of 4. The mean Lipase/Amylase ratio is higher in alcoholic group compared to non-alcoholic group with values of 3.95 and 3.3 respectively, but the values are not statistically significant.

STRENGHTS AND LIMITATIONS

This study is conducted for a limited duration, therefore might not represent general population.

Only 25 patients belong to non-alcoholic pancreatitis and that might affect the relevance of the Serum Lipase/Amylase ratio in differentiating alcoholic and non-alcoholic pancreatitis.

CONCLUSION

Serum Amylase and Lipase levels are useful in diagnosing Acute Pancreatitis but the serum Lipase/Amylase ratio is not of any significance to differentiate Alcoholic from Non-Alcoholic Pancreatitis.

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