



ORIGINAL RESEARCH PAPER

Surgery

STUDY OF SERUM LIPASE TO AMYLASE RATIO IN DIFFERENTIATING BETWEEN ACUTE ALCOHOLIC AND NON-ALCOHOLIC PANCREATITIS

KEY WORDS: Acute Pancreatitis, Alcoholic Pancreatitis, Non-alcoholic Pancreatitis, Amylase, lipase

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INTRODUCTION

Acute pancreatitis (AP) is a common condition involving the pancreas. The estimated incidence is about 3% of cases presenting with pain in abdomen.⁽⁴⁾ Gall stones and alcoholism together account for 80% of acute pancreatitis.⁽⁶⁾ Although the overall mortality rate for acute pancreatitis is 2-10% and this is primarily related to the 10-30% of patients with severe disease characterized by pancreatic and peripancreatic necrosis.⁽⁶⁾ Diagnosis remains clinical and can be supported by 1.5 - 2 fold increase above the upper limit of normal of serum amylase and lipase.⁽¹⁰⁾ Amylase and lipase levels are known to be the most important factors in determining acute pancreatitis. It is well known that these levels are usually elevated in acute pancreatitis, without regard to whether it is of biliary type or alcoholic type. Furthermore whether or not these levels can be used to discern between the two types, has been also a matter of concern. It has been reported that the lipase/amylase ratio could be a new index distinguishing two types of pancreatitis, with the critical value being 2. This report had been followed by some debate between supporters and opponents. Currently CECT is the imaging modality of choice where areas of hypo perfusion correlate with necrosis.⁽¹¹⁾ It can't differentiate between alcoholic and non-alcoholic AP. Identification of two groups could help formulating treatment protocol for either group. The aim of the present study is to establish the utility of the ratio of the serum lipase and serum amylase, a new index distinguishing acute episode of alcoholic from non alcoholic pancreatitis.

Aims & Objectives

General Objective:

The ratio of serum lipase to serum amylase has been proposed to distinguish between acute episodes of alcoholic from non-alcoholic (gall stone) pancreatitis

Specific Objective:

1. To estimate the Lipase/amylase Ratio for each study subject
2. To determine the sensitivity and specificity of serum lipase/amylase ratio in predicting between alcoholic and non-alcoholic(gall stone) pancreatitis

Materials and Methods

STUDY DESIGN:

It was a hospital based descriptive cross sectional study in predicting The serum Lipase/amylase ratio had been proposed to distinguish the aetiology of acute pancreatitis, the efficacy to predict the sensitivity and specificity by lipase/amylase ratio of acute pancreatitis is assessed in this study among the patients sustaining with acute pancreatitis. Total 65 patients will be included in this study.

STUDY SETTING & STUDY PERIOD

This study was conducted in the In-Patient-Department of General Surgery of BSMCH, Bankura. The study was accomplished in a stipulated time frame of one and half year i.e. from February, 2018 to July, 2019.

INCLUSION CRITERIA:

1. Patient with history of alcohol intake without cholelithiasis of above 18 years of age
2. Patient with history of cholelithiasis without alcohol intake of 18 years of age

EXCLUSION CRITERIA:

1. Patients with Severe acute pancreatitis were deleted from the study.
2. Patients with both alcoholism and cholelithiasis in a Single Patient were also excluded from the study.
3. Patients with chronic pancreatitis and acute on chronic pancreatitis

RESULT & ANALYSIS

In our study mean age of the patients was 35.90±8.25 with median of 35.00. Those who were suffering from alcoholic pancreatitis all were male and there total number is 51(78.46%). In non-alcoholic gr. There were 14(21.54%) patients.

It was seen that 78.46% of the patient were diagnosed with acute alcoholic pancreatitis with history of Alcoholic addiction and remaining 21.54% patients were diagnosed with the absence of alcohol addiction were diagnosed as non-alcoholic pancreatitis especially gall stone pancreatitis with history of cholelithiasis. Ultrasonography showed cholelithiasis in these patients.

Table-1: Distribution of participants according to serum amylase levels. (n=65)

Group	Mean	Standard Deviation	Independent t, df, p
Alcoholic	656.5471	164.4311	1.115,1,=0.2496
Non-alcoholic	711.1571	154.1602	

The mean amylase in alcoholic pancreatitis group is 656.5(SD=164.3) which is significantly lower but statistically not significant at 95 % confidence interval than mean of non-alcoholic pancreatitis which is 711.1(SD=154.1) at 95% confidence interval.

Rise of serum amylase in non-alcoholic pancreatitis is significantly higher than that in alcoholic pancreatitis. but not statistically significant at 95 % confidence interval.

Table-2: Distribution of participants according to Lipase levels. (n=65)

Group	Mean	Standard Deviation	Independent t, df, p
Alcoholic	1464	734	-3.107, 63,<0.0001
Non-alcoholic	543	214	
Total	1707	948	

The mean lipase level in alcoholic pancreatitis is 1464.1 which is higher but statistically significant than that in non-alcoholic pancreatitis 543.7 at 95% confidence interval.

After running ANOVA Test we found that mean lipase levels in

alcoholic pancreatitis is higher than in non-alcoholic pancreatitis but statistically significant at 95 % confidence interval.

Table-3: Data comparison between the Alcoholic Pancreatitis and Non-Alcoholic Pancreatitis. (n=65)

	Alcoholic Pancreatitis	Non-Alcoholic Pancreatitis	P value
Age(Mean± SD)	35.9020±8.2565	51.8571±6.5499	<0.001
Sex ratio (M:F)	(49:2)	(5:9)	<0.0001
Serum amylase(Mean ± SD)	656.5471±164.4311	711.1571±1602	=0.269
Serum lipase(Mean± SD)	1464.1176±734.8193	543.7143±214.4666	=0.003
Serum lipase/ amylase ratio(Mean± SD)	2.2300±0.2586	.7645±0.2416	<0.001

Table-4: Distribution of participants according to Serum Lipase/ Amylase Ratio and the type of pancreatitis

Type of pancreatitis	mean	Standard deviation	Independent t value	Degree of freedom	P-value
Alcoholic pancreatitis	2.2300	0.2586	6.925	63	<0.0001
Non-Alcoholic pancreatitis	.7645	0.2416			
Total	2.7132	.4002	---	--	--

1. Sensitivity = $a/a+c \times 100 = 47/51 \times 100 = 92.2\%$
2. Specificity = $d/b+d \times 100 = 12/14 \times 100 = 85.7\%$
3. Positive Predictive Value = $a/a+b \times 100 = 47/49 \times 100 = 95.91\%$
4. Negative Predictive Value = $d/c+d \times 100 = 12/16 \times 100 = 75.0\%$

DISCUSSION

In our study, the number of alcoholic pancreatitis were seemed to 78% (n=51) of the total patients that is higher than non-alcoholic pancreatitis (Gall stone Pancreatitis) with 22 % (n=14) of the total patients Comparable to western literature. Wu et al reported that most of these cases with acute pancreatitis were between the age of 21 to 40 years old , which accounted 57.7% of the total cases and 64.1% of female cases was in age groups of 21 to 30 years old ,which was much younger than reported in other Asian countries However, there was no documented report comparing the different etiologic groups. In our study the patients with alcoholic AP were relatively younger than non- alcoholic AP patients. The alcoholic AP patients were ranging between 20 to 45 years with mean age 36 years ± 8 years while the non-alcoholic AP ranges between 40 to 65 years with the mean age 52 years ± 7 years. Little bit Similar findings were observed in other studies.

Our study findings were concurrent with others with respect to the alcoholic pancreatitis being predominantly seen in males with 75%(n=49) when compared to females with the 3%(n=2),while the biliary AP was higher amongst the females with 15%(n=10) in comparison to males 6%(n=4). Probably the reason could be that the percentage of alcoholics reported is lower for females when compared to males in Indian population and the reported cases of AP in females for other causes of pancreatitis such as biliary is much higher than the alcoholic variety.

Earlier studies showed that rise in serum of amylase in alcoholic pancreatitis were significantly lower than in gall stone pancreatitis. Serum lipase levels were not statistically different. Our study demonstrates similar results that is

increase of serum amylase in gall stone pancreatitis is significantly higher than that in alcoholic pancreatitis while mean lipase levels in alcoholic pancreatitis is higher than in gall stone pancreatitis with statistically significant 95 % confidence interval.

Our results show that serum Lipase/Amylase ratio with a cut off value fixed at 2, can assist in differentiating alcoholic AP from non-alcoholic AP. The lipase / amylase ratio >2 is observed in alcoholic AP while the non-Alcoholic (Gall stone pancreatitis) ratios < 2 . Our reports showed sensitivity of 92 % and specificity was 85 % with lipase / amylase ratio > 2. to alcoholic AP. Our results show that serum lipase/ amylase ratio with a cut off value fixed at 2, can assist in differentiating alcoholic AP from non-alcoholic AP.

CONCLUSION

We would like to conclude that serum lipase/ amylase ratio more than 2 could be used to differentiate acute alcoholic pancreatitis and values less than 2 as acute non-alcoholic (gall stone) pancreatitis. Hence serum lipase/ amylase ratio may be useful as means of biochemical diagnostic tool to differentiate alcoholic from gallstone pancreatitis in acute pancreatitis setting in the back-ground of relevant clinical and radiological assessment. This shall help in better triage of patient in emergency department.

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