



CLINICAL SIGNIFICANCE OF SERUM AND URINARY AMYLASE IN ACUTE PANCREATITIS

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KEYWORDS : Acute pancreatitis, Urinary amylase, CTSI, BISAP score, Serum amylase, Serum lipase.

INTRODUCTION:

Acute pancreatitis is one of the commonest acute abdominal conditions presenting to the emergency. CT abdomen has been used widely to diagnose and also to exclude other acute abdominal conditions. Serum amylase is still being widely used to assist the diagnosis of acute pancreatitis. Most of the cases with typical symptoms can be diagnosed clinically but still few cases with atypical/mild symptoms with normal or subclinical serum amylase become difficult to diagnose. So this may result in misdiagnosis of cases of acute pancreatitis. Many newer investigations like serum procalcitonin, IL, IL -6 and urinary trypsinogen-2 are now used in the diagnosis of acute pancreatitis. But most of these investigations are expensive and require trained personnel. Reports from various studies have shown that the hourly excretion rate of urinary amylase could be more frequently abnormal in the presence of pancreatic diseases than the serum concentration of either amylase or lipase, and compared to the newer expensive investigations, urine amylase estimation is cheaper.

AIM OF STUDY:

This study is done to find the significance of urinary amylase levels and its comparison with serum amylase and serum lipase in cases of acute pancreatitis.

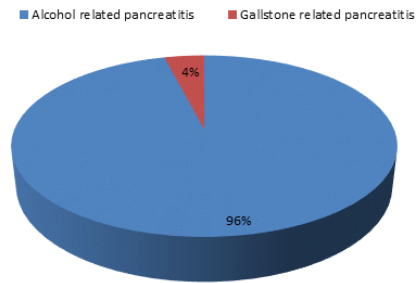
MATERIALS AND METHODS:

Patients admitted in Thanjavur medical college Hospital, from September 2017 to September 2018 with clinically suspected acute pancreatitis in the age group 25-45 years and with CT findings suggestive of acute pancreatitis were included in the study. Those with comorbidities like diabetes mellitus, hypertension and chronic kidney disease and those not willing for the investigations were not included in the study. BISAP score and CTSI were calculated and severity of pancreatitis identified. In these cases serum amylase, urinary amylase (both done by Kit method with reagent used CNP-G3), and serum lipase (enzyme calorimetric method) was done within 24 hours of admission. The biological reference value for diagnosis of AP was taken as 28-100 U/L for serum amylase, >60 for serum lipase and >321 for urinary amylase. Other investigations like complete hemogram, renal function test, were done and BISAP score was used in assessing the severity of pancreatitis. Reports were collected within one day and the values were compared. Their clinical significance and sensitivity in the diagnosis of acute pancreatitis, and its correlation to severity was analysed. Datas were entered and analysed statistically.

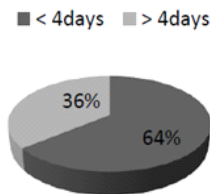
RESULTS:

A total of fifty in patients with acute pancreatitis were studied. All in the age group 25-45 years. Out of the fifty cases 48 were male and 2 female. Among the 50 cases 48 were due to alcohol related pancreatitis and 2 due to gallstones. Duration of symptoms was less than 4 days in 32 patients (64%) and more than 4 days in 18 members (36%). SIRS was evident in 38 patients (76%) and was not present in the rest 12 patients (24%). BISAP Score was 0-2 in 47 patients (94%) and 3-5 in 3 patients (6%). Based on CTSI 38 cases (76%) had mild acute pancreatitis (0-3) and 12 (24%) had moderate acute pancreatitis (4-6), none had severe acute pancreatitis (7-10). Urinary amylase was elevated in all 50 cases (100%). Serum amylase was elevated >100 in 39 cases (78%), but significant (three times the upper limit >300) in 18 cases (36%), and 11 cases had normal values (22%). Serum lipase was elevated (>60) in 49 cases (98%) and normal in only 1 case (2%). Also urinary amylase was grossly elevated (>1001) in patients with BISAP Score >2 and CTSI >3. The sensitivity of serum amylase for value >100 was found to be 70%, and the sensitivity of urinary amylase value >500 was found to be around 83%.

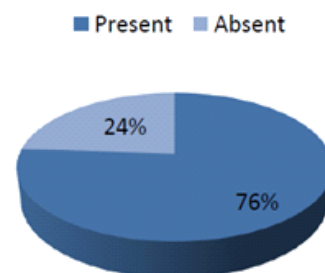
Etiology



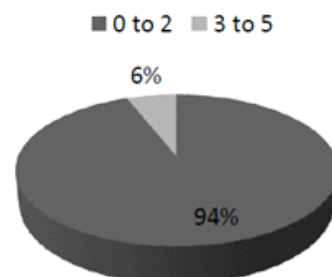
Duration of symptoms



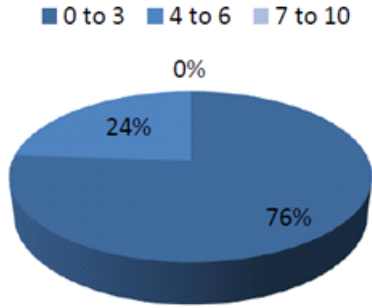
SIRS



BISAP

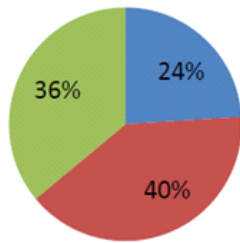


CTSI



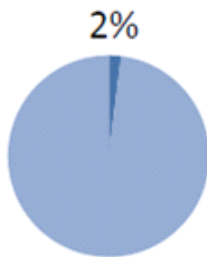
Serum amylase

■ <100 ■ 100-300 ■ 300 and above

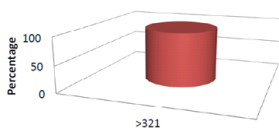


Serum Lipase

■ Below 60 ■ Above 60

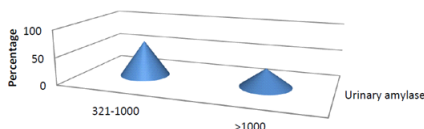


Urinary amylase



Urinary amylase	>321
Urinary amylase	100

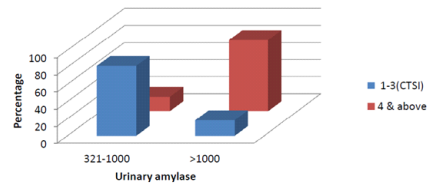
Urinary amylase



Urinary amylase	321-1000	>1000
Urinary amylase	66	34

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of symptoms	50	1	7	2.96	1.498
Serum amylase	50	70	814	286.29	204.307
Serum lipase	50	50	876	341.85	210.936
Urinary amylase	50	417	1778	927.12	372.796
BISAP score	50	0	3	1.24	.870
CTSI score	50	1	5	2.36	1.290
Valid N (list wise)	50				

Correlation Of CTSI and Urinary amylase level



INTERPRETATION AND CONCLUSION:

Urinary amylase is more sensitive than serum amylase in diagnosis of acute pancreatitis. It is especially useful in cases of acute pancreatitis with late presentation, or atypical cases with normal serum amylase values. It can also be useful in cases of macroamylasemia and hypertriglyceridemia where serum amylase values are not relevant. It also correlates with the severity of pancreatitis. Urinary amylase is grossly elevated in patients with Moderate acute pancreatitis than mild acute pancreatitis in this study. Thus Urinary amylase estimation can be a very useful non-invasive diagnostic tool for diagnosing atypical cases of AP thus reducing the morbidity in cases of AP which are missed or misdiagnosed with normal or insignificant rise in serum amylase value.

In this study it was found that urine amylase was more consistently elevated in all patients with acute pancreatitis, and also in cases where serum amylase was in the normal range. Most of the cases with normal or low serum amylase values were those who had duration of symptoms less than 3 days. Thus urinary amylase measurement can be used as a more sensitive tool in diagnosis of acute pancreatitis when compared to serum amylase, especially in those with late clinical presentation of acute pancreatitis. Urinary amylase was also correlating with severity of pancreatitis being grossly elevated in patients with moderate acute pancreatitis than mild acute pancreatitis.