



EVALUATION OF SERUM AMYLASE IN VARIOUS CAUSES OF ACUTE ABDOMEN

Piyush Tarwey*

Junior Resident; Department of General Surgery, RIMS Ranchi.
*Corresponding Author

Avnish Tarwey

Junior Resident; Department of Biochemistry, RIMS Ranchi.

Narayan

Junior Resident; Department of General Surgery, RIMS Ranchi.

ABSTRACT

Background: Acute abdominal pain is a common condition presenting to the surgical emergency department (ED). Elevation of serum amylase levels are found in many GI conditions. Serum amylase level is found since decades, consistently high in acute pancreatitis although high values are not pathognomonic and just a matter of prognosis.

The aim of this study is to assess the level of serum amylase in various causes of acute abdominal pain and to evaluate the role of routine measurement of serum amylase in various acute abdominal condition.

Methods: A prospective observational study was performed from October 2019 – March 2020 ie; 6 months at Department of Surgery and lab values assessed at Department of Biochemistry of RIMS Ranchi, Jharkhand. All patients presenting in emergency department with acute abdomen requiring admissions in the surgical ward were included. An analysis was performed to assess the level of serum amylase in various diseases with acute abdominal pain.

Results: 220 patients of acute abdomen (n=220) were included in the study during a period of 6 months. Majority of cases (92 cases ie; 42%) were diagnosed of acute pancreatitis, 37% cases of elevation were due to non pancreatic pathology, and rest 21% cases were due to non GI (Genitourinary and obstetric) cases with raised serum amylase level (> 1000 U/L).

Conclusions: Routine assessment of serum amylase is helpful in excluding differential diagnosis of patient presenting with acute abdomen and this study identified serum amylase as a good screening tool if done in cases with clinical suspicion.

KEYWORDS :

INTRODUCTION:

Acute abdominal pain is a common condition presenting to both surgical emergency department and surgical admissions unit. Around 75% cases presenting to the surgical emergency at RIMS Ranchi are of acute abdomen. Most common cause of elevation of serum amylase is indeed acute pancreatitis, still many other acute abdomen can be a cause of amylase elevation.

The accuracy of these tests depends on both the diagnostic threshold used, and the study population. In addition, amylase can be elevated in conditions other than pancreatitis; in some cases of pancreatitis, enzyme concentrations may be normal. Where one test is used, lipase is believed to be superior in sensitivity and specificity.

Increase amylase levels are found in much other gastrointestinal pathology as well. In some cases of pancreatitis, enzyme concentration may be normal. Amylase may be released into circulation due to tissues damage containing high levels of enzyme and escaping from the gastrointestinal tract. Amylase is good tool of screening pancreatitis because level of serum amylase is much higher in these cases than in other gastrointestinal pathology. This study was conducted to assess level of serum amylase in all cases of acute pain abdomen.

We performed this study to evaluate the role of routine serum amylase testing in the diagnosis of acute abdominal pain, and identify any cost implications associated with their use.

MATERIAL AND METHODS:

A hospital-based prospective observational study was performed including all patients with acute abdominal pain from October 2019 – March 2020 presented to Emergency Department and then admitted in department of surgery, RIMS Ranchi.

Exclusion criteria consisted of age group < 18 years, malignancy, abdominal trauma and patient transferred from

other hospital diagnosed as acute pancreatitis and managed primarily in other center. Informed consent was taken from all sample patients.

Detailed history including menstrual history, clinical examination (abdominal tenderness, rigidity, muscle guarding, rebound tenderness and bowel sound) was done. Lab values of routine blood examination and Serum amylase at 24 hour of admission were done and recorded.

According to our protocol, Serum amylase and Ultrasound of abdomen was done in all cases, also in required cases, CT scan of abdomen and pelvis were performed to establish diagnosis if required. Cases of acute pain abdomen were classified into 3 groups ie; Acute pancreatitis, non pancreatic pathology and Non GI pathologies. Level of serum amylase was assessed in all the groups. All the collected data were evaluated and analyzed. Using the cut off value of serum amylase as more than 500 IU/L, different causes of elevation, sensitivity and specificity were calculated in establishing the diagnosis of acute pancreatitis in acute abdomen. The final diagnosis with the aid of further assessment of each case was recorded. The correlation between acute abdominal pain and level of serum amylase level were noted, and thus study is done to assess whether elevation of serum amylase can be used to help to make clinical diagnosis.

RESULT:

Total 220 patients were taken as sample, and in 92/220 ie; 42% cases were finally diagnosed as Acute pancreatitis with elevated serum amylase >500 U/L, 37% (81/220) of the cases of elevation were due to non pancreatic pathology(Intestinal perforation, peptic ulcer disease[PUD], mesenteric ischemia or acute appendicitis); 21% (46/220) of the cases were due to non-GI (Genitourinary and obstetric) causes and 19/220 ie;8.5% cases of other miscellaneous cause.

The cut off value of serum elevation is taken as >500 U/L. In the group of pancreatitis, 38/92 mpatients ie; 41% cases were having an elevation of amylase between 500-1000 U/L; whilst

30/92 ie;32% cases were having amylase in between 1000-1500U/L, and rest 24/92 ie;26% cases had amylase > 1500 U/L. In the group of non pancreatic cause, 12/81 ie;14% cases of amylase elevation were due to intestinal perforation, 11/81 ie; 13.5% cases were due to PUD, 22/81 ie;27% cases of elevation were due to mesenteric ischemia (primary or secondary to intestinal obstruction), 17/81 ie;45% cases were of acute appendicitis, and rest 19/81 ie 23% cases were due to other causes of acute abdomen. All cases of this group (81/220) were having serum amylase level in the range of 500-1000 U/L. In the group of Non-GI causes (Genitourinary and Obstetric), 33/46 ie;72% cases of enzyme elevation were due to Obstetric causes. Eg; Pelvic inflammatory disease (24/46), acute salpingo-oophoritis(9/46), ectopic pregnancy (8/46) etc. Rest 5/46 ie;10% cases were associated with genito-urinary causes. In all cases, the level were in the similar range of 500-1000 U/L.

The following table illustrate the summary of various causes of acute abdomen and associated elevated serum amylase.

DIAGNOSIS	NO. OF CASES (n=220)	SERUM AMYLASE (U/L)		
		500-1000	1000-1500	>1500
Acute Pancreatitis-	92	38	30	24
Intestinal Perforation-	12	10	02	--
Mesentric Ischemia-	22	07	10	05
Peptic ulcer disease-	11	11	--	--
Acute appendicitis-	17	15	02	--
Ectopic pregnancy-	08	06	02	--
Pelvic inflammatory disease-	24	20	03	01
Acute salpingo-oophoritis-	09	09	--	--
Genitourinary causes-	05	05	--	--
Other cause-	19	18	01	--

DISCUSSION:

In this study we attempted to evaluate the use of serum amylase level which is frequently used at our hospital in both surgical emergency and ward in the evaluation of patient with a chief complaint of abdominal pain ie; acute abdomen. We identified 92/220 ie; 42% cases of acute pancreatitis of acute abdominal pain with amylase elevation; 81/220 ie;36% cases of non pancreatic cause of acute abdomen associated with amylase elevation. Non- GI causes including genito urinary and obstetric cause contribute 46/220 ie; 21% cases of amylase elevation in this study, whilst 19/220 ie; 8.5% cases of amylase elevation is due to other miscellaneous causes.

Clearly, it is seen that the most common cause of elevated amylase level in acute abdomen is acute pancreatitis, followed by non pancreatic intra abdominal cause, and minor cases of elevation is of Non-GI causes.

CONCLUSION :

Elevated serum amylase can clearly aids in diagnosis of acute pancreatitis since decades. We found in this study that in many other abdominal, genitourinary and obstetric pathologies, serum amylase is elevated in a significant amount; and thus can be used clinically in aiding the diagnosis of these disease specially in acute abdomen.

REFERENCES:

1. Pitts SR, Niska RW, Xu J, et al. National hospital ambulatory medical care survey: 2006 emergency department summary. National Center for Health Statistics; 2008.

2. Pitts SR, Niska RW, Xu J, et al. National hospital ambulatory medical care survey: 2006 emergency department summary. National Center for Health Statistics; 2008.

3. Dervenis C, Johnson CD, Bassi C, Bradley E, Imrie CW, Mc Mahon MJ, Modlin I. Diagnosis, objective assessment of severity, and management of acute pancreatitis. Santorini consensus conference. Int J Pancreatol 1993; 25: 195-210. 9. Dixon RH, Laszlo J. Utilization of clinical chemistry service.

4. Dixon RH, Laszlo J. Utilization of clinical chemistry services by medical house staff. Arch Intern Med 1974; 134: 1064-7.

5. Schroeder SA, Martin AR. Will changing how patients order tests reduce medical costs? Ann Intern Med 1981; 94: 534-6