



THE CORRELATION BETWEEN BIOCHEMICAL MARKER AND RADIOLOGICAL SEVERITY SCALE IN ACUTE PANCREATITIS

Radiodiagnosis

Nidhi Sehgal	Assistant Professor, Dept. of Radiology, IQ City Medical College, Durgapur.
Sulekha Sinha*	Associate Professor, Dept. of Biochemistry, IQ City Medical College, Durgapur. *Corresponding Author
Kishore Mandal	Senior Resident, Dept. of Radiology, IQ City Medical College, Durgapur.
Sunanda Mazumdar	Professor & HOD, Dept. of Radiology, IQ City Medical College, Durgapur.

ABSTRACT

Acute pancreatitis is a common disorder with multiple etiology. Patients with acute pancreatitis showing positive findings on CT scan were included in the study. Any other disease of pancreas was excluded. The radiological grading (modified CT severity index) was recorded for all the patients with acute pancreatitis. The serum lipase levels were recorded for patients with acute pancreatitis mentioned above. Among 38 selected cases of acute pancreatitis 27 were male and 11 female. The Pearson's correlation coefficient between modified CT severity score and serum lipase levels was done and found positive with r value 0.307. This correlation is statistically significant with p value < 0.05 . The radiological finding along with biochemical parameters may help in diagnosing as well as finding the severity of acute pancreatitis. This will help in proper and early treatment aspects.

KEYWORDS

acute pancreatitis, lipase, modified CT severity index

INTRODUCTION

Acute pancreatitis is a clinical condition mainly presents with abdominal pain. The various causes of acute pancreatitis are alcoholism, biliary stone, endoscopy etc. This may be mild pancreatitis (also known as interstitial or edematous pancreatitis) or its severe form (also known as necrotizing pancreatitis). The severe pancreatitis occurring in approximately 20% of patients is usually associated with organ failure or local complications including pseudocyst.¹ There are different clinical and radiological methods to measure severity of acute pancreatitis eg. Ranson's criteria, the acute physiology and chronic health evaluation (APACHE II) scoring system, the CT severity index etc.^{1,2}

The CT severity index (developed by Balthazar and colleagues in 1994) 2 focuses on degree of pancreatic inflammation and necrosis on 10 point severity scale (Table 1). This CT severity index was very useful to predict morbidity and mortality in acute pancreatitis cases. But this index failed to correlate subsequent development of organ failure, extrapancreatic parenchymal complications or peripancreatic vascular complications. Later on modified CT severity index (Table -2) was developed to predict better clinical outcome.²

Along with this for acute pancreatitis there are some biochemical markers also eg. Serum amylase, lipase and proenzyme trypsinogen. The serum amylase levels usually rises more than three folds the normal upper limit. The rise in levels are usually in first 12 hrs which comes down to the normal in 3-5 days. The serum lipase levels in comparison to the serum amylase levels remains increased for 8-14 days after onset.³

This study was done to correlate modified CT severity index with serum lipase levels in selected cases of acute pancreatitis.

Table-1 : CT Severity index		
Prognostic indicators		Points
Pancreatic inflammation	Normal pancreas	0
	Focal or diffuse enlargement of pancreas	1
	Intrinsic pancreatic abnormalities with inflammatory changes in peripancreatic fat	2
	Single, ill defined fluid collection or phlegmon	3
	2 or more poorly defined collections or presence of gas in or adjacent to the pancreas	4

Pancreatic necrosis	None	0
	$\leq 30\%$	2
	30-50%	4
	$> 50\%$	6

Table-2 : Modified CT Severity index		
Prognostic indicators		Points
Pancreatic inflammation	Normal pancreas	0
	Intrinsic pancreatic abnormalities with inflammatory changes in peripancreatic fat	2
	Pancreatic or peripancreatic fluid collections or peripancreatic fat necrosis	4
Pancreatic necrosis	None	0
	$\leq 30\%$	2
	> 30	4
	Extrapancreatic complications (one or more of pleural effusion, ascitis, vascular complications, parenchymal complications pr gastrointestinal tract involvement)	2

MATERIALS AND METHODS

This is a retrospective study, conducted at IQ City Medical College and NH multispeciality Hospital from November 2016 to April 2017. The research study was approved by institutional ethics committee. Patients with acute pancreatitis showing positive findings on CT scan were included in the study. Any other disease of pancreas was excluded.

The radiological grading (modified CT severity index) was recorded for all the patients with acute pancreatitis. The serum lipase levels were also recorded for patients with acute pancreatitis mentioned above. The above mentioned detail was obtained from MRD.

The serum lipase was analyzed using enzymatic kinetic assay method in Siemen's autoanalyzer. The CT scan was done on a MDCT scanner. The correlation of CT scan based grading (modified CT severity index) for acute pancreatitis with serum lipase levels was done statistically using Pearson's correlation coefficient.

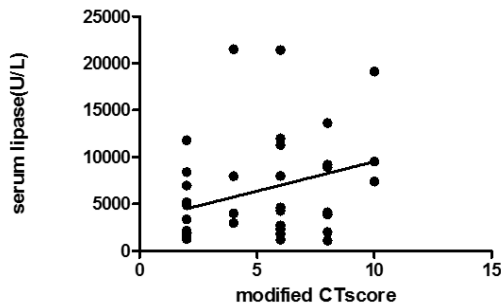
RESULT

Among 38 selected cases of acute pancreatitis 27 were male and 11 female. The serum lipase and modified CT score was recorded for the selected cases. The Pearson's correlation coefficient between modified CT severity score and serum lipase levels was done and found positive

with r value 0.307 (Graph -1). This correlation is statistically significant with p value < 0.05.

Graph: 1 – correlation of serum lipase and modified CT score in acute pancreatitis

correlation of serum lipase and modified CTscore



DISCUSSION

The serum lipase levels and radiological grade (CT scan) are usually done for diagnosing and checking severity of acute pancreatitis. The modified CT scoring system has been found better than simple CT scoring system as that can assess severity and organ failure. This can provide better view in respect to complications, hospital stay and patient outcome as found in studies by Koenraad J et al⁴ and Adhishwari PP et al⁵. In the current study serum lipase and modified CT score parameters were correlated statistically and found positive significantly. This has the r value of 0.307 with p value less than 0.05. In Kim et al⁶ study they found high serum lipase levels and positive radiological findings at the time of patient admission. They also found CRP levels were positively correlated with radiological grading at admission as well as for follow up of the patients.

In the study by Batra HS et al⁷, out of 50 patients in the study group (radiologically diagnosed acute pancreatitis) 42(84%) had both amylase and lipase raised whereas 8(16%) had only lipase raised. The serum lipase has been found to correlate with modified CT score. The serum lipase along with modified CT scoring system may be helpful for evaluating acute pancreatitis.

CONCLUSION

The radiological finding along with biochemical parameters may help in diagnosing as well as finding the severity of acute pancreatitis. This may help in early diagnosis and proper treatment of acute pancreatitis.

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