



TO STUDY THE ROLE OF C-REACTIVE PROTEIN TO PREDICT THE RISK OF PANCREATIC NECROSIS

Dr. Edara Supriya Chowdary*

Postgraduate*Corresponding Author

Dr. S. Hameed Ali

Postgraduate

ABSTRACT **INTRODUCTION** Acute pancreatitis is an inflammation of pancreas of variable severity. Its severity varies from mild to severe attacks like necrotizing pancreatitis which has bad prognosis. C-reactive protein is an inflammatory mediator synthesized in the liver and is raised in acute pancreatitis. **AIM OF THE STUDY** To study the role of C-reactive protein in predicting the risk of pancreatic necrosis and other severe complications of acute pancreatitis.

MATERIALS AND METHODS

- Study setting: The study was conducted on patients admitted in the Department of General Medicine with features suggestive of Acute Pancreatitis.
- Study period: The study was conducted between November 2021 to October 2022
- Sample size: The present study included 50 patients admitted in the Department of General Medicine with features suggestive of Acute Pancreatitis.

INCLUSION CRITERIA 1) Patients of any age and either sex presenting with acute pain abdomen and fourfold elevation of Serum Amylase and/or Serum Lipase.

EXCLUSION CRITERIA

- 1) Patients with ischemic heart disease and angina
- 2) Patients with prior history of fever before onset of pain
- 3) Patients with chronic infectious diseases and known case of collagen vascular disease.

RESULTS Based on 5th day CRP values 50 patients are divided into 3 groups, 1st group(n-30) CRP less than 100mg/dl, 2nd group(n-8) CRP levels between 100-200mg/dl, 3rd group(n-12) CRP levels more than 300mg/dl. The development of necrotizing pancreatitis in correlation with CRP was out of 30 patients in the 1st group, 4(13.33%) developed necrotizing pancreatitis, in the 2nd group, out of 8 patients, 4(50%) developed necrotizing pancreatitis, in the 3rd group, out of 12 patients, all 12(100%) of them developed necrotizing pancreatitis. **CONCLUSION** CRP levels peaked at 5th day of illness and cut off value of 150mg/dl can be taken above which pancreatic necrosis can be predicted with high probability. This value has a specificity of 80%. CRP values above 200mg/dl has a specificity of 100%.

KEYWORDS :

INTRODUCTION

Acute pancreatitis is an inflammation of pancreas of variable severity. Its severity varies from mild to severe attacks like necrotizing pancreatitis which has bad prognosis. C-reactive protein is an inflammatory mediator synthesized in the liver and is raised in acute pancreatitis.

AIMS AND OBJECTIVES

To study the role of C-reactive protein in predicting the risk of pancreatic necrosis and other severe complications of acute pancreatitis.

MATERIALS AND METHODS

Study setting: The study was conducted on patients admitted in the Department of General Medicine with features suggestive of Acute Pancreatitis.

Study period: The study was conducted between November 2021 to October 2022

Sample size: The present study included 50 patients admitted in the Department of General Medicine with features suggestive of Acute Pancreatitis.

INCLUSION CRITERIA:

- 1) Patients of any age and either sex presenting with acute pain abdomen and fourfold elevation of Serum Amylase and/or Serum Lipase.

EXCLUSION CRITERIA

- 1) Patients with ischemic heart disease and angina
- 2) Patients with prior history of fever before onset of pain
- 3) Patients with chronic infectious diseases and known case of collagen vascular disease.

RESULTS

Based on 5th day CRP values 50 patients are divided into 3 groups, 1st

group(n-30) CRP less than 100mg/dl, 2nd group(n-8) CRP levels between 100-200mg/dl, 3rd group(n-12) CRP levels more than 300mg/dl. The development of necrotizing pancreatitis in correlation with CRP was out of 30 patients in the 1st group, 4(13.33%) developed necrotizing pancreatitis, in the 2nd group, out of 8 patients, 4(50%) developed necrotizing pancreatitis, in the 3rd group, out of 12 patients, all 12(100%) of them developed necrotizing pancreatitis.

Table 1: Etiology and Sex Predominance:

Etiology	Males	Females
Alcohol	34	0
Gall Stones	4	4
Hypertriglyceridemia	0	6
Idiopathic	2	0

Table 2: CRP Values in Correlation with Disease Severity:

CRP Value	Pancreatic Edema	Pancreatic Necrosis
Less than 100mg/dl (N-30)	26	4
Between 100-200mg/dl (N-8)	4	4
More than 200mg/dl (N-12)	0	12

Table 3: CRP and its significance to severity in study groups:

Study Groups	No. of SAP patients	CRP>150mg/dl	CRP<150mg/dl
Present Study	20	16	4
Ajay K. Khanna et al	29	25	4

DISCUSSION

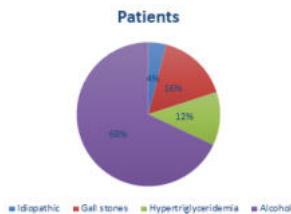
Acute pancreatitis is a disorder defined by a collection of radiological, laboratory, and clinical signs and symptoms. In acute pancreatitis, there are numerous complications that can cause morbidity and

mortality. Local complications like pancreatic necrosis might cause morbidity and mortality. Therefore, an earlier diagnosis aids in the beginning of prompt therapy. Different inflammatory indicators are employed in the early diagnosis of acute pancreatic necrosis. An inflammatory marker called CRP was used as the technique of diagnosis in our investigation.²

CRP has been proven to be a human prognostic factor. Hepatocytes produce CRP, which is an acute phase reactant. Interleukin 1 and 6 release triggers this synthesis. As a result, the CRP peak in serum invariably occurs later than the peak of these interleukins and is typically not maximal until after day 3 of discomfort.

In our study, there were 50 patients, of which 40 (80%) were men and 10 (20%) were women. In comparison to females, there is hence a masculine predominance. In the current group, people between the ages of 25 and 45 predominated. Out of the 50 participants in the study, 42 (84%) were between the ages of 25 and 45, 6 (12%) were between the ages of 15 and 25, and 2 (4%) were over the age of 65. As a result, the age indicates that the disease predominates between the middle of the second and late in the fourth decade.

The most common etiological cause is induced by alcohol in males, and bile stones in females. Alcohol is the most frequent etiological component in our study, accounting for 50 instances, followed by gallstones and hypertriglyceridemia. In the current study, the causes of acute pancreatitis were idiopathic in 2 patients (4%), gallstones in 8 out of 50 patients (16%), hypertriglyceridemia in 6 out of 50 patients (12%), and alcohol in 34 out of 50 patients (68%).



The two symptoms that acute pancreatitis patients typically experience are abdominal pain and nausea with or without vomiting. There are 50 patients in our group, and every single one of them has a similar issue. According to the modified Atlanta criteria, one of the key findings for defining pancreatitis is the clinical presentation.

In the current study, we used immunoelectrophoretic methods to measure inflammatory markers such CRP on the 3rd, 5th, and 9th days after admission. For the current investigation, the CRP values that peaked on the fifth day were collected and separated into 3 groups.

- 1) CRP values below 100 mg/dl
- 2) CRP levels of 100–200 mg/dl
- 3) CRP values of 200mg/dl or higher

Out of the 50 patients recruited for the study, 30 had a CRP level of less than 100 mg/dl, 8 had a level between 100 and 200 mg/dl, and 12 had a level of more than 200 mg/dl. Cut-off values have been debated in the literature, and it has been decided that levels between 120 and 210 mg/dl can discriminate between mild and severe illness.

20 individuals fall into the moderate to severe acute pancreatitis group in the current study and have CRP values between 100 and 200 mg/dl or higher. With the exception of 4 patients who had pancreatic necrosis despite having a CRP value of less than 100mg/dl, our analysis indicates that individuals with a CRP value of less than 100mg/dl primarily have pancreatic edema rather than necrosis. Out of 30 patients with CRP levels less than 100 mg/dl, 26 (86.66%) showed pancreatic edema only on CT scans performed between 5 and 9 days earlier, while 4 (13.33%) had pancreatic necrosis.

In the current study group, the occurrence of pancreatic necrosis was influenced by age and sex. Of the 20 patients who presented with pancreatic necrosis, 14 were male and 6 were female. As a result, of the 10 females in the study group, 6 had necrotizing pancreatitis (60%) compared to the 14 out of 40 males (35%) who had it. Four patients in the research group were under the age of 20, two were above the age of 50, and 14 of the 20 patients with necrotizing pancreatitis were between the ages of 20 and 50. This is known as the age predominance. In the etiological predominance, out of 20 patients with necrotizing

pancreatitis 14 are due to consumption of alcohol and 4 due to bile stones and 2 are idiopathic.

When compared to individuals with edematous pancreatitis, people with necrotizing pancreatitis had higher rates of morbidity and mortality. The current research group's average hospital stay was 8 days, but when the patients were split into two groups, the edematous pancreatitis group's average hospital stay was 5.4 days and the necrotizing pancreatitis group's average hospital stay was 11.8 days.

In the current trial group, 4 patients died as a result of respiratory failure brought on by MODS. On the 5th day, the CRP levels of the 4 patients who passed away were over 200 mg/dl, and their serum levels of amylase and lipase were elevated. These patients' CT scans showed extensive pancreatic necrosis, and other lab results like their serum creatinine and calcium levels were all abnormal.

The 50 patients in the current trial group had an average serum lipase level of 306.52U/L, which was higher than the starting value by more than two times. 30 patients with mild acute pancreatitis (edematous pancreatitis) had an average of 230.33U/L, which was lower than the 50 patients' combined average. 20 patients with severe acute pancreatitis (necrotizing pancreatitis) had an average blood sugar level of 420.8U/L, which was greater than the average of all 50 patients.

From the 5th to the 9th day of the trial, the 50 patients in the current study group underwent a contrast-enhanced CT abdomen. Of them, 20 patients had necrotizing pancreatitis, and the remaining 30 patients had edematous or interstitial pancreatitis. The serum lipase and CRP measurements made on days 3, 5, and 9 had lower predictive values than CT. However, if the CRP cut-off value was taken at or above 150 mg/dl, it has a predictive value of 80% and is a less expensive test than a CT scan.³

CONCLUSION

CRP levels peaked at 5th day of illness and cut off value of 150mg/dl can be taken above which pancreatic necrosis can be predicted with high probability. This value has a specificity of 80%. CRP values above 200mg/dl has a specificity of 100%.

REFERENCES

- 1) Frossard JL., Steer ML., Pastor CM. 2008. Acute pancreatitis. *Lancet* 371:143-152.
- 2) Giedrius Barauskas, Saulius Svagzdys, 2004. Almantas Maleckas C- reactive protein I early prediction of pancreatic necrosis, *Medicina* vol. 40, No.2.
- 3) Gunay Gurleyik I, Seyfi Emir I, Gamze Kilicoglu 2, Alpe Arman 2, 2005. Abdullah saglam I Computed Tomography Severity Index, APACHE II Score, and Serum CRP Concentration for Predicting the Severity of Acute Pancreatitis, *JOP. J Pancreas(online)* 6(5);562-567.