



EARLY PREDICTION OF SEVERITY OF ACUTE PANCREATITIS ROLE OF C-REACTIVE PROTEIN

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ARTICLE INFO

**Article History:**

Received 07<sup>th</sup> May, 2014  
Received in revised form  
20<sup>th</sup> June, 2014  
Accepted 26<sup>th</sup> July, 2014  
Published online 06<sup>th</sup> August, 2014

**Key words:**

Ranson's criteria, C-reactive protein,  
Acute pancreatitis.

ABSTRACT

**Aim:** To assess the accuracy of C-reactive protein in predicting the severity of acute pancreatitis.

**Method:** In this study 20 patients with acute pancreatitis were included. Ranson's criteria were fulfilled and C-reactive protein level was estimated at the time of admission.

**Result:** Out of 20 patients of acute pancreatitis, 12 were having severe disease with CRP level between 96-192 mg/L, while in mild disease 7 patients were having severe disease with CRP level between 24-48 mg/L and only 1 patient was having normal CRP level i.e. below 6 mg/L.

**Conclusion:** Value of C - reactive protein is to provide a guide to the severity of the inflammation. Measurement of CRP level is a simple method to assess the severity of disease.

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INTRODUCTION

Acute Pancreatitis is used to describe pancreatic inflammation associated with a broad spectrum of pathological and clinical finding and with widely diverse etiological association (Ranson 1984). Acute pancreatitis is a protean disease capable of wide clinical variation, ranging from mild discomfort to apocalyptic prostration. Moreover, the inflammatory process may remain localized in the pancreas, spread to regional tissues, or even involve remote organ systems. This variability in presentation and clinical course has plagued the study and management of acute pancreatitis since its original clinical description (Edward Bradley 1993). Acute pancreatitis presents a broad spectrum ranging from cases (80%) so mild that symptoms abate before the diagnosis is actively perused to cases (20%) high progress rapidly to multisystem failure and eventual demise of the patient despite current modes of therapy (Tariq et al 2011). With this spectrum it is important to predict the outcome of the diseases and its potential complications with a view to chalk out a plan to deal with these potential complications.

A prolonged or excessive inflammatory response may be one of the mechanisms whereby patients develop multi organ failure. During this inflammatory response multiple substances are released which play an important role in disease pathogenesis they are called Acute Phase Protein. In humans C - reactive protein (CRP) is the most important acute phase protein. Stimuli that induce it are infection, inflammation stress

tissue necrosis and neoplasia (Severine *et al.*, 2004). An increased serum C -reactive protein concentration is well recognized as a non specific response to a wide variety of tissue injury (Pepys *et al.*, 1981) and (Gewurz 1982). C-reactive protein has been considered as a non specific indicator of bacterial infection, inflammatory response and tissue injury.

The rapid response of C-reactive protein to changes in the intensity of the inflammatory stimulus suggests that it might be valuable in the assessment and monitoring of acute pancreatitis. Severe acute pancreatitis is life threatening disorder with high mortality rate (Sandberg *et al.*, 2002). Sequential measurements of CRP can be helpful in providing a warning of inflammatory complications. So the work is focused on quantifying disease severity as well as estimating prognosis and outcome. This study is to determine the CRP in acute pancreatitis relation to the severity of process and to the nature of the tissue reaction. In inflammatory disorders the CRP can be valuable and sensitive index of disease activity and response to therapy. The CRP assay is simple, quick to perform, provide useful clinical information and is more likely to be of value and to be adopted in to routine clinical practice than multifactor scoring system. In near future a combined clinical and laboratory approach for early severity prediction will be most reliable.

MATERIALS AND METHODS

The present study was carried out in the Bikaner district. This Study included 20 patients of acute pancreatitis admitted in the surgical ward PBM hospital, Bikaner. In this study all the

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patients, more than 20 years old with significantly raised level of serum amylase with clinical signs of acute pancreatitis were included. Ranson's criteria were used to determine severity of acute pancreatitis. C - reactive protein was measured by collecting 2 ml of mixed venous blood sample. C-reactive protein was done by standard semi quantitative Latex Agglutination method (Biosystem SA, Barcelona, Spain) at admission. When the serum sample containing a significant level of CRP is mixed with the latex, visible agglutination occurs. The test is expected to be positive with serum CRP levels between 6-1000 mg/L.

### Analysis of data

Percentage analysis is one of the statically measure used to describe the characteristics of the sample.

## RESULTS

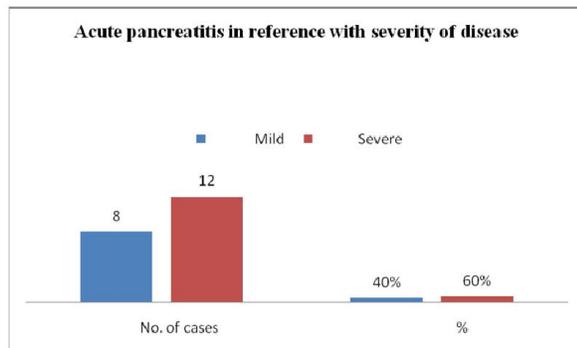
**Table 1. Acute pancreatitis in reference with severity of disease**

Severity of disease	No. of cases	%
Mild	8	40%
Severe	12	60%

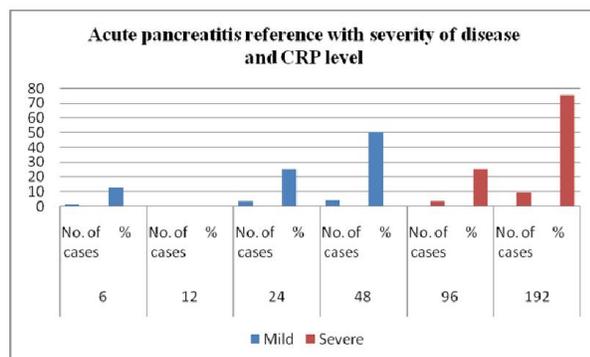
40% cases examined have mild pancreatitis while 60% have severe pancreatitis.

**Table 2. Acute pancreatitis reference with severity of disease and CRP level**

Severity of disease	CRP level (mg/L)											
	6		12		24		48		96		192	
	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
Mild	1	12.5	0	0	3	25	4	50	0	0	0	0
Severe	0	0	0	0	0	0	0	3	25	9	75	



**Fig.1.**



**Fig.2.**

Out of 20 patients of acute pancreatitis, 12 were having severe disease with CRP level between 96-192 mg/L, while in mild disease 7 patients were having severe disease with CRP level between 24-48 mg/L and only 1 patient was having normal CRP level i.e. below 6 mg/L.

## DISCUSSION

Acute pancreatitis is an acute inflammation of the pancreas presenting clinically with "acute abdomen". The severe form of the disease associated with macroscopic hemorrhage and fat necrosis in and around the pancreas. It is important to identify those patients with acute pancreatitis who have an increased risk of dying. Result of our study is similar to the study carried out by Alfenjo *et al.* (2003). They conducted a retrospective study on 157 patients of acute pancreatitis whose serum CRP level were determined. Out of 157, 132 patients had high CRP level less than or equal to 200mg/L obtained at 72 hrs of symptoms onset is useful for ruling out with a high degree of probability, the presence of necrosis. Similarly Medicina (2004) studied the relationship between the CRP level and pancreatic necrosis. They found that out of 78 patients most of patients had high CRP level cut off of 110mg/L. In support to our findings Tariq Saeed *et al.* (2011) said that estimation of

the severity state in patients having Acute pancreatitis constitute a significant part of diagnosis and complex treatment so in this diseases early diagnosis and severity can prevent complications and CRP level can early predict the severity of diseases. Del *et al.* (2001) suggested that the early diagnosis is mandatory for successful treatment and in acute pancreatitis most widely used scoring systems are often cumbersome and difficult to use in clinical practice because of their multifactorial nature. So the number of unifactorial prognostic indices have been employed in routine hospital practice in which CRP is the one of estimation. P Puolakkainen (1987) examined that the value of C-reactive protein (CRP) determination in the assessment of the severity of acute pancreatitis and the correlation of CRP with serum phospholipase A2 activity and the clinical status. 53 patients with acute pancreatitis were studied; 17 with hemorrhagic pancreatitis and 36 with a mild form of the disease. S-phospholipase A2 activity increased significantly (p less than 0.05) in patients with fatal pancreatitis but not in those with mild disease. High CRP values also correlated with the prognostic signs indicative of severe pancreatitis. CRP and S-phospholipase A2 determinations are valuable in the early assessment of the severity of acute pancreatitis, but the CRP assay is much easier to include in hospital routine.

## Conclusion

The present study concluded that value of C - reactive protein is to provide a guide to the severity of the inflammation.

Measurement of CRP level is a simple method to assess the severity of disease.

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