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PROGNOSTIC ACCURACY OF C- REACTIVE PROTEIN DONE ON ADMISSION AND AT 24 HOURS IN ACUTE PANCREATITIS

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ABSTRACT

Background: "Acute pancreatitis (AP) is defined as a sudden onset pancreatic inflammatory process" and is associated with complications such as Multi organ dysfunction syndrome leading to increased hospitalizations and mortality rates.

Aim: This study aims at studying the role of CRP done at admission and at 24 hours as a simple and effective prognostic predictor of Severe Acute Pancreatitis and as an alternative to the complex scoring systems available.

Methods: A hospital based observational study was conducted during October 2020 to September 2022 among 50 AP participants aged between 18- 65 years diagnosed using standard criteria. The study will help to translate the significance of CRP done at admission and at 24 hours as a prognostic predictor after comparisons within two clinical grades of AP - Mild Acute pancreatitis-(MAP) and Severe Acute pancreatitis (SAP).

Results: The mean difference of CRP done on admission and at 24hrs between Mild vs Severe Acute Pancreatitis was statistically significant with a P VALUE <0.05. Upon comparing the AUC for both CRP done on admission and CRP at 24 hours, CRP at 24 hours is found to be not of greater significance in predicting the outcomes of disease and is not a better prognostic marker than CRP done on admission.

Conclusion: In our study, both CRP at admission and CRP at 24 hours were statistically significant in predicting the severity of Acute pancreatitis but the CRP levels done at 24 hours were not found to be superior to CRP done on admission to assess disease severity.

Keywords: Acute Pancreatitis, CRP, Prognosis, Severity

INTRODUCTION

Acute pancreatitis is a sudden onset inflammation of the pancreas with manifestations ranging from abdominal pain to systemic inflammation, and multi-organ failure. It is of frequent occurrence in routine practice and is associated with high mortality rates confronting the treating doctor with major challenges.

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Acute pancreatitis is a condition that often progresses slowly. However, between 20 to 30% of individuals develop Severe Acute Pancreatitis. According to the updated Atlanta classification, these individuals are categorized as having severe acute pancreatitis since persistent organ failure is the primary factor in mortality, whether or not there are local complications such pancreatic necrosis and subsequent infections[1]. Different scoring methods and prognostic markers for risk stratification are reported in current recommendations for the management of acute pancreatitis.

CRP is one such frequently used biomarker as it is widely available, is relatively inexpensive and is found to correlate well with disease severity. Several Studies have shown CRP at 48 hours as a better predictor of SAP.

On the day of admission, when there is a window of opportunity for defining measures to prevent pancreatic necrosis and organ failure, early evaluation of the severity of AP becomes critical. Despite this, none of the available clinical scoring methods or biochemical indicators have a definite function, are widely used, or are consistently accurate[2]. Early detection of the onset of severe AP is therefore still very difficult. Since then, further multi-factorial scoring methods that incorporate typical clinical and biochemical indicators have been developed to forecast severity. More study is required to enable a quicker and more precise prediction of severe AP, despite recent advancements in our understanding of the biology of the disease.

METHODOLOGY

A hospital based observational study was conducted during October 2020 to September 2022 among 50 AP participants aged between 18- 65 years diagnosed using standard criteria. The study will help to translate the significance of CRP done at admission and at 24 hours as a prognostic predictor after comparisons within two clinical grades of AP - Mild Acute pancreatitis-(MAP) and Severe Acute Pancreatitis (SAP).

RESULTS

Table 1: Comparison of mean of biochemical parameters in MAP and SAP (N=50)

Parameter	Severity (Mean± SD)		P value
	MAP (N=39)	SAP (N=11)	
CRP	54.02 ± 55.91	156.27 ± 101.28	<0.001
CRP 24hrs	31.14 ± 37.41	98.52 ± 99.61	0.001

Table shows that the mean difference of CRP done on admission and at 24hrs between Mild vs Severe Acute Pancreatitis was statistically significant with a P VALUE <0.05.

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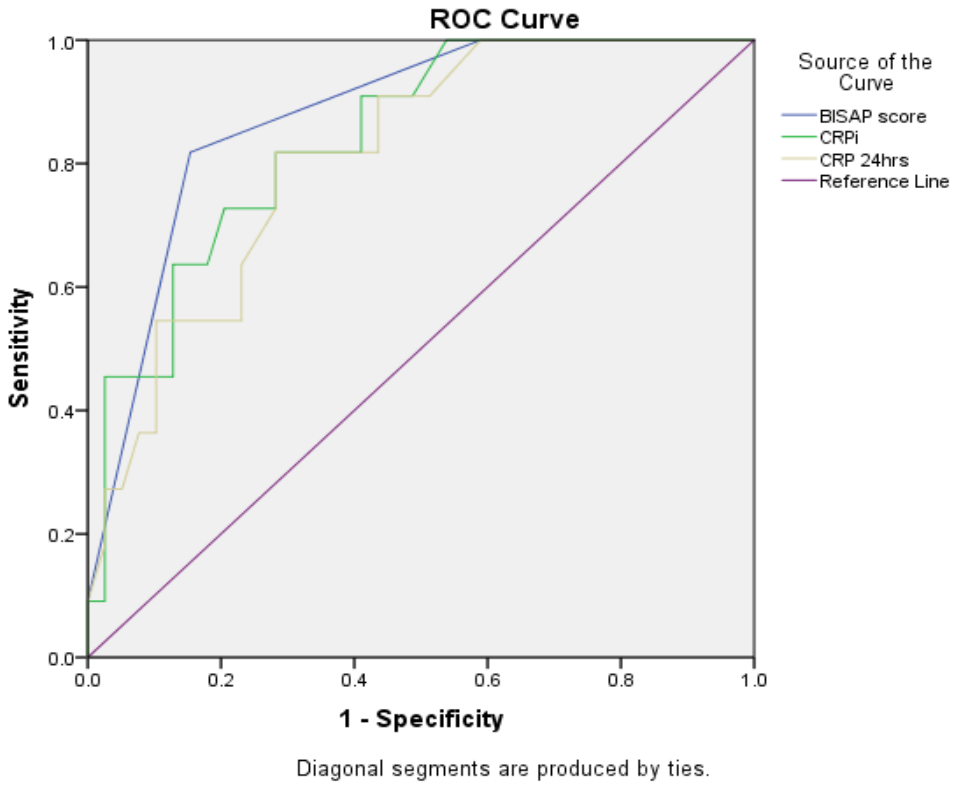
Figure 1: Area under the curve of CRP, CRP 24 hours and its comparison with BISAP score.



Area Under the Curve					
Test Result Variable (s)	Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
BISAP score	.876	.054	.000	.771	.981
CRPi	.840	.062	.001	.719	.962
CRP 24hrs	.812	.066	.002	.683	.942

Figure shows similar AUC for both CRP done on admission and CRP at 24 hours implying CRP at 24 hours to be not of greater significance in predicting the outcomes of disease and is not a better prognostic marker than CRP done on admission. AUC of BISAP score, CRP initial and CRP at 24 hours are 0.876, 0.840 and 0.812 respectively.

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DISCUSSION

Acute pancreatitis (AP) is diagnosed in the presence of two of the following three findings[3] -

- Sudden onset of typical epigastric abdominal pain
- Elevation of serum amylase or lipase more than three times the upper limits of normal
- Characteristic findings of acute pancreatitis such as pancreatic edema, fat stranding, and peripancreatic fluid collections on abdominal imaging.[4]

The age-standardized population incidence has most recently been reported in the United States to be 34.8 per 100,000 persons, with a mortality rate of 1.4 per 100,000 population per year due to acute pancreatitis which accounts for 275,000 hospital admissions[5]. Acute pancreatitis generally has a fatality rate of 1–2%, whereas severe acute pancreatitis has a substantially higher mortality rate ranging between 2 – 10%.

In order to choose the appropriate degree of treatment, severity evaluation and prognostication are crucial. There are several validated clinical prediction measures that have been established. Most require 48-hour data and are difficult to compute. Since then, a variety of multi-factorial scoring systems that use common clinical and biochemical indicators to predict severity have been described.

Studies such as Staubli et al. suggested that among the biochemical markers, CRP is the most useful biochemical prognostic marker for measuring the severity of AP[6].

In Data gathered from 269 patients with acute pancreatitis by Francisco Valverde-López et al. in 2017, the C-reactive protein level at admission was a statistically significant predictor of SAP[7].

Studies performed by Stirling et al. compared the ROC curve of CRP at admission and 24, 48 and 72 hours and found maximum difference in mean CRP for mild vs severe disease at 48 hours pointing to an improved predictive accuracy for severe disease at 48 hours[8]. Similar results were noticed by Cardoso et al[9].

A similar study done by Cho et al. Showed a positive association between CRP done at 24 hours and severe acute pancreatitis[10].

CONCLUSION

In our study, both CRP at admission and CRP at 24 hours were statistically significant in predicting the severity of Acute pancreatitis but the CRP levels done at 24 hours were not found to be superior to CRP done on admission to assess disease severity.

REFERENCES

1. Johnson CD, Abu-Hilal M. Persistent organ failure during the first week as a marker of fatal outcome in acute pancreatitis. Gut 2004; 53:1340.
2. Kaplan M, Ates I, Akpinar MY, Yuksel M, Kuzu UB, Kacar S, Coskun O, Kayacetin E. Predictive value of C-reactive protein/albumin ratio in acute pancreatitis. Hepatobiliary & Pancreatic Diseases International. 2017 Aug 15;16(4):424-30.
3. Banks PA, Freeman ML, Practice Parameters Committee of the American College of Gastroenterology. Practice guidelines in acute pancreatitis. Official journal of the American College of Gastroenterology| ACG. 2006 Oct 1;101(10):2379-400.
4. O'Connor OJ, McWilliams S, Maher MM. Imaging of acute pancreatitis. AJR-American Journal of Roentgenology. 2011 Aug 1;197(2):W221.

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5. De Pretis N, Amodio A, Frulloni L. Hypertriglyceridemic pancreatitis: epidemiology, pathophysiology and clinical management. United European gastroenterology journal. 2018 Jun;6(5):649-55.
6. Staubli SM, Oertli D, Nebiker CA. Laboratory markers predicting severity of acute pancreatitis. Critical Reviews in Clinical Laboratory Sciences. 2015 Nov 2;52(6):273-83.
7. Valverde- López F, Matas- Cobos AM, Alegría- Motte C, Jiménez- Rosales R, Úbeda- Muñoz M, Redondo- Cerezo E. BISAP, RANSON, lactate and others biomarkers in prediction of severe acute pancreatitis in a European cohort. Journal of gastroenterology and hepatology. 2017 Sep;32(9):1649-56.
8. Stirling AD, Moran NR, Kelly ME, Ridgway PF, Conlon KC. The predictive value of C-reactive protein (CRP) in acute pancreatitis–is interval change in CRP an additional indicator of severity?. Hpb. 2017 Oct 1;19(10):874-80.
9. Cardoso FS, Ricardo LB, Oliveira AM, Canena JM, Horta DV, Papoila AL, Deus JR. C-reactive protein prognostic accuracy in acute pancreatitis: timing of measurement and cutoff points. European journal of gastroenterology & hepatology. 2013 Jul 1;25(7):784-9.
10. Cho JH, Kim TN, Chung HH, Kim KH. Comparison of scoring systems in predicting the severity of acute pancreatitis. World journal of gastroenterology: WJG. 2015 Feb 28;21(8):2387.