

A Comparative Study of Serum C-Reactive Proteins in Alcoholic and Infective Hepatitis Patients in Jodhpur (Rajasthan)

Gupta Ritu¹, Mathur Ranjana², Khandelwal Dheeraj Kumar³

¹Senior Demonstrator, Department of Biochemistry, Dr. S. N. Medical College, Jodhpur (Rajasthan) India

²Senior Professor & Head, Department of Biochemistry, Dr. S. N. Medical College, Jodhpur (Rajasthan) India

³Resident, Department of Microbiology, Dr. S. N. Medical College, Jodhpur (Rajasthan) India

Abstract: Introduction: C-reactive proteins (CRP) are a very good marker of inflammation and when the inflammation subsided, CRP quickly falls followed by erythrocyte sedimentation rate (ESR) thus it is a more sensitive and accurate reflection of the acute phase response than the ESR. As both alcoholic and infective hepatitis leads to inflammation in hepatocytes, CRP levels are increased in both conditions. Material and Method: The present study was conducted on 200 each patients of both alcoholic and infective hepatitis in Department of Biochemistry, Dr. S. N. Medical College, Jodhpur and the results were compared with 100 healthy control subjects. The serum CRP levels were measured by turbidimetry immunoassay method. Result and Discussion: The mean serum C-reactive protein of the healthy control was 0.232 ± 0.18 mg/dL; for alcoholic hepatitis patients mean serum C-reactive protein was 27.01 ± 12.26 mg/dL while in infective hepatitis subjects, the observed mean serum C-reactive protein was 27.56 ± 12.32 mg/dL. Both alcoholic and infective hepatitis patients showed a highly significant relationship when compared with healthy control subjects. Conclusion: Estimation of CRP is simple, quick and reliable so it should be included in the routine investigations of alcoholic as well as infective hepatitis patients for better management and prognosis of disease.

Keywords: CRP, ESR, Alcoholic Hepatitis, Infective Hepatitis, Turbidimetry

1. Introduction

C-reactive protein (CRP) is a non-specific marker of inflammation[1] and a predictor of a coronary heart disease, cardiovascular disorders, subclinical vascular diseases and infective diseases. The serum C- Reactive proteins (CRP) are produced mainly in the hepatocyte and under transcriptional control by the cytokine IL-6. Decompensate liver cirrhosis leads to extensive loss of liver cells and necrotic process of the liver parenchymal cells, the serum CRP levels are maintained in high level and independent of serum ALT level with its low correlation. The remaining viable hepatocytes contribute to this result. [2] As both alcoholic and infective hepatitis leads to inflammation in hepatocytes, CRP levels are increased in both conditions. Thus the present was planned to estimate serum CRP level in both alcoholic and infective hepatitis patients with an aim to find out utility of this parameter in better prognosis and management of diseases status.

2. Material and Methods

The present study was conducted on 200 patients of each alcoholic and infective hepatitis in Department of Biochemistry, Dr. S. N. Medical College, Jodhpur (Rajasthan). The age of the patients ranged from 15-75 years of age. The results were compared with age matched healthy control subjects. An informed consent was taken from all the control subjects as well as from the patients or their attendants who participated in the study after apprising them the nature and objective of study.

Inclusion Criteria

- 1)Confirmed diagnosed patients of alcoholic hepatitis by treating physicians and surgeons.
- 2)Confirmed diagnosed patients of infective hepatitis by Microbiology investigations.

Serum CRP levels were measured by turbidimetry immunoassay method.[3] The procedure and methods described in kit manual were strictly followed.

3. Observation Table

Mean Serum C-Reactive Protein (mg/dL) of the subjects studied

S.No.	Group studied	C-Reactive Protein (Mean \pm S.D.) [Range]
1	Healthy Controls (100)	0.232 ± 0.18 (0.002-0.632)
2	Alcoholic Hepatitis Patients (200)	27.01 ± 12.26 (6.00-61.0)
3	Infective Hepatitis Patients (200)	27.56 ± 12.32 (6.00-65.0)

Statistical analysis of C- Reactive Protein among the groups studied

	Group Compared	t-value	p-value
1	Healthy Controls v/s Alcoholic Hepatitis Patients	21.822	<0.0001 [HS]
2	Healthy Controls v/s Infective Hepatitis patients	22.162	<0.0001 [HS]

4. Result and Discussion

In the present study the mean serum C-reactive protein of the healthy control was 0.232 ± 0.18 mg/dL; which varied from 0.002 to 0.632 mg/dL. In alcoholic hepatitis patients mean serum C-reactive protein was 27.01 ± 12.26 mg/dL which varied from 6.00 to 61.0 mg/dL while in infective hepatitis subjects, the observed mean serum C-reactive protein was 27.56 ± 12.32 mg/dL which varied from 6.0 to 65.0 mg/dL.

A highly significant correlation ($t=21.82$; $p<0.001$) in alcoholic hepatitis patients was observed when healthy control subjects were compared with alcoholic hepatitis patients.

Similarly the infective hepatitis patients also showed a highly significant relationship ($t=22.16$; $p<0.0001$) when compared to healthy control subjects for serum C-reactive protein levels.

Vanbiervliet G *et al* 2006 [4] observed that CRP increased significantly with the severity of acute alcoholic hepatitis. Total bilirubin and CRP were independent factors for predicting alcoholic hepatitis. The area under the receiver operating curve (ROC) of CRP was 0.78 using optimized cutoff values ($CRP>19$ mg/L). Thus it was concluded that CRP is an accurate marker of alcoholic hepatitis. Our study is in accordance to this study.

Bayupurnama P *et al* 2010 [2] suggested that in ascitis patients, mean value of hs-CRP level was 63.6 (0.76-783.2mg/L) and mean ALT was 74.3 (16-912 IU/L). The correlation coefficient between hs-CRP and ALT was $r=0.22$, $p=0.02$. thus it was concluded that there was positive but correlation between hs-CRP and alanine transferase levels.

The findings Dragonjic LP *et al*, 2010 [5] of indicated that the hs-CRP values had a statistically significant increase in the chronic hepatitis C patients group compared to control group ($p<0.05$). In chronic hepatitis C and mild liver steatosis (very common in hepatitis C infections) patient's subgroup, even more statistically significant hs-CRP increase observed compared to other sub groups. So it was concluded based on the hs-CRP should be consider as a chronic hepatitis C progressive prognostic factor.

5. Conclusion

Estimation of CRP is simple, quick and reliable so it should be included in the routine investigations of alcoholic as well as infective hepatitis patients for better management and prognosis of disease.

References

[1] Dhingara R, Gona P, Nam BH, D'Agostino PB (2007); C-Reactive protein: inflammatory conditions and cardiovascular disease risk. *Am J Med.* 120 (12): 1054-62.

[2] Bayupurnama P, Ratnasari N, Meduseno S and Nurdjanah S (2010); C- reactive protein in decompensate liver cirrhosis and its correlation with serum alanine amino transferase and albumin levels. *The Internet journal of gastroenterology.* 9(2): doi 10.5580/15dd.
[3] Kari P (1986); *Sacand J Clin Invest.* 46: 606-607.
[4] Vanbiervliet G, Breton LF, Rosenthalallieri MA, Gelsi E, Marine BE, Auty R, Piche T, Benzaken S, Saint-Paul MC, Huet PM and Tran A (2006); Serum C-reactive protein: a non invasive marker of alcoholic hepatitis. *Sc and J Gastroentrol*; 41(12):1473-9.
[5] Dragonic LP, Jovanovic M, Vrbic M, Konstantinovic L, Kostic V and Dragonjic I (2010); High sensitivity C-Reactive protein as prediction factor of disease progressive in patients with chronic hepatitis C and mild liver steatosis. *Acta Medica Mediana*; 49(3):14-17