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ORIGINAL ARTICLE / ÖZGÜN ARAŞTIRMA

Correlation of high sensitive C-reactive protein and Hepatitis C Virus RNA in anti-HCV-positive sera

Anti-HCV pozitif serumda yüksek duyarlıklı C-reaktif protein ve Hepatit C virus RNA ilişkisi

Tuncer Özekinci[1], Selahattin Atmaca[1], Hasan Akbayın[2]

[1]Deparment of Microbiology, Faculty of Medicine, University of Dicle, Diyarbakır, Turkey

[2]Faculty of Education, University of Dicle, Diyarbakır, Turkey

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ABSTRACT

Objectives: To determine whether the level of high sensitive C-reactive protein (hsCRP) secreted from liver differed according to the positivity and negativity of the HCV RNA in sera collected from individuals with HCV antibodies.

Materials and methods: A total of 84 patients with clinically suspected Hepatitis C were included in this study, in which anti-HCV was detected to be positive. Eighty four anti-HCV positive samples were divided into two groups according to the HCV RNA results, as the HCV RNA positive group (Group 1, 50 samples) and the HCV RNA negative group (Group 2, 34 samples).

Results: 50 of the 84 samples with anti HCV positivity were detected to be positive for HCV RNA (Group 1), whereas 30 were detected as negative (Group 2). While the hsCRP values were found to be above the normal level in 11 (22%) of the 50 sera samples in the first group, and in 3 (8,8%) of the 34 sera samples in the second group.

Conclusion: Numerical comparison of the hsCRP positive samples revealed a statistically significant result in favor of group 1 (p<0,001). On the other hand, results obtained from comparison of the quantitative hsCRP mean values obtained from the two groups were found to be statistically insignificant (P>0.05).

Key words: HCV, hsCRP, correlation

ÖZET

Amaç: HCV antikoruna sahip kişilerden elde edilen serumlarda HCV RNA'nın pozitif ve negatifliğine göre karaciğerden salgılanan hsCRP düzeyinin farklılık belirlenmesidir.

Gereç ve yöntem: Klinik olarak Hepatit-C şüpheli olup anti-HCV'si pozitif tespıt edilen toplam 84 hasta çalışmaya dahil edildi. Anti HCV'si pozitif 84 örnek, HCV RNA sonuçlarına göre; HCV RNA'sı pozitif grup (Grup 1, 50 örnek) ve HCV RNA'sı negatif grup (Grup 2, 34 örnek) olmak üzere iki gruba ayrıldı.

Bulgular: HCV'si pozitif 84 örneğinin 50'sinde HCV RNA pozitif (Grup 1), 34'ünde HCV RNA negatif (Grup 2) olarak tespit edildi. 1.grupta 50 serum örneğinin 11'de (%22), 2.grupta 34 serum örneğinin 3'de (%8.8) hsCRP değerleri normal değerin üzerinde tespit edildi.

Sonuç: Örneklerin sayısal olarak karşılaştırıldığında Grup 1 lehine istatistiksel olarak anlamlı bulundu (p<0,001). Buna karşılık iki gruptan elde edilen hsCRP değerlerinin kantitatif ortalamalarının karşılaştırılmasında elde edilen sonuçlar istatistiki olarak anlamsız bulundu (P>0.05).

Anahtar kelimeler: HCV, hsCRP, ilişki

INTRODUCTION

Hepatitis C virus (HCV) RNA is the most important indicator of viral replication in patients with Hepatitis C. HCV RNA, which is a significant parameter in terms of detection of viremia in serum, the trend of the infection, and particularly the response to treatment, can be quantitively detected with polymerase chain reaction (PCR).[1] C-reactive protein (CRP), which is at the same time a major acute-phase protein, is produced by the liver; it may be a mediator of tissue damage and is a factor that activates the

Yazışma Adresi /Correspondence: *Assoc. Prof. Tuncer Özekinci,*
Dicle Üniversitesi, Tıp Fakültesi, Mikrobiyoloji Anabilim Dalı, Diyarbakır, Türkiye Email: tunozek@ dicle.edu.tr

complement system. In humans, plasma levels of and/or fibrogenic activity, and markedly, as much as 1000-fold or more, after an acute inflammatory stimuli, largely reflecting and increased synthesis by hepatocytes.[2,3]

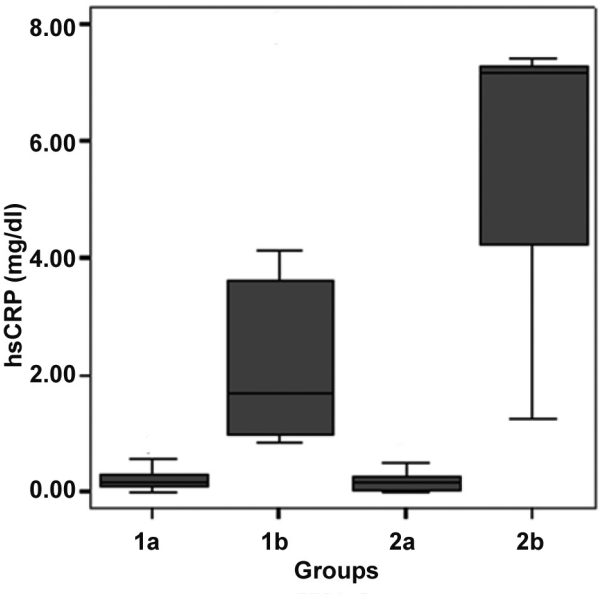
In the planning process of this study, literature review revealed a few studies investigating the correlation between presence of hepatitis C antibody and CRP in especially dialysis patient sera. The aim of this study, as distinct from the other studies, was to determine whether the level of hsCRP secreted from liver differed according to the positivity and negativity of the HCV RNA in sera collected from individuals with HCV antibodies.

MATERIALS AND METHODS

A total of 84 patients with clinically suspected Hepatitis C were included in this study, in whom anti-HCV was detected to be positive, and who were referred to the University of Dicle, Faculty of Medicine, Microbiology Laboratory. Hepatitis C antibodies were detected by MacroELISA (Cobas Core II, ROCHE), and HCV RNA was detected by Real-Time PCR (Cobas Taqman 48, ROCHE). Sera with HCV RNA of over 50 IU/ml were evaluated as HCV RNA positive. The hsCRP levels (Normal result: 0,00-0,744 mg/dl) of the sera detected as anti-HCV positive were detected in a Beckman Coulter equipment by nephelometric method. The sera were stored subsequently at -20°C for HCV RNA testing. Eighty four anti-HCV positive samples were divided into two groups according to the HCV RNA results, as the HCV RNA positive group (Group 1,50 samples) and the HCV RNA negative group (Group 2,3,4 samples). Comparison of the quantitative mean values of the cumulative hsCRP results of Group 1 and 2 was performed by student's t test. Proportion test was used for comparison of the numerical rates of the hsCRP positive results related to both groups. P<0,05 was considered statistically significant.

RESULTS

In the study, 50 of the 84 samples with anti HCV positivity were detected to be positive for HCV RNA (Group 1), whereas 30 were detected as negative (Group 2). While the hsCRP values were found to be above the normal level in 11 (22%) of the 50 sera samples in the first group, and in 3 (8.8%) of the 34 sera samples in the second group, numerical comparison of the hsCRP positive samples revealed a statistically significant result in favor of group 1 (p<0,001). On the other hand, results obtained from comparison of the quantitative hsCRP mean values obtained from the two groups were found to be statistically insignificant (P>0.05) (Graphic 1).



Graphic 1. The serum groups for HCV RNA related with hsCRP results

1a: HCV RNA positive, hsCRP negative; 1b: HCV RNA positive, hsCRP positive; 2a: HCV RNA negative, hsCRP negative; 2b: HCV RNA negative, hsCRP positive

DISCUSSION

Viral hepatitis is a necro-inflammatory disease of the liver, caused by various hepatotrophic viruses. Cytokines play an important role in initiation of the immune response against the viral hepatitis agents, and in chronic development of the disease. Proinflammatory cytokines TNF-α, IL-1, and IL-3 are produced by the liver Kuppfer cells. The liver increases the production of the acute phase proteins by increasing the production and secretion of these cytokines[4,5]. Plasma cytokine IL-6 is secreted by the circulating and non-circulating cells, and lead to synthesis of CRP, which is an acute phase protein, in especially the liver.[6,7] We aimed in this study to detect if the acute phase protein CRP, secreted from the liver, differed in anti-HCV positive sera, between the viremic patient groups with HCV RNA positivity or negativity.

In the study, statistical insignificance was observed when especially the quantitative mean values of hsCRP were compared between the HCV RNA positive group (n=50) and the HCV RNA negative group (n=34), and statistical significance was observed when hsCRp positivity (22%) in the HCV RNA positive group was compared with the hsCRP positivity (8.8%) obtained from the HCV RNA negative group.

The most interesting results in literature related to our study are similar results reported in two separate studies on hemodialysis patients. In both studies, CRP values have been detected to be higher in the groups negative for hepatitis C antibody than in groups positive for the same antibody.[8,9]

The earliest results related to the subject have been reported in Romania in 1995. The investigators have detected that CRP was higher than the normal level in 5 (12,1%) of the 41 sera positive for anti-HCV in hemodialysis patients.[10]

Our study group have detected that there was no correlation between hsCRP rates and viral load in patients with hepatitis B, in a previous study[11].

The main aim of our study was, differing from the studies on hepatitis C mentioned above, was investigation of the hsCRP levels between viremic groups with hepatitis C antibody positive for HCV RNA, and nonviremic groups negative for HCV RNA. As a consequence of the data represented in this study, although it is hard to come to a definite conclusion with regard to correlation between certain serological indicators and hsCRP in hepatitis C patients, we think that our results are worth presenting for it will help the issue to be investigated wider and in more detail.

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