

Anti-c1q antibodies in patients with hepatitis b virus



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Anti-C1q Antibodies in Patients with Hepatitis B Virus Infection

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Abstract

Background: Hepatitis B virus (HBV) infection is associated with extrahepatic manifestations the mechanism of which is thought to be immune mediated. One of the autoantibodies accused to be associated with tissue injury in immune complex disorders is anti-C1q. This might be attributed to the ability of these autoantibodies to amplify complement activation in situ. To date, there are no data describing the prevalence of anti-C1q in patients with HBV infection.

Objectives: The aim of this study was to investigate the prevalence of anti-C1q antibodies and analyze possible associations in a population with HBV infection.

Materials and Methods: Serum samples were collected from a group of 145 patients with HBV infection and 33 apparently healthy controls. Anti-C1q antibodies were quantified by ELISA.

Results: The levels of anti-C1q antibodies showed a highly statistically significant difference between HBV cases and controls as the mean \pm SD were 21.28 ± 38.72 and 6.56 ± 5.73 , respectively ($p < 0.001$).

Interestingly, cases with acute HBV infection showed higher anti-C1q levels compared with chronic HBV infection (35.37 ± 81.77 and 20.43 ± 25.60 ,

respectively) ($p= 0. 031$). Levels of anti-C1q antibodies were significantly higher in Belgian and Iranian population versus Egyptian population. Concerning the HBV genotype, the patients enrolled were mainly of genotypes A and D. The levels of anti-C1q antibodies were higher in genotype A ($p= 0. 004$). Concerning the anti-C1q seropositivity, its prevalence was 22. 8% among HBV cases compared with 3% among controls; however, no significant association has been found with any of the studied variables.

Conclusions: Patients with HBV infection exhibit increased production of anti-C1q antibodies. This observation may partially explain the tissue damage associated with the extrahepatic involvements of HBV.

Keywords : Anti-C1q antibodies; autoantibodies; Hepatitis; Infection

1. Background:

2. Objectives:

The aim of this study was to investigate the prevalence of anti-C1q antibodies and analyze possible associations in a population with HBV infection.

3. Patients, Materials, and Methods:

1. Ethical statement:

All procedures were conducted in accordance with the ethical principles expressed in the Declaration of Helsinki. Written informed consents were obtained from all subjects enrolled in the study.

2. Study design and population:

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The study was performed as a case control study on 2 groups. A total of 145 patients with HBV infection were enrolled in the first group. Of the 145 patients, 65, 64, and 16 were living in Iran, Belgium, and Egypt, respectively. Patients were classified into: patients with acute hepatitis B diagnosed by seropositivity for hepatitis B surface antigen (HBs-Ag) and hepatitis B core IgM (HBc-IgM), and patients with chronic hepatitis B characterized by presence of HBs-Ag and HBc-IgG. The second group included 33 apparently healthy volunteers. Patients were excluded if they had systemic lupus erythematosus (SLE) or co-infected with hepatitis C virus (HCV) or human immunodeficiency virus (HIV). One mL serum was collected from all enrolled subjects and stored at -20°C till testing.

3. Laboratory assessment:

Anti-C1q determination in the collected serum samples was performed using commercial enzyme linked immunosorbent assay kit (QUANTA Lite™ Anti-C1q ELISA, INOVA Diagnostics, Inc., United States of America), as per the manufacturer's instructions. The samples were classified as negative, low positive, moderate positive or strong positive if the anti-C1q values were <20, 20 - 39, 40 - 80 or > 80 units, respectively.

4. Statistical analysis:

Continuous variables were expressed as the mean \pm SD & median (range), and the categorical variables were expressed as a number. Continuous variables were checked for normality by using Shapiro-Wilk test. Mann Whitney U test was used to compare between two groups of non-normally distributed variables. Kruskal Wallis h test was used to compare between

more than two groups of non-normally distributed variables. A p-value <0.05 was considered significant. All statistics were performed using SPSS 22.0 for windows (SPSS Inc., Chicago, IL, USA), MedCalc windows (MedCalc Software bvba 13, Ostend, Belgium) and Microsoft Office Excel 2010 for windows (Microsoft Cor., Redmond, WA, USA).