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Increased serum IgE in acute type A, B and delta hepatitis

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SUMMARY

Serum IgE levels have been documented in patients of acute type B hepatitis. There are very few studies on serum IgE in acute type A hepatitis and, to our knowledge, there are no data on serum IgE in acute delta hepatitis patients. The purpose of this study was to measure total IgE levels in 38 patients with acute A, B and delta hepatitis and in 181 controls in order to determine the possible existence of changes in this parameter in the course of these infections. Our results showed a relevant increase in IgE levels in the three groups (hepatitis A, B and delta) with respect to the control group. Moreover, the hepatitis B group showed increased total serum IgE levels with respect to the hepatitis delta group.

Key words: Total serum IgE - Acute hepatitis A, B and delta

INTRODUCTION

Hypergammaglobulinemia is a prominent feature of acute liver disease (1). Many investigators have found a variable increase in serum IgM, IgG, and IgA in patients with hepatitis (2). Moreover, serum IgE levels have been documented in patients of both acute and chronic type B hepatitis (3, 4). There are very few studies on serum IgE in acute type A hepatitis (5) and, to our knowledge, there are no data on IgE levels in acute delta hepatitis patients.

In the present study we report on serum IgE levels in acute type A, B and delta hepatitis.

MATERIALS AND METHODS

Patients

The study group consisted of 38 patients with acute A, B or delta hepatitis. The diagnosis of symptomatic and

active hepatitis was based on a personal history and physical examination and confirmed by the presence of IgM antibodies to the hepatitis A and delta virus. Acute type B hepatitis was confirmed by the presence of HBsAg (hepatitis B surface-antigen carriers) and negative IgM antibodies to delta hepatitis (6).

Patients with a family or personal history of allergy were excluded, as were those with a history of repeated infections, peripheral blood eosinophilia and parasitic disease.

The patients were then divided into three groups:

Group I: 15 patients (7 males and 8 females) with acute hepatitis A and a mean age of 9.20 ± 2.51 .

Group II: 10 patients with acute hepatitis B (7 males and 3 females) with a mean age of 24.20 ± 4.31 .

Group III: 13 patients with acute hepatitis type delta (12 males and 1 female) with a mean age of 24.58 ± 3.52 for the males and 20 years old for the only female.

Control subjects

A total of 181 healthy individuals (95 males and 86 females) were also studied. All were older than 6 years with a mean age of 45.61 ± 20.06 .

Criteria for exclusion from the control group were: an age difference of more than ten years compared to participants in study group, apparent clinical infections or parasitic disease at the time of the study, corticoid ingestion, use of antihistaminic, antiparasitic and/or anti-inflammatory drugs 30 days before blood letting, family or personal history of allergy, atopic children, parasitic disease, contact eczema, insect stings, drug and/or food allergies or hyposensitization.

Methods

Sera from patients and control subjects were obtained 15 days before clinical symptoms appeared. They were stored at -70°C without repeated freeze/thaw cycling and then were tested. IgE levels were determined in duplicate by RAST (Pharmacia, Uppsala, Sweden), and the values are presented in Units per milliliter.

A Student's T-test was used to do the statistical analysis with a $p < 0.5$ value considered as statistically significant.

RESULTS

Control group

The mean for total serum IgE was 27.34 ± 18.90 I.U./ml (27.69 ± 187.94 I.U./ml for the male group and 26.96 ± 19.92 I.U./ml for the female group). Relevant statistical differences were not found between healthy males and females ($p > 0.05$) (Table 1).

Table 1
IgE serum levels in patients and control group.

	Hepatitis A	Hepatitis B	Hepatitis delta	Controls
IgE level ¹	1058 \pm 599	1507 \pm 715	926 \pm 355	27 \pm 19
p value ²	* <0.001	* <0.001	* <0.001	
p value ³		>0.05	>0.05	* <0.001
p value ⁴	>0.05		* >0.05	* <0.001
p value ⁵	>0.05	* >0.05		* <0.001

¹Mean \pm S.D. (I.U./ml). ²Comparing with the control group. ³Comparing with hepatitis A group. ⁴Comparing with hepatitis B group. ⁵Comparing with hepatitis delta group. *Statistically significant.

Patients

Group I: 15 patients with acute hepatitis A having an average total serum IgE of 1058.00 ± 599.12 I.U./ml (1232.85 ± 740.87 I.U./ml for the male group and 985.00 ± 435.98 I.U./ml for the female group). Non-relevant differences were statistically found between males and females with acute hepatitis A.

Group II: 10 patients with acute hepatitis B showing an average total serum IgE of 1507.00 ± 715.26 I.U./ml (1410.00 ± 826.45 I.U./ml for the male group and of 1733.33 ± 378.59 I.U./ml for the female group). Non-relevant differences were found between males and females with acute hepatitis B.

Group III: 13 patients with acute hepatitis delta having an average total serum IgE of 926.92 ± 355.72 I.U./ml (895.83 ± 352.61 I.U./ml for the male group and 1300.00 I.U./ml for the sole female.)

There were relevant differences when comparing each study group (I, II, III) with the control group ($p < 0.001$), and when comparing groups II and III globally ($p < 0.05$). However, no statistically significant differences were found when comparing groups I and II or I and III

($p > 0.05$) (Table 1). Likewise, no relevant differences were found between males and females with acute A and B hepatitis.

DISCUSSION

Immunoglobulin abnormalities are a common feature of acute hepatitis. Previous studies have demonstrated that serum IgE concentrations are increased in symptomatic acute and chronic B hepatitis (7). However, several studies (8) have not found increased IgE serum levels in patients with positive HBsAg who show no signs of symptomatic illness (HBsAg carriers). Our results in the first 15 days of symptomatic disease confirm that there is an important increase of IgE serum levels in the preliminary phase of symptomatic acute hepatitis B.

In the only study referring to an increase in IgE serum levels in patients with hepatitis type A, Levo *et al.* (5) state that acute hepatitis A demonstrates an initial IgE level that increases before becoming normal during the convalescence. Our results confirm these findings and add no significant differences about serum IgE levels in acute A, B and delta hepatitis.

Although early studies showed that several hepatic illnesses produced high levels of serum IgE, later studies demonstrated that high levels of IgE were not produced in chronic hepatic autoimmune diseases, such as hepatitis C virus chronic infections. Moreover, alcoholics with hepatic disease were found to have higher serum IgE levels than the general population (9). However, this increase was not related to any clinical features.

These findings suggest that higher levels of serum IgE in hepatitis are produced only in the acute phase of the viral infection. Our results confirm that the mean increase of total serum IgE levels is produced in the acute phase of A, B and delta hepatitis.

Infection by the hepatitis virus type delta is produced only in those subjects previously infected by the hepatitis B virus (acute or active chronic hepatitis). Other studies have demonstrated that subjects with chronic hepatitis B or who are HBsAg asymptomatic carriers do not show increased, or even decreased, serum IgE levels with respect to the general population (8). The presence of higher IgE levels in HBsAg positive subjects who are carriers of hepatitis type delta suggests that this increase is produced by a new viral infection (delta virus) having nothing to do with the natural evolution of the hepatitis B virus. The determination of total IgE in subjects diagnosed with hepatitis B who show signs of relapse could be defined as a sign of a new acute viral infection.

In conclusion, the average total IgE values are significantly higher in acute A, B and delta hepatitis subjects in relation to normal controls. Very high serum IgE levels suggest the existence of an infectious hepatopathy in an acute hepatitis or a new acute viral infection (virus delta).

RESUMEN

Realizamos un estudio de las concentraciones de IgE sérica total en 38 enfermos diagnosticados de hepatitis aguda (A, B y delta) y 181 controles. Hemos evidenciado un aumento significativo de las concentraciones séricas de IgE total en los tres grupos de enfermos (hepatitis A, B y delta) con respecto a la población control. Los sujetos con hepatitis B presentaron concentraciones significativamente más elevadas de IgE sérica que los diagnosticados de hepatitis delta. No encontramos diferencia entre los sujetos diagnosticados de hepatitis B y hepatitis A. Nuestros resultados coinciden con la mayor parte de los existentes en la literatura en relación con la fase aguda de la hepatitis A y B. No existen estudios previos que determinen las concentraciones de IgE total en sujetos con hepatitis delta. Hemos demostrado una elevación de las tasas séricas de IgE total en la fase aguda de las infecciones por diversos virus hepatotropos, por lo que podría considerarse un parámetro inmunológico inespecífico a valorar en pacientes diagnosticados de enfermedad viral hepática aguda.

Palabras clave: IgE total - Hepatitis aguda A, B y delta

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