

ORIGINAL ARTICLES

HB_sAg Titre in Patients with Acute and Chronic Liver Diseases and in Asymptomatic Carriers

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Quantitation of HB_sAg was carried out in 25 patients with acute, four with fulminant, nine with subacute and 10 with chronic active hepatitis and in six asymptomatic carriers. The titre of HB_sAg does not apparently play a significant role in elucidating the pathogenesis or the severity of hepatitis B infection but it has prognostic significance. High initial titres of HB_sAg in acute viral hepatitis could mean prolonged illness or progress to an asymptomatic carrier state. An abrupt fall in the titre in acute hepatitis might herald a serious complication. Rise of HB_sAg titre in CAH is indicative of improvement while a persistently high titre may suggest a poor prognosis and refractoriness to treatment.

INTRODUCTION

Recent studies have suggested an inverse relationship between HB_sAg titre in the serum and the severity of liver injury^{1,2,3,4}. Very low titres have been reported in fulminant hepatitis^{1,3} while carriers with minimal liver injury have high titres^{1,2}. Patients with chronic active hepatitis (CAH) have lower titres during the stage of activity which rise during remission³. Patients with uncomplicated acute virus B hepatitis (AVH) have no set pattern of antigen titres and often there is no apparent re-

lationship between these and the course and severity of their disease. The present study was carried out to gather further information on the relationship of hepatitis B surface antigen titre and the different manifestations of virus B infection.

MATERIAL AND METHODS

Serum samples were collected from 54 patients which included 25 patients with uncomplicated acute viral hepatitis, four patients with fulminant hepatitis, nine with subacute hepatitis, 10 chronic active hepatitis and six asymptomatic carriers. Standard criteria were used for the diagnosis of these diseases. All sera of patients with AVH were collected during the first two weeks of illness.

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Samples from 10 patients with chronic active hepatitis were studied during the active stage of their disease. Repeat studies were carried out in six of them during remission. Remission was defined as a distinct improvement in clinical features with a fall in the serum bilirubin and transaminases to near normal levels.

Haemagglutination inhibition (HAI)⁵ using antigen coated sheep red cells, was employed as the test for all sera of patients with acute hepatitis, subacute and fulminant hepatitis and carriers. The sera were diluted upto 512 in all instances. Enzyme immunoassay (using a Cordis Kit) was used for HB_sAg quantitation in chronic active hepatitis. Four dilutions were carried out in each serum undiluted to 1:1000.

RESULTS

The Table shows the titres of HB_sAg in acute, fulminant and subacute hepatitis and asymptomatic carriers. In uncomplicated viral hepatitis, a wide variation in the titre was seen. Patients above the age of forty had higher titres than younger patients. No sex predilection was observed. Six of the patients had HB_sAg titre above 1:128. There was no difference with regard to age, sex, onset, mode of transmission, degree of bilirubinemia and transaminases in these patients compared with the rest of the group. However, five of them had delayed resolution of their disease characterised by a prolonged period of clinical symptoms, bilirubinemia and raised transaminases. Antigenemia lasted for over ten weeks. The remaining patient had an anicteric course and became an HB_sAg carrier.

TABLE
HB_sAG TITRES IN ACUTE, FULMINANT AND
SUBACUTE HEPATITIS AND
CARRIERS (HAI)

<i>Clinical state</i>	<i>Number tested</i>	<i>Range</i>	<i>Mean</i>
Acute viral hepatitis	25	1:4-1:512	1:100
Fulminant hepatitis	4	1:4	1:4
Subacute hepatitis	9	1:2-1:5	1:3
Carriers	6	1:128-1:512	1:235

All six carriers had high HB_sAg titres. None of them were subjected to liver biopsy. All have remained asymptomatic with normal liver function tests on follow up from two to five years.

Very low titres of HB_sAg in the range of 1:2 to 1:5 by HAI, were observed in the majority of patients with fulminant and subacute hepatitis. The titre apparently did not bear any relationship to the course of the illness. One patient with subacute hepatitis who had an initially low titre of HB_sAg, on recovery had an elevated titre and became a persistent carrier of HB_sAg.

Relatively low levels of HB_sAg titre were observed in six of the 10 patients with CAH during activity, with distinct elevation in the titres with clinical and biochemical remission. The HB_sAg titre was raised in four patients during active disease. Two of these patients rapidly progressed to fatal hepatocellular failure. The remaining two also deteriorated and developed portal hypertension and cirrhosis despite treatment.

DISCUSSION

The results of this study reveal an inverse relationship of HB_sAg titre to the severity of the liver disease. The lowest titres were recorded in fulminant and subacute hepatitis while high titres were seen in association with an asymptomatic carrier state. Similar findings have been reported earlier.^{1,2,3} HB_sAg titre tended to fall to very low levels in fulminant and subacute hepatitis so as to be undetectable by conventional methods. Serial studies of HB_sAg titre in acute viral hepatitis may be useful to see if the precipitous fall in HB_sAg heralds a serious complication in the form of fulminant or subacute hepatitis.

Lower titres of HB_sAg were seen during activity in CAH which rose with clinical and biochemical remission. Similar findings have been reported by Dudley et al³. Four patients in this group continued to have high titres of HB_sAg despite active disease. Two of them succumbed to the disease and two others showed a poor response to treatment. It is possible that the titres tend to remain elevated in the terminal stages and may well be a predictor of an unrelentless disease course and refractoriness to treatment in CAH. This needs further elucidation.

The majority of patients with acute viral hepatitis who had titres above 1:128 tended to have prolonged clinical and biochemical abnormalities with albeit complete recovery thereafter. One patient who had anicteric hepatitis, and prolonged antigenemia had become a carrier. These findings have not been reported by others. They suggest that a very high initial titre of HB_eAg in acute hepatitis may indicate the likelihood of a prolonged illness. Progress to chronic hepatitis was not seen in any of these patients.

The quantity of circulating antigen per se does not influence the type or severity of the clinical manifestations—it merely reflects the host's immunological status. Titres seem to be inversely related to cell-mediated immunity. The lowest titres of HB_eAg would be expected in conditions with a pronounced cell-mediated immune response, as seen in fulminant and subacute hepatitis. On the other hand, if the antigen does not get eliminated as in the presence of reduced immunological states then a high titre persists, as in carrier states.

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