

BRIEF COMMUNICATION

Antibody to Hepatitis C virus in thalassemia patients

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Abstract

A specific enzyme immunoassay (EIA) for the diagnosis of hepatitis C virus (HCV) infection was developed by recombinant DNA technology. Abbott HCV EIA was used to detect antibody to HCV (anti-HCV) in non-transfused and multiply-transfused thalassemia patients. None of 11 non-transfused patients had anti-HCV but 3 of 52 (5.8%) multiply-transfused patients had anti-HCV. This study showed that the prevalence rate of HCV infection is low in thalassemia patients. However, it is still important to identify hepatitis C virus infected patients in high risk groups because hepatitis C is associated with chronic hepatitis, cirrhosis and hepatocellular carcinoma.

Key words: Hepatitis C virus, thalassemia, transfusion.

INTRODUCTION

Non-A, Non-B hepatitis (NANBH) accounts for a substantial proportion of hepatitis cases among patients with frequent parenteral exposure to blood (haemophiliacs, intravenous drug abusers and hemodialysis patients) and for more than 25% of cases of sporadic hepatitis without obvious percutaneous exposure.¹

Houghton and colleagues, working at the Chiron Corporation, developed a specific assay for the blood-borne NANBH virus in which a polypeptide synthesized in recombinant yeast clones of the hepatitis C virus (HCV) is used to capture circulating antibodies.^{3,4} The availability of radioimmuno- and enzyme immuno- assays for antibodies to hepatitis C virus (anti-HCV) has aroused much interest in their use in the evaluation of the risk of post-transfusion hepatitis C infection.

We report here the prevalence of anti-HCV in thalassemia patients in Malaysia.

MATERIALS AND METHODS

Serum samples from thalassemia patients were obtained in 1990. Enzyme immunoassay for anti-HCV was done using Abbott HCV EIA kit. Briefly, the human serum sample was diluted in serum diluent (1:40). The specimen was incubated with a polystyrene bead coated with recombinant HCV antigens for 1 hour in a 40°C waterbath. Unbound material was aspirated and

the bead was washed with distilled water. Bound antibody was detected by incubating the bead with diluted goat anti-human IgG: horseradish peroxidase for 30 minutes in a 40°C waterbath. After aspiration and washing with distilled water, freshly prepared OPD substrate was added to the reaction well and incubated at room temperature for 30 minutes. The reaction was stopped with 1N sulphuric acid. The absorbance was read using a Quantum II spectrophotometer at 492 nm. Three negative controls and three positive controls were included. Specimens with absorbance values greater than or equal to the cutoff value were considered reactive. The cutoff value was calculated as the Negative Control Mean Absorbance + (0.25) Positive Control Mean Absorbance.

RESULTS

Sixty-three serum samples from thalassemia patients were stored at -20°C. Eleven samples were from non-transfused thalassemia patients and 52 samples were from multiply-transfused patients. None of the 11 non-transfused patients had anti-HCV but 3 of 52 (5.8%) multiply-transfused patients had anti-HCV. The OD readings of the 3 seropositive samples had obviously high OD values of 1.753, >2.00 and 1.075.

The levels of alanine aminotransferase (ALT) in non-transfused thalassemia patients are shown in Fig. 1 and those of multiply-transfused thalassemia patients are shown in Fig. 2.

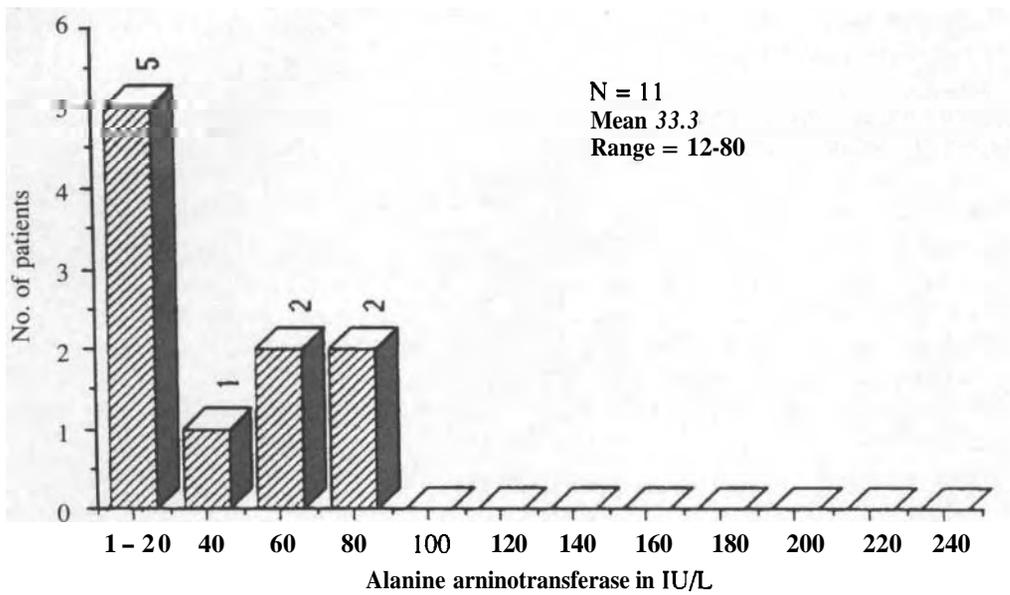


FIG. 1: Alanine aminotransferase levels in non-transfused thalassemia patients.

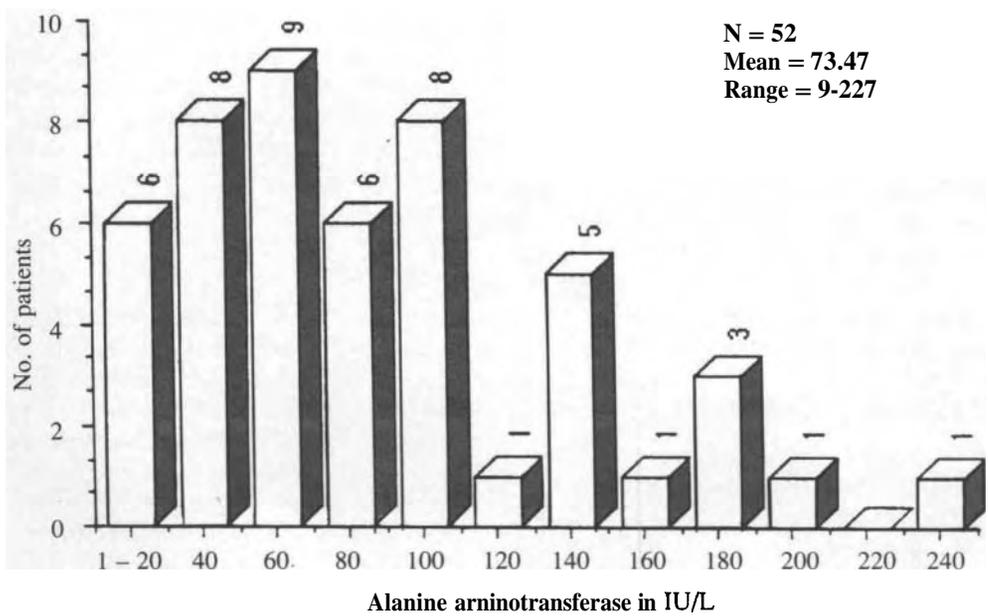


FIG. 2: Alanine aminotransferase levels in multiply-transfused thalassemia patients.

The first seropositive anti-HCV patient had an ALT level of 168 IU/l and the second patient an ALT level of 26 IU/l. The third patient's ALT level was unobtainable.

DISCUSSION

The prevalence rate of anti-HCV in thalassemia patients seems to be low. However, seroconversion may occur late after the onset of disease and it may take 3 to 4 months based on first generation anti-HCV assays. Obviously, these patients still need to be monitored 4 to 6 months after transfusion for anti-HCV.

Alanine aminotransferase has been used as a surrogate marker before the availability of specific anti-HCV assays. From this study, we noted that ALT levels were elevated in the multiply-transfused group regardless of the anti-HCV status. Another study has shown that there was no prognostic marker to indicate progression to persistent infection since ALT levels can normalise despite HCV RNA persistence.⁵

Clinical studies have also revealed that approximately 50% of NANBH cases progress to chronic hepatitis.⁶ HCV is associated with chronic sequelae which include chronic persistent hepatitis, chronic lobular hepatitis, chronic active hepatitis, cirrhosis and hepatoma. The progression to these chronic states in most cases are symptomatic.

In conclusion, although the prevalence rate may be low in this group of patients, it is still important to identify hepatitis C infection because of its serious sequelae. ALT levels are elevated in the multiply-transfused group regardless of the anti-HCV status.

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