Hepatitis C virus antibody positive blood donors

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Abstract

In an analysis of 15 blood donors referred from the Blood Transfusion Service to the Queen Elizabeth Hospital, Birmingham, more than 50% of anti-hepatitis C virus (HCV) positive patients had a parenteral risk factor. Most were serum HCV-RNA positive, and all were liver HCV-RNA positive. Although no physical signs of liver disease were apparent, all anti-HCV positive donors had abnormal liver histology.

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Screening for antibodies to hepatitis C virus (anti-HCV) was introduced by the West Midlands Regional Health Authority Blood Transfusion Service on 1 September 1991. This paper presents an analysis of the donors that have been referred from the Blood Transfusion Service to the Liver Unit, Queen Elizabeth Hospital.

Methods

Patients who tested positive on 4-RIBA (Ortho Diagnostics) were interviewed with special attention to parenteral risk factors. Physical examination was performed, together with routine liver biochemistry analysis (including aspartate aminotransferase (AST) and alanine aminotransferase (ALT)). Liver biopsy specimen was scored according to a modified Knodell's histological activity index (HAI) (maximum possible score 13). HCV-RNA detection (in liver and serum) was carried out by polymerase chain reaction (PCR) using primers from the 5' non-coding region.

Preliminary results

Fifteen donors, aged 22–46 years (median 36), were referred from the Blood Transfusion Service to the Liver Unit. These consisted of 11 men (nine with a parenteral risk factor – usually intravenous drug use – and two with no identifiable risk factor) and four women (all with no identifiable risk factor). The interval from the most recent intravenous drug use to blood donation was 10–21 years (median 15).

No physical signs of liver disease were evident in these patients. Serum AST and ALT were both normal in five patients (33%); AST was normal but ALT was raised in three (20%); and both AST and ALT were raised in seven (47%) (Fig 1). The results suggest that the serum ALT activity is a more sensitive index of HCV associated hepatitis than AST.

To date, 10 patients have undergone liver biopsy and all were found to have abnormal liver histology. The relation between the serum ALT activity and HAI, and between HAI and risk factor, are shown in Figures 2 and 3, respectively. Mild, non-specific histological

Figure 1 Serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) in anti-hepatitis C virus positive blood donors.

Figure 2 Serum alanine aminotransferase (ALT) and histological activity index (HAI) in 10 anti-hepatitis C virus positive blood donors.

Figure 3 Histological activity index (HAI) and risk factors in 10 anti-hepatitis C virus positive blood donors.

changes can be associated with a score of zero. HCV-RNA was detected in all 10 liver biopsy specimens and in eight out of 10 sera. The two serum samples that were HCV-RNA negative were from women with no parenteral risk factors (HAI=0 and 2).

Conclusions

Among these 15 anti-HCV positive blood donors, more than 50% have a parenteral risk factor. Most of the anti-HCV positive donors were also serum HCV-RNA positive and all had an abnormal liver histology. HCV-RNA was detectable in the liver tissue in all cases.

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