Prevalence of antibody to hepatitis C virus in Saudi blood donors

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HEPATITIS C VIRUS (HCV) INFECTION accounted for about 70 to 90% of post-transfusion hepatitis before the recent introduction of mandatory testing of donated blood. The parenterally transmitted non-A, non-B hepatitis is caused, in the majority of cases, by a small single-stranded RNA virus closely related to flaviviruses, currently recognized as HCV.

The recent isolation of viral RNA from chimpanzees infected with hepatitis C led to the development of HCV testing using antibodies against recombinant antigens (1). The five antibody tests available include: ELISA I, which detects antibody against C-100-3; ELISA II, which detects antibodies against C-100-3, c-33c and c-22-3; recombinant immunoblot assay (RIBA) I, which detects antibodies against C-100-3 and 5-1-1; RIBA II, which detects antibodies against C-100-3, 5-1-1, c-33c and c-22-3; and RIBA III, which incorporates recombinant antigens derived from the NS5 region in addition to the antigenic components in RIBA II. Viral RNA is currently detected by polymerase chain reaction using CDNA primers from the highly conserved noncoding 5’ region of HCV genome.

The routine policy of HCV antibody testing has reduced the incidence of acute post-transfusion hepatitis. The current risk of post-transfusion in hepatitis is about three for every 10,000
The prevalence of HCV antibodies in blood donors varies in different parts of the world: Germany, 0.24 to 0.79% (4-6); England, 0.5 to 1% (8); Italy, 1.2% (10); Japan, 1.2% (11); and South Africa, 0.6 to 1.2% (12). In the Kingdom of Saudi Arabia, the prevalence of hepatitis C antibody among blood donors from the central part of Saudi Arabia is 1.00 to 1.24% (13,14). A prevalence of 1.7% has recently been reported in the Jeddah area among Saudi blood donors (13). The aim of this study was to determine the prevalence of HCV antibody in the southern part of Saudi Arabia, an area with the highest carrier rate of hepatitis B virus (HBV) (10%) and whether the prevalence of HCV antibodies was influenced by the higher prevalence of HBV infection.

**MATERIAL AND METHODS**

This study was conducted in Asir Central Hospital, the only centre in the region where HCV antibody testing is available. The authors retrospectively examined the blood bank records for a period of one year. All blood donors were unpaid male volunteers who appeared clinically healthy and gave no history of any predisposing risk factors to HCV infection such as use of intravenous drugs, homosexuality, previous history of blood transfusion, etc. Liver function tests were not performed. Donated blood units from 3868 individuals – 3354 Saudis (86.71%), 204 Egyptians (5.27%) and 310 other nationalities (8.02%) – were repeatedly tested positive, however, no supplementary tests for anti-HCV were done. Blood units were also tested for human immunodeficiency virus (HIV) (Pasteur’s kit), venereal disease and malaria. All assays were performed and evaluated according to the manufacturers’ instructions.

**RESULTS**

The overall prevalence of anti-HCV antibodies and HBsAg among the different age groups in the population studied is shown in Table 1. Generally, seropositivity to HCV appears to increase with age. The prevalence rate of positive anti-HCV test by nationality (Table 2) is as follows: Saudis, 1.43%; Egyptians, 21.08%; other nationalities, 2.58%. Among the anti-HCV-positive Saudi nationals (Table 3), the peak of seropositivity (39.6%) seems to lie within the 25 to 34 year age group and subsequently declines to 8.2% in the 45 years and older age group. In the Saudi donor population studied, the prevalence of HBsAg is 4.0% (data not shown). Only one Saudi and one Egyptian were positive for both HBsAg and anti-HCV and none was HIV-positive. Donors with positive anti-HCV tests were not further evaluated to assess their liver disease status.

**DISCUSSION**

It has been a general policy in most, if not all, of the Saudi Arabian blood banks to screen for HCV antibody. In this study, we assessed the prevalence of HCV antibodies in apparently healthy male Saudi blood donors in southern Saudi Arabia; it was 1.43%, a figure similar to those obtained from other parts of Saudi Arabia, where the prevalence of HBV infection is relatively low. The high prevalence of HBV infection (10%) in the population did not seem to influence the prevalence of anti-HCV antibodies, which was found to be less than half that of HBsAg (1.43% versus 4.0%). (The data in Table 1 may not reflect the actual situation regarding HBV infection among Saudis since those younger than 18 years were not included in the study, in addition to the mixed nature of the population.) There were only two individuals (a Saudi and an Egyptian) who
were co-infected with HCV and HBV. These data confirm the studies by Hyams et al (15), who showed that the epidemiology of HCV differs significantly from that of HBV. It appears that these donors had the sporadic type of HCV virus infection and that their exposure to HCV seemed to increase with age, peaking in the 25 to 34 year age group. The decline in the prevalence of these antibodies in the older age group (Table 3) may only reflect the relatively small number of donors in this age group. Therefore the prevalence of HCV seropositivity in Saudi Arabian blood donors seems to range from 1.00 to 1.70%, a rate similar to that reported from western countries.

In the present study we have shown a high prevalence of anti-HCV among Egyptian blood donors. This has also been observed in other parts of the Kingdom (16). Studies from Al-Baha have shown a prevalence of 22.7% Italian blood donors. Vox Sang 1990;59:26-9.
