Antibodies to Hepatitis C Virus in Bahrain A Preliminary Study

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ABSTRACT

One hundred and fifty-five sera from some of the high risk groups were tested for anti-HCV. Of these, high prevalence (55.5%) was seen in the blood donors with elevated alanine aminotransaminase (ALT). Seropositivity in the 73 jaundice patients that were negative for anti-HAV and hepatitis B surface antigen (HBsAg) was lower (8.2%) than expected, but haemodialysis patients exhibited a high rate (15.8%) of positivity. Of the 64 random blood donors tested, 3 (4.7%) were positive thus indicating the usefulness of this new assay in preventing the spread of this disease among the dialysis patients and post-transfusion hepatitis due to non-A, non-B virus.

Implementation of hepatitis B virus (HBV) testing in the early 1970s reduced the incidence of post-transfusion hepatitis (PTH). It was, however, soon realised that more than 90% of PTH were due to non-A, non-B hepatitis (NANBH).[1] Studies have indicated that there is a risk of development of NANBH in patients receiving blood with elevated serum alanine aminotransaminase(ALT) and presence of antibodies to HBV core antigen.[2,3] Chronic hepatitis develops in approximately half the persons infected with NANB virus, with 10 to 20% of these progressing to cirrhosis.[2]

The cloning of the genome of NANBH agent, designated the hepatitis C virus (HCV), has led to the development of a recombinant-based assay for the detection of HCV antibodies.[4] The presence of these antibodies indicates that the individual (donor or patient) who has been infected with HCV may harbour the infections agent and may be capable of transmitting NANBH.

METHODS

Serum samples of 73 jaundice patients that had already been tested for hepatitis A and B and found to be negative for both, were included in the study along with 19 haemodialysis patients, 64 random blood donors and 9 blood donors with elevated ALT (three times the normal value).

All serum samples were kept frozen at –20°C until tested. Anti HCV tests were done using the Abbott recombinant DNA enzyme immunoassay. All samples testing positive were re-tested.

RESULTS

The results of anti-HCV testing are shown in table 1.

Anti-HCV seroconversion was observed in only 6 (8.2%) of the 73 patients hospitalised due to jaundice. High

Table 1
Prevalence of anti-HCV in different high risk groups

Group	*Number tested*	*Anti-HCV positive*	*Percentage*
Patients with jaundice	73	6	8.2
Haemodialysis patients	19	3	15.8
Random blood donors	64	3	4.7
Blood donors with elevated ALT†	9	5	55.5

† ALT = alanine aminotransaminase

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positivity (55.5%) was seen in blood donors that had been rejected due to high ALT levels. However, only 3 (4.7%) of the 64 blood donors were positive, while haemodialysis patients again accounted for a high positivity rate with 3 (15.8%) of the 19 being repeatedly reactive for anti-HCV.

All the samples were tested for hepatitis B surface antigen (HBsAg) and were found to be negative. All the samples giving positive anti-HCV were repeatedly reactive.

DISCUSSION

This study shows that only 8.2% of the jaundice patients were positive for anti-HCV which is much lower than one would expect. In fact, it is lower than hepatitis B which according to a previous study showed a prevalence of 11.7% in this group of patients.[5] This is because seroconversion to HCV does not occur in about two thirds of the patients during the acute phase.[6] It is, therefore, unlikely that a patient would test positive for anti-HCV during the acute phase, and in this case other agents such cytomegalovirus, Epstein-Barr virus and toxic hepatitis would have to be excluded. Late seroconversion would also mean that anti-HCV would not be detected in all post-transfusion cases. Seroconversion to HCV in the recipients of blood and blood components would mean nothing unless they are tested prior to transfusion and are negative at that time.

The high positivity (15.8%) in the haemodialysis patients may either be due to transfusions or to the dialysis itself. In any case, it identified this group as being at high risk of contracting HCV infections and when compared to hepatitis B surface antigen (HBsAg) is eight times greater.[5] This figure is comparable to a study done in Spain which showed that 19% of the dialysis patients tested positive for anti-HCV.[7]

The 4.7% seropositivity among blood donors seems to be very high particularly in light of the fact that only less than 1.0% of the blood donors in Bahrain are HBV positive.[5]

Perhaps the most important finding of our study is the high prevalence of anti-HCV among blood donors with high ALT. Although the number of donors tested was not large enough, a seropositivity of 55.5% strongly indicates the exclusion of all high ALTs from the list of regular blood donors.

CONCLUSION

The implications of these results for adding anti-HCV testing to the donor-screening process are clear. However, because of the prolonged interval between exposure and the detection of antibodies, it will not completely eliminate the risk of post-transfusion hepatitis. Due to this prolonged seroconversion period, diagnosis of acute hepatitis C in most cases will require up to six-month follow-up which will not be practical. However, anti-HCV testing should be mandatory for following up all chronic hepatitis patients including undiagnosed ones, once the test is made available.

REFERENCES

1. Prince AM, Grady GF, Hazzi C, et al. Long-incubation post-transfusion hepatitis without serological evidence of exposure to hepatitis-B virus. Lancet 1974;2:241-6.

2. Feinstone SM, Kapikian AZ, Purcell RH, Alter HJ, Holland PV. Transfusion-associated hepatitis not due to viral hepatitis type A or B. N Engl J Med 1975;292:767-70.

3. Wick MR, Moore S, Taswell HF. Non-A, non-B hepatitis associated with blood transfusion. Transfusion 1985;25:93-101.

4. Kuo G, Choo QL, Alter HJ, et al. An assay for circulating antibodies to a major etiologic virus of human non-A, non-B hepatitis. Science 1989;244:362-4.

5. Bader ZHB, Rifaat AH. Incidence of hepatitis B in Bahrain. Bahrain Med Bull 1989;11:24-6.

6. Alter HJ, Purcell RH, Shih JW, et al. Detection of antibody to hepatitis C virus in prospectively followed transfusion recipients with acute and chronic non-A,non-B hepatitis. N Engl J Med 1989;321:1494-500.

7. Esteban JI, Esteban R, Viladomiu L, et al. Hepatitis C virus antibodies among risk groups in Spain. Lancet 1989; 2:294-7.