

Transfusion Associated Hepatitis C in Multi-Transfused Thalassemic Children

Patients receiving multiple transfusions are at a high risk for transfusion-associated diseases and thalassemic children form one such high-risk group. After the discovery of hepatitis C virus (HCV) in 1989, it has proved to be the major cause of transfusion-associated hepatitis in the world(1), other transfusion acquired diseases being hepatitis B, HIV, syphilis, malaria etc. One cost-effective way to prevent these infections is by pre-transfusion screening of the blood. Although, hepatitis B and HIV screening is being done in all blood banks in India since 1996; screening for HCV was made mandatory only from 1 June, 2001. However, our center has been carrying out HCV antibody screening of donors and patients since 1 July 1997. A recent survey of blood transfusion practices noted that testing for transfusion-transmitted infections is unsatisfactory and poorly regulated in most blood banks, both private and government, throughout India(2). We herein report the prevalence of anti-HCV antibody by a third-generation ELISA (HCV Tri-DOT[®], J. Mitra and Company Ltd., New Delhi-110 020) in 47 multi-transfused thalassemic children over a 36 months period between 1 January 2000 and 31 December 2002.

Data for antibodies to HCV was retrospectively reviewed for the period under study from the records of the Thalassemia Unit. Hepatitis B surface antigen, antibody to HIV and antibody to HCV is tested every six

months for all thalassemic patients at our centre. All the thalassemic and hemophilic children are registered with Red Cross Society and are provided blood free of cost, which is cross-matched and transfused at our hospital. Therefore, till 1 June 2001 all these thalassemic children received blood, which was not screened for HCV.

Of the total 75 thalassemic patients enrolled in the unit at the start of the study, only 47 (mean age, 8.2 year, range, 18mo-16 year; 31 (65%) male, 16 female) regularly availed of the hospital services during the study period. Three (6.4%) of the study children were positive at the beginning of the study and 7 (14.9%), 12 (25.5%) and 13 (27.7%) children positive at the end of the first, second, and third year, respectively. Further review showed that the majority of the patients were reported positive prior to June 2001, when unscreened blood was being used for transfusion. Only 4 children were reported positive after this date (13 days, 15 days, 4 month 10 days, and 10 month 16 days after the date). Given that the window-period (period between infection and the first detectable serological marker) of HCV is normally 6-10 week and occasionally up to 9 months(1), the donors for these four children were probably in the window period. One of the study children died and none were found positive for antibodies to HIV and HBV during the study period.

The epidemiology of HCV in India is not well described, more so in children. The prevalence of HCV in blood donors in India (1-1.5%) is higher than that in developed countries (0.3-0.7%)(1,3,4). A high prevalence of HCV is found in many high-risk

groups exposed to blood or blood-products like hemophilics (24-90% anti-HCV positive), IV drug users (70-92% anti-HCV positive), patients with pediatric hematological malignancies (55% HCV-RNA positive) and those with thalassemia (60% anti-HCV positive)(1,5-6). The reported prevalence of the anti-HCV positivity of thalassemics from India varies from 19%-68%(1,7). Choudhury *et al.*(7) conducted serological monitoring of 39 patients of thalassemia major receiving blood unscreened for HCV over a three-year period (1993-95), and reported anti-HCV positivity of 23%, 30.7% and 35.7% in the I, II and III year, respectively. The wide variability among the prevalence reported in different studies is because of different sensitivity and specificity of the tests used (third generation ELISA: 99% sensitive and 99.5% specific), different HCV prevalence in the donor populations, and differing donor selection criteria. This study shows the high risk of acquiring this infection when unscreened blood is used and a significant fall in the risk after introduction of mandatory screening.

Given that the cost of chronic hepatitis C therapy using peg-interferon combination regime is approximately 1.5-2 Lakh rupees for 6 months, prevention seems to be a more cost effective modality. Transfusion associated hepatitis is a largely preventable disease. With our current abilities to screen for HBV and HCV along with inactivation protocols for pooled plasma fractions, the risk of TAH can be eliminated to a very large extent. The recently given guidelines on providing safe blood by "Indian Association for the study of Liver (INASL)" may go a long way in achieving this goal(8).

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