

# Hepatitis and Blood Transfusion\*

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**B**lood transfusions constitute a major mode of transmission of viral hepatitis leading to the so-called "Post Transfusion hepatitis". The discovery of Hepatitis B<sub>e</sub> antigen by Blumberg<sup>1</sup> in 1964 and the demonstration of the association between hepatitis and this antigen<sup>2,3</sup> are the most significant advances in this field.

The incidence of Hepatitis B<sub>e</sub> antigen in a donor population varies according to the type of the particular donors and their geographical distribution.<sup>4-8</sup> Accordingly, the risk of transmission of hepatitis by means of blood transfusions increases in communities in which this antigen is prevalent. Thus, it becomes imperative to screen all the donors for elimination of the asymptomatic hepatitis carriers from the potential blood donors in an effort to decrease the risk of hepatitis transfer. It is for this reason that routine testing of the donors' sera for this antigen has been made mandatory in several countries.<sup>9</sup>

In the study reported here, we investigated the incidence of hepatitis B<sub>e</sub> antigen in a Turkish donor population in order to establish the magnitude of the threat of hepatitis transfer through blood transfusions in this country.

## *Material and Methods*

Blood samples of a total of 3700 consecutive donors were tested for the presence of hepatitis B<sub>e</sub> antigen at the Hacettepe Blood Bank in Ankara. The technique used for the demonstration of the hepatitis B<sub>e</sub> antigen was double diffusion.<sup>10</sup>

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*Results and Discussion*

The total of 3700 blood samples were collected from 1601 voluntary and 2099 professional donors. Hepatitis B<sub>s</sub> antigen was present in 49 voluntary donors (3.01 %) and in 59 professional donors (2.81 %), adding up to a total of 108 hepatitis B<sub>s</sub> antigen positive donors in the whole group (2.92 %). Various reports about the incidence of this antigen in different donor populations are summarized in Table I.<sup>11, 17</sup>

TABLE I  
HEPATITIS B<sub>s</sub> ANTIGEN IN BLOOD DONORS

| Country               | Number tested | Method | Antigen present (number and percentage) |
|-----------------------|---------------|--------|-----------------------------------------|
| Unpaid donors         |               |        |                                         |
| Belgium               | 6656          | ID     | 10 (0,15)                               |
| France                | 18046         | ID     | 75 (0,41)                               |
| Germany               | 2053          | ID     | 17 (0, 8)                               |
| Norway                | 3162          | ID     | 5 (0,16)                                |
| Switzerland           | 2641          | ID     | 5 (0, 2)                                |
| Japan                 | 5246          | ID     | 54 (1,03)                               |
| USA (NY)              | 85539         | ID     | 84 (0,09)                               |
| Turkey (Ankara)       |               |        |                                         |
| (Military servicemen) | 1032          | ID     | 37 (3. 5)                               |
| (Civilians)           | 569           | ID     | 12 (2. 1)                               |
| Paid donors           |               |        |                                         |
| Japan                 | 849           | ID     | 19 (2.26)                               |
| USA (NY)              | 2007          | ID     | 24 (1.19)                               |
| Turkey (Ankara)       | 2009          | ID     | 59 (2. 8)                               |

These reports indicate a higher percentage of hepatitis B<sub>s</sub> antigen positive donors among professionals as compared to voluntary donors. This is in contrast to the higher incidence of this antigen among our voluntary donors. The explanation for this discrepancy may lie in the fact that the bulk of our voluntary donors were derived from enlisted men in the military service. The incidence of hepatitis B<sub>s</sub> antigen was 3.5 % (37 donors) among these 1032 enlisted men, versus an incidence of 2.1 % (12 donors) among the 569 civilian volunteer donors. The prevalence of the hepatitis B<sub>s</sub> antigen among the military servicemen could be the result of their close living conditions and relatively poorer hygienic

conditions. When we exclude the military donors and compare only the civilian donors, the incidence of hepatitis B<sub>1</sub> antigen is higher in the professional group in accordance with the reports in the literature. Obviously, transfusion of hepatitis B<sub>1</sub> antigen containing blood is dangerous for the recipient and every effort must be made to eliminate this danger.

Gocke et al<sup>18</sup> have followed the known recipients of antigen positive blood, for 6 months and have seen that 60 % of these recipients have developed hepatitis 4 to 17 weeks following transfusion.

The antigen may disappear from the sera of some donors with the passage of time, but persistence of the same antigen over a span of several years is the more common finding.<sup>12, 19</sup> We were able to follow eight hepatitis B<sub>1</sub> antigen positive donors from our series for fourteen months and they remained positive at the end of this period. Two other antigen positive donors became negative after three months. The Hepatitis B<sub>1</sub> antigen positive donor with the longest follow-up period in our series, remained positive at the end of five years. Regardless of the possibility that he may become negative in the future, every donor who has been shown to have hepatitis B<sub>1</sub> antigen at any time, must be permanently removed from the list of potential donors. It is estimated that there will be a reduction of 25 % in the incidence of transfusion hepatitis in the United States of America, where there are approximately 30,000 cases a year of icteric hepatitis and 1500 to 3000 deaths associated with transfusions, by rejection of hepatitis B<sub>1</sub> antigen positive donors.<sup>20</sup>

In conclusion we want to point out that a significant, if not total reduction, in the numbers of transfusion induced cases of hepatitis can be achieved by screening of potential blood donors for hepatitis B<sub>1</sub> antigen and that this test must be employed as a routine in all blood banks.

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