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Incidence of LAV/HTLV-III-Positive Blood Donors

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In January 1985 we started to screen all blood donors of the blood bank of the University clinics in Hamburg Eppendorf (UKE) for LAV/HTLV-III antibodies [1, 2]. Of the 7624 donors examined up until July 1985, 10 were positive in the enzyme-linked immunosorbent assay (ELISA), the IFT, and the Western blot analysis. All of the LAV/HTLV-III-positive donors were male; the mean age was 34 years; nine out of the ten LAV/HTLV-III positives were homosexual and one out of the ten had had multiple contacts with prostitutes.

Each of the stock donors who were LAV/HTLV-III-positive at the first examination had donated blood 8–95 times prior to detection of the infection. Fourteen out of 16 recipients followed back until 1981 are LAV/HTLV-III-positive. From two of the donors and the two recipients of their blood we isolated LAV/HTLV-III using two procedures: the detection of reverse transcriptase after in vitro cocultivation of their lymphocytes with normal lymphocytes, and the demonstration of the viral antigens in the Western blot analysis, using the supernatants of those cultures. The *env* and core proteins of LAV/HTLV-III were demonstrated in the supernatants of the isolates.

Among the recipients of LAV/HTLV-III-positive blood there is a higher rate of AIDS in infants than in adults, and the mean incubation period is 4.5 years. In the United States, up to June 1986, 384 cases of AIDS attributed to blood transfusion had been reported, and we have to expect an increasing number in the years ahead.

From May to September 1985 about 0.02% of donors in West Germany proved to be LAV/HTLV-III-positive. In the large cities, where AIDS occurs more frequently, the frequency of positive donors was much higher: in Berlin it was 0.14% and in Hamburg 0.10%. In the second half of 1985 the prevalence of LAV/HTLV-III-positive donors dropped sharply in Hamburg from 0.1%–0.003%.

Although 35% of the donors tested were female and 65% were male, more than 90% of ELISA- and Western-blot-positive donors were men. The female donors, however, were overrepresented in the false ELISA-reactive blood samples; 44% of the latter were of female origin. About 20%–30% of the ELISA-reactive sera could be confirmed as positive in the Western blot analysis. This may be partly due to the fact that the H9 cell line used for the growth of LAV/HTLV-III contains the HLA DR-4 antigen; 10 out of 27 commercial DR-4 antisera were positive in the ELISA for LAV/HTLV-III antibodies.

No cases of LAV/HTLV-III infection have been attributed to the use of immunoglobulins, commercial hepatitis B antisera, or the licensed hepatitis B vaccines.

The remaining problems for the screening of blood donors are the seronegative LAV/HTLV-III carriers and the blood donations of freshly infected persons who carry the

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virus but are still seronegative. These problems could be diminished by the introduction of an antigen test. The fact that the risk of acquiring LAV/HTLV-III in Hamburg by blood transfusion has already significantly decreased demonstrates the great progress made in the screening of blood donors for LAV/HTLV-III antibodies.

References

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