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SURROGATE TESTS FOR NON-A, NON-B HEPATITIS

Special Report to Regional Transfusion Directors

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Despite various claims, no specific sensitive reproducible serological test exists for the accurate identification of donors who transmit non-A, non-B (NANB) hepatitis. Because of this situation, numerous strategies including the use of surrogate tests have been suggested or even introduced by certain transfusion centres in an attempt to reduce the number of NANB post-transfusion hepatitis (PTH) cases. In chapters 4 and 5 of Dow (1985) three strategies were investigated, namely the exclusion of donors with a history of jaundice, anti-HBc or raised alanine aminotransferase (ALT) test.

History of Jaundice. In the USA individuals with a history of prior jaundice are excluded because of the possibility of their jaundice episode being due to NANB and subsequently becoming chronic carriers of NANB agent(s). Exclusion of such individuals in the West of Scotland population would incur a loss of around 2 to 3% of blood donors.

Anti-HBc. NANB hepatitis is epidemiologically similar to HBV, affecting mostly drug abusers. As two-thirds of West of Scotland HBsAg negative drug abusers are known to possess anti-HBc, the introduction of anti-HBc tests (commercial cost of around £2 per test) could be useful in identifying those donors who could be NANB carriers. If such a donor testing strategy was introduced in the West of Scotland, between 1 and 2% of donors would be excluded.

ALT tests. The National Institutes of Health (NIH) (Alter et al, 1981) and Transfusion-Transmitted Viruses (TTV) (Aach et al, 1981) studies have shown an association between the use of blood

with high ALT levels and the development of NANB hepatitis. In these studies 10% of transfusion-recipients developed NANB hepatitis compared to 2.9% of non-transfused controls (Hoofnagle et al, 1982). The NIH study suggested using a cut-off point of 2.25 standard deviations above the geometric mean ALT. This criteria when applied to West of Scotland blood donors using an inexpensive but labour-intensive test produced results as shown in the Table. In the USA, 1.6% of the donor population would be excluded using the above cut-off point, whereas only 0.75% of West of Scotland blood donors would be excluded.

The effect of these strategies in identifying implicated donors involved in NANB PTH cases. The "acid" test for either of these three means of identifying potential NANB carrier donors is to examine the effect, if any, they would have in identifying such donors amongst those implicated in reported cases of NANB PTH.

Of the 65 donors implicated in 18 NANB PTH cases, only 2 had histories of jaundice and both were involved in the cases in which the jaundice may have been caused by the effects of drugs rather than transfused blood.

Three implicated donors had both anti-HBc and anti-HBs and theoretically may have been the cause of jaundice in 3 NANB PTH cases.

Three implicated donors had raised ALT levels, suggesting that they may have been the cause of jaundice in 3 NANB PTH cases. (If a higher cut-off point was used i.e. 3.35 SD only 2 of these donors would have been flagged).

Assuming that the described strategies are "correctly" identifying NANB infective donors, a maximum of 8 (44%) of the 18 NANB PTH cases would have been prevented using all three strategies. This would result in a loss of approximately 5% of donors and considerably increase testing costs. Even if the combination of anti-HBc and ALT tests was shown to be 100% effective the economics involved in conducting these tests would greatly outweigh the costs of hospitalization of the few reported NANB PTH cases.

Conclusion. The present UK policy of accepting donors with raised ALT levels (i.e. not routinely ALT testing), anti-HBc or histories of jaundice would appear to be correct. It would appear from the study that the introduction of such surrogate screening procedures would have little impact on reducing the already low level of NANB PTH cases at present reported within the West of Scotland region.

Table ALT results on West of Scotland blood donors according to different cut-off points (1980-85)

Donor Category	Number tested	Cut-off point 2.25 SD	3.35SD
Normal donors	4980	35 (0.7%)	4 (0.08%)
Jaundice history	484	6 (1.2%)	1 (0.2%)
Total	5464	41 (0.75%)	5 (0.09%)

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