Expansion of Saudi Blood Donor Pool by Better Screening and Vaccination Practices

Over a 10-year period, significant decreases in the prevalences of HBsAg and anti-hepatitis C virus (anti-HCV) were noted among the Saudi National Guard blood donor population (P < 0.0001), with a chief impact of fewer rejected donors. Two important points rise as plausible explanations for such findings.

Firstly, in 1995 our institution adopted the new regulations of the American Association of Blood Banks (AABB) for transfusion-transmitted-disease testing (4). The new regulations stipulated the replacement of the enzyme alanine aminotransferase (ALT) test with hepatitis B virus (HBV) and HCV serological tests. Instead of being screened with an initial ALT test and rejected if the ALT levels were outside established limits (5), all blood donors were to be tested with HBV and HCV serological tests. If the serological results were positive for either or both of these tests, the donor would be rejected for that donation and for any donation in the future. However, if the serological results were negative, regardless of the ALT level, the donor would be accepted. Therefore, fewer donors were rejected since many of those with initially elevated ALT levels tested negative for HBsAg and anti-HCV (5). A second advantage to the adoption of the new AABB regulations was that donors who were serologically positive were excluded from future donations as well. Therefore, the donor pool was purified by not allowing those with serological test results positive for HBV or HCV to donate in subsequent years. All donations were tested using the serological markers for HBsAg and anti-HCV (Abbott Laboratories, Abbott Park, Ill.). In all of the procedures, the manufacturer’s instructions were strictly followed.

Between 1992 and 2002, our institution screened 63,368 donors; the majority (95%) were Saudi nationals. Only 6% of the donors were repeat donors, and the rest were first-time donors. Overall prevalences of HBsAg and anti-HCV were found to be 1.69 and 0.58%, respectively. These results are lower than those previously reported (1, 3). We also compared the prevalence rates of HBV and HCV from 1995 to 2002 with those of the period from 1992 to 1994 (Fig. 1) (3). For the earlier period, only data for those donors with normal ALT levels were included, since those with elevated ALT levels were excluded from donation and further testing based on the old AABB criteria (5). Donors with borderline results for HBsAg and anti-HCV tests were also deferred from donation and were not included in our calculation.

The second explanation for the cleaner donor population was the HBV vaccination requirements introduced in 1989 and 1990. In 1989, it became law that all newborns in Saudi Arabia must be vaccinated against HBV infection. In the following year, 1990, the law was extended to include all school-aged children in the requirements for HBV vaccination (2). Since most of our donors are younger than 25 years of age, we expect that most are immune to HBV infection. And with the continued HBV vaccination strategy, we expect that the prevalence of HBsAg will decrease even more over the coming years, as the vaccinated children will become the majority of adults donating blood. Secondly, the preemployment evaluation and consultation performed by Saudi Arabian National Guard hospitals have made testing and vaccination for HBV infection a mandatory protocol. We believe that this approach may have added to the decline in the prevalence of hepatitis B among the donor population during the last few years.

The difference in the HCV prevalences from the two periods was statistically significant (P < 0.00001). Our explanation is improvement of the donor questionnaire and public awareness of the disease. With the new AABB regulations, donors are screened with a serological test for anti-HCV and, if found to be positive, are permanently excluded from donation. Since no vaccine is available for HCV infection and no other preventive measures are currently taking place, we assume that the above-mentioned reasons are the more logical explanation for the downward trend seen in HCV prevalence.

In conclusion, the better selection criteria within the new AABB guidelines and the overall decreasing incidence of HBV infection in the Saudi population due to vaccination programs and disease awareness have lead to a cleaner donor pool with fewer unnecessary donor rejections.

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