Acute hepatitis B infection associated with blood transfusion in England and Wales, 1991-7: review of database

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Blood donations in England and Wales are collected from healthy donors who do not acknowledge factors associated with an increased risk of bloodborne infections. All donations issued for transfusion since the early 1970s have been tested for hepatitis B surface antigen as a marker of transmissible hepatitis B virus. These measures have resulted in low rates of transmission by transfusion but have not eliminated all infectious donations from the blood supply.

Hepatitis B infections in transfusion recipients are investigated by the national blood services to identify if they were transmitted by transfusion. A donation is concluded as having been probably infectious if the donor was surface antigen negative but had evidence of acute infection or of carrying the virus (antibody to hepatitis B core antigen with no or low titres of antibody to surface antigen¹) or if the donor was surface antigen positive (on review of test results or retesting archived serum) and blood was erroneously released. Mutant strains of hepatitis B virus not detected by routine surface antigen tests also pose a risk of infectious donations being transfused.²

Acute hepatitis B infections, and the probable route of infection, are reported voluntarily by laboratories in England and Wales to the Communicable Disease Surveillance Centre. We examined these reports to describe the frequency and nature of acute hepatitis B infection transmitted by transfusion.

Methods and results

We reviewed cases of acute hepatitis B infection reported to the surveillance centre during 1991-7 and sought information from the national blood services for cases associated with transfusion (table). Twenty four of 4185 (0.6%) cases were associated with transfusion in England and Wales. For 10 reports investigation by the national blood services was not possible (for example, donation identifiers not available) or inconclusive (for example, one or more donor not traced for retesting), or information was not available retrospectively. Of the 14 probably infectious donations that were identified, three were from surface antigen negative donors during acute hepatitis B infection and 11 were collected from negative donors during late carriage of the virus. No reports of erroneous release of surface antigen positive blood were identified.

Comment

Over 2.5 million donations are issued annually in England and Wales. The cases presented here underestimate the number of hepatitis B infections transmitted by transfusion as infection is often asymptomatic and not all acute infections are diagnosed and reported. Nevertheless, these data show that transmission of hepatitis B by transfusion does occur but is rare in England and Wales. Transfusion accounts for only a small part of the total burden of acute symptomatic

hepatitis B infection and most cases are due to carriage of infection rather than acute infections in donors. A similar observation was made by the North London Blood Centre during 1985-93 (John Barbara, personal communication).

Donor selection criteria aim to exclude people with recent risk factors for acquiring bloodborne infection. Persistent hepatitis B infections often follow perinatal or childhood infection and therefore are less likely to be excluded by donor selection. Testing for antibodies to hepatitis B core antigen, as is routine in some other countries, would have detected most of the infectious donations identified. Since testing for antibodies to core antigen would also detect non-infectious donations from donors with naturally acquired immunity to hepatitis B further tests would be needed to avoid unnecessary loss of donations.

Further consideration of the costs and benefits of testing donations for antibodies to core antigen is warranted. Policies to vaccinate people who receive multiple transfusions³ remain justified. The serious hazards of transfusion scheme⁴ and collaborative work between the national blood services and Public Health Laboratory Service will continue to monitor post-transfusion infections.

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Reports of acute hepatitis B infection associated with transfusion, England and Wales, 1991-7*

Year	Total reports	Transfusion in UK most probable route of infection	Donor surface antigen negative		Investigation of donor not available or inconclusive
			Acute infection	Carrier	
1991	572	5	0	2	3
1992	531	3	1	1	1
1993	629	5	1	4	0
1994	631	3	0	2	1
1995	613	5	0	1	4
1996	581	2	1	1	0
1997	628	1	0	0	1
1991-7	4185†	24 (0.57%)	3	11	10

*Data at 31 March 98. †For 21 reports the most probable route of infection was transfusion abroad (not known to have been confirmed by investigation of the implicated donations), and for three reports no information about the place of transfusion was provided.

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