Prolonged Hepatitis B Surface Antigenemia After Vaccination

Eric R. Lunn, MD, FAAP; Bernard J. Hoggarth, MD, FAAP; and Walter J. Cook, MD, FAAP

ABSTRACT. Infection with hepatitis B virus can lead to serious long-term complications including chronic hepatitis B virus infection leading to hepatocellular carcinoma, liver failure, and death. We report a case of prolonged hepatitis B antigenemia after routine vaccination with Engerix B. A positive hepatitis B surface antigen was found when the individual donated blood 18 days after vaccination. This resulted in rejection of the donated blood and permanent deferral from further donation. It also led to referral to a physician, creating anxiety in the individual and additional unnecessary testing. Additional studies are needed to identify the length of time of hepatitis B surface antigenemia after hepatitis B vaccination, and blood collection centers should be aware of the potential for donors to have a prolonged false-positive hepatitis B surface antigen after vaccination against hepatitis B. Pediatrics 2000;105(6).

ABBREVIATIONS. HBV, hepatitis B virus; HBsAg, hepatitis B surface antigen; EIA, enzyme immunoassay.

Approximately 200,000 to 300,000 acute infections with hepatitis B virus (HBV) occur each year in the United States. More than 1 million persons have chronic HBV infection and ~5000 persons die each year from HBV-induced hepatocellular carcinoma and chronic liver disease in the United States.1,2 HBV is usually transmitted through sexual contact, exposure to blood or blood products, from mothers to neonates at birth, and inapparent percutaneous and permucosal exposures.

Previous attempts at controlling HBV infection in the United States consisted of vaccinating high-risk populations and serologic screening of all pregnant women for hepatitis B surface antigen (HBsAg). However, these measures had little impact on the control of HBV infections; therefore, in 1992, the American Academy of Pediatrics recommended universal hepatitis B vaccination for newborns and routine vaccination of adolescents when feasible. Since then, immunization rates for newborns and adoles-

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Received for publication Sep 20, 1999; accepted Jan 14, 2000.
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to 7 days; however, our patient was still HBsAg-positive after 18 days.

Each year in the United States, ~14 million units of blood are donated, by ~8 million volunteer blood donors. These units are transfused to as many as 4 million patients (URL: http://www.aabb.org/does/facts.html). Although there are no national standards, blood collection centers/blood banks may defer donation after hepatitis B vaccination. The US Armed Forces defers donors for 1 day and the Red Cross defers donors for 7 days after hepatitis B vaccination. However, our case suggests that deferral from donation after hepatitis B vaccination may need to be longer. In addition to losing potential donated blood, the false-positive HBsAg results create anxiety and further unnecessary testing of the donor. It also places the donor’s name on the Deferred Donor Directory, permanently disqualifying a healthy individual from donating.

Additional studies are needed to identify the length of time of hepatitis B surface antigenemia after hepatitis B vaccination. Blood collection centers currently screen potential blood donors for recent vaccination, and guidelines exist for temporary deferral of potential donors who received vaccines. Blood collection centers should be aware of the potential for donors to have a false-positive HBsAg (up to 3 weeks) after vaccination against hepatitis B.

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*Pediatrics* 2000;105;e81

DOI: 10.1542/peds.105.6.e81

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