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The persistence of anti-HBs antibody and anamnestic response 20 years after primary vaccination with recombinant hepatitis B vaccine at infancy

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Abstract

Hepatitis B (HB) vaccine induces protective levels of antibody response (anti-HBs \geq 10 mIU/mL) in 90-99% of vaccinees. The levels of anti-HBs antibody decline after vaccination. The aim of this study was to evaluate the persistence of anti-HBs antibodies and immunologic memory in healthy adults at 20 years after primary vaccination with recombinant HB vaccine. Blood samples were collected from 300 adults at 20 years after primary HB vaccination and their sera were tested for anti-HBs antibody by ELISA technique. A single booster dose of HB vaccine was administered to a total of 138 subjects, whose anti-HBs antibody titer was <10 mIU/mL. The sera of subjects were re-tested for the anti-HBs antibody levels at 4 weeks after booster vaccination. At 20 years after primary vaccination 37.0% of participants had protective levels of antibody with geometric mean titer (GMT) of 55.44 \pm 77.01 mIU/mL. After booster vaccination, 97.1% of vaccinees developed protective levels of antibody and the GMT rose from 2.35 \pm 6.49 mIU/mL to 176.28 \pm 161.78 mIU/mL. 125/138 (90.6%) of re-vaccinated subjects also showed an anamnestic response to booster vaccination. At 20 years after primary vaccination with HB vaccine, low proportion of the subjects had protective levels of antibody. However, the majority of the re-vaccinated subjects developed protective levels of anti-HBs and showed an anamnestic response after booster vaccination. Additional follow-up studies are necessary to determine the duration of immunological memory.

Keywords: Anti-HBc antibody, antibody to HBcAg; Anti-HBs antibody, antibody to HBsAg; ELISA, Enzyme-linked immunosorbent assay; EPI, Expanded Program on Immunization; GMT, Geometric mean titer; HB, Hepatitis B; HBV, Hepatitis B virus; HBcAg, Hepatitis B core antigen; HBsAg, Hepatitis B

surface antigen; WHO, World Health Organization; anamnestic response; anti-HBs antibody; hepatitis B vaccine; mIU/mL, milli-international units per milliliter; persistence; protection.

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