Abstract

Background：To evaluate the long-term immunogenicity of hepatitis B virus (HBV) vaccine, we studied the duration of surface antigen antibody (anti-HBs) persistence and the incidence of HBV infection on a large-scale community-based population in Taiwan.

Methods：We followed 1200 healthy 7-year-old children in Taipei city with a complete HBV immunization in infancy. HBV surface antigen (HBsAg), anti-HBs, HBV core antibody (anti-HBc) were determined annually for 5 consecutive years. A booster vaccination was administered in 200 noncarrier children without protective anti-HBs titers at the age of 7. HBV DNA was tested in serum samples collected at the time of new HBV infection by using PCR method.

Results：The percentage of protective anti-HBs (> 10 S/N) dropped from 51.5% at age 7 to 33.0% at age 12. Sixty percent of boosted vaccinees showed anamnestic response, but the risk for new HBV infection was not different between boostered and non-boostered groups. Six vaccinated children had new HBV infections with anti-HBc positivity as the only marker during 5-years follow up. Five of them had anti-HBs titers below 100 mIU/mL prior to new HBV infections. None became seropositive for HBsAg. Five newly infected children were tested for HBV DNA and none was positive.

Conclusions The long-term efficacy against chronic HBsAg carriage is maintained. The protection against isolated anti-HBc positive infection is not complete, especially when serum anti-HBs titer falls to low level. Yet routine booster vaccination may not be needed to maintain immune memory and protection against chronic HBsAg carriage before 13 years of age.

Keywords：hepatitis B virus；HBV vaccination；immunogenicity；immune memory