

ABSTRACT

Serological and Molecular Study on Hepatitis B Virus (HBV) and Detection of HBV Vaccine Escape Mutant among under five years children in Sorong

Indonesia was launched hepatitis B universal vaccination program to all new born baby in 1997. Hepatitis B universal vaccination program allow the emergence of HBV vaccine escape mutants, some kind of mutation of the virus which is able to circumvent the neutralization system of antibodies formed by the vaccine. The objective of this study was to analyze the serological marker of Hepatitis B (HBsAg, anti-HBs and anti-HBc) and HBV genotype, subtype and also presence of HBV vaccine escape mutant among children under five years in Sorong, West Papua.

This research performed as observe and descriptive design. All serum samples were examined for HBsAg, anti-HBs and anti-HBc by using enzyme-linked immunosorbent assay (ELISA). Samples with positive serological results of HBsAg and / or anti-HBs and / or anti-HBc were followed by DNA extraction. We carried out Polymerase Chain Reaction (PCR) method to find HBV DNA and followed with DNA sequencing. We analyzed the HBV genotype, subtype and presence of any HBV *vaccine escape mutant*.

Of 167 serum sample, the HBsAg, anti-HBs and anti-HBc were 7 samples (4.2%), 72 samples (43.1%) and 8 samples (4.8%) respectively. Number of samples with HBV DNA positive was 20 samples (11.9%) with genotype distribution of HBV/B and HBV/C were 12 and 8 samples respectively. The number of HBV subtype of *adw2*, *adrq +*, *adrq indeterminate* and *ayw1* were 12, 3, 4, and 1 sample respectively. There were HBV *adrq indeterminate* with Alanin at 159 and 177 amino acid position. In this study, we identified two samples (I152T-F158L, S155F) were suspected as HBV vaccine escape mutant, and other mutations with T140I and V168L were identified.

Conclusions :

The sero-positive number of HBsAg among children in Sorong, Papua was relatively decreased compared with previous result among adults. Genotypic and Subtypic HBV distribution were shifted from HBV/C-*adr* subtype to HBV/B-*adw* subtype, it might be due to people migration. Mutation of I152T-F158L and S155F were suspected to be HBV vaccine escape mutant in Sorong.

Keywords : Hepatitis B virus, Genotype, Subtype, vaccine escape mutant, immunization