

Low Prevalence of Hepatitis B Virus Pre-S Deletion Mutation in Indonesia

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The molecular epidemiological study of hepatitis B virus (HBV) in Indonesia is still limited. This study was aimed to identify the prevalence of HBV pre-S deletion/insertion mutations, and to assess the association of pre-S deletion mutation with liver disease progression in Indonesia. Pre-S mutations were identified by direct sequencing. Of the 265 subjects, 32 samples (12.1%) harbored pre-S deletion/insertion mutations. The prevalence of those pre-S mutations was 2.7% (2/75), 12.9% (8/62), 16.7% (11/66), and 17.7% (11/62) in asymptomatic carrier, chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma groups, respectively. Statistical analysis showed significant difference among them ($P = 0.024$). In HBV genotype B (HBV/B), pre-S1, pre-S1/S2, and pre-S2 deletion mutations were detected respectively in 3 (17.6%), 4 (23.5%), and 9 (52.9%) of 17 samples. On the other hand, in HBV/C, 12 of 15 samples (80.0%) showed a pre-S2 deletion mutation, and only 2 samples (13.3%) demonstrated a pre-S1/S2 deletion mutation. These results suggest that in HBV/B deletion mutation tends to occur in pre-S1 or pre-S1/S2 region, while in HBV/C the deletion mutation usually occurs in the pre-S2 region. Analysis of complete genome of four viruses confirmed that 3 isolates were classified into HBV/B3, and 1 isolate was HBV/C1. However, SimPlot and BootScan analyses showed that isolate 08.10.002 was an intragenotypic recombinant between HBV/B3 and HBV/B4. As conclusion, the prevalence of HBV pre-S mutations was relatively low in Indonesian patients compared

to those from Taiwan, Japan, and other Asian countries. There was a weak association between pre-S deletion mutation and progressive liver disease. **J. Med. Virol.** **83:1717–1726, 2011.** © 2011 Wiley-Liss, Inc.

KEY WORDS: hepatitis B virus; pre-S deletion mutation; liver disease; Indonesia

INTRODUCTION

Hepatitis B virus (HBV) infection is a major health problem leading to significant morbidity and mortality worldwide. Approximately, two billion people in the world have been infected by HBV [Zuckerman and Zuckerman, 2000]. Indonesia has a moderate-to-high endemicity of HBV infection [Sastrosoewignjo et al., 1991], perhaps due to the lack of proper health facilities, poor economical status, less public awareness, or incomplete vaccination. The majority of acute HBV infections are self-limiting, whereas chronic HBV

Grant sponsor: MRIN Research Funding; Grant numbers: cc041/2009. cc041/2010.

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Accepted 8 June 2011

DOI 10.1002/jmv.22172

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