Prevalence and Molecular Epidemiology of Hepatitis B Virus Mutations in Patients With Chronic HBV Infection in Korea, Especially the Ulsan Region

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Hepatitis B virus (HBV) infection is one of the major problems in public health. Although Korea is an endemic area for HBV, study about the prevalence of variants in major hydrophilic region (MHR) of surface antigen of HBV was limited. In the present study, we studied to determine the prevalence and mutational pattern of HBsAg in various patient groups and compared the pattern of MHR mutation previously reported in Korea. A total of 270 serum samples were collected for this case-control study. We enrolled 6 patient groups: (1) 50 patients with negative HBsAg results; (2) 29 patients with weakly positive HBsAg results; (3) 50 patients with strongly positive HBsAg results; (4) 50 samples from a human serum bank; (5) 50 patients treated with antiviral drug after diagnosis of chronic hepatitis B infection; (6) 41 patients after liver transplantation. To analyze mutation patterns and frequencies in the MHR of the S gene, HBV DNA nested-PCR and direct sequencing analysis were used. Among 270 cases, 194 samples were isolated and further identified. All HBV isolates showed genotype C. Of 194 isolates, 69 (35.6%) had amino acid substitution in the MHR region of the S gene and 45 isolates (23.2%) showed amino acid substitution in ‘a’ determinant region. Amino acid substitution frequencies were not different in each patient group (P = .0500), but there were differences among each patient group except the negative group (P = .0387). The frequency in the post-liver transplantation group was significantly lower than that of the weakly positive group, strongly positive group, human serum bank group, and chronic hepatitis with antiviral agents group (P = .0169). All HBV isolates showed genotype C, which was consistent with previous reports. HBsAg subtype adr is predominant in Korean patients. Naturally occurring MHR mutation were detected in 35.6% of Ulsan province, the southeastern area of Korea.

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