

Pre-S Mutants as a Predictive Marker of Hepatocellular Carcinoma in Patients with Chronic Hepatitis B Virus Infection

Abstract

The HBV carriers present 100-fold increase in risk to develop into HCC. Therefore, it is an important public health issue to early diagnose and treat HBV infection. The HBV surface antigen is an important marker for estimating HBV infection. In the late or nonreplicative stage of HBV infection, a novel type of HBS mutation, the pre-S mutation, has been identified. Such mutations have shown high correlation with HCC progression. In this study, we collected sera from the patients that enrolled in the "Hepatitis Protection Health Insurance Program". The HBV surface gene in these sera was analyzed by nested PCR. The PCR products of HBV surface genes were cloned into TA plasmid cloning vectors and fully sequenced. For the patients that have received the treatments of anti-viral drugs lamivudine and/or interferon gamma, the transformation of pre-S mutant genotypes were evaluated. In total, 1553 serum specimens, 1148 male and 405 female, were collected and fully investigated. Most of the participants had blood drawn before receiving the treatments with anti-viral drugs lamivudine and interferon. It was found that among the males in the ages of 40 to 60 years old the prevalence rate of pre-S mutations was as high as 31%. After lamivudine/interferon gamma treatments to these patients, 26.7% showed viral clearance. And 30% has transformed into the wild-type HBS genotype. These results suggest that the lamivudine/interferon gamma treatments are effective for the patients carrying the pre-S mutant HBsAg. Pre-S mutations are highly prevalent (~30%) in chronic HBV infection. And the lamivudine/interferon gamma treatments are effective for viral clearance in these patients.

Keyword: hepatitis B virus, HBsAg, pre-S mutant HBsAg, hepatocellular carcinoma