



Correlation between hepatitis B virus DNA levels and diagnostic tests for HBsAg, HBeAg, and PreS1-Ag in chronic hepatitis B

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ABSTRACT. The aim of this study was to investigate the diagnostic value of the serum markers HBsAg and HBeAg and PreS1 protein (PreS1-Ag) in quantifying the levels of hepatitis B virus (HBV) DNA in patients with chronic hepatitis B (CHB). One thousand CHB patients were recruited from Beijing You'an Hospital between June and December 2012. Serum HBsAg and HBeAg levels were detected by electrochemiluminescence immunoassay. Enzyme-linked immunosorbent assay and fluorescence quantitative PCR were used to determine the level of PreS1-Ag and HBV DNA, respectively. We observed a low correlation between HBsAg and HBV DNA ($r = 0.172$, $P < 0.001$) expression; however, the correlation coefficient increased gradually with the increase in HBV DNA levels, and was more significant when HBV DNA $\log_{10} > 7$ ($r = 0.597$, $P < 0.001$). Additionally, HBsAg and HBV DNA showed a significant positive correlation in the HBeAg+ group ($r = 0.321$, $P < 0.001$), whereas no correlation was observed in the HBeAg- group ($r = -0.016$, $P = 0.825$).

HBV DNA expression was correlated with HBeAg ($\chi^2 = 83.07$, $P < 0.001$) and PreS1-Ag ($\chi^2 = 36.01$, $P < 0.001$). HBV DNA-positive rate was higher in HBeAg/PreS1-Ag++ patients (72.26%) than that in the single-positive groups ($P < 0.001$). Therefore, serum HBsAg is not a good marker for the prediction of HBV replication, and co-detection of HBeAg and PreS1-Ag, which can better predict HBV DNA replication, can be used as a reliable method for the clinical diagnosis and treatment of CHB.

Key words: Clinical diagnosis; Hepatitis B e antigen; Hepatitis B surface antigen; Hepatitis B virus DNA; PreS1 protein