Predictive Value of Baseline and On-Treatment Quantitative Serum HBsAg Levels in Therapeutic Outcome to Entecavir in Patients with Chronic Hepatitis B

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Abstract

Background: The predictive value of baseline and on-treatment quantitative serum hepatitis B surface antigen (qHBsAg) levels in the therapeutic outcome to entecavir (ETV) in chronic hepatitis B (CHB) patients remains unclear. **Patients and Methods:** Between June 2006 and May 2013, 321 treatment-naïve compensated CHB patients had been treated with ETV for at least 1 year. Serum HBsAg and HBV DNA levels were quantified using the Abbott Architect HBsAg QT assay and the Cobas Amplicor HBV Monitor Test during therapy, respectively. **Results:** The baseline features were: median age: 49 years, 75.1% men, 37.4% HBeAg-positive (N=120), 59.1% genotype B infection, median ALT: 79 IU/L, HBV DNA: 6.56 $\log_{10}$ copies/mL, and qHBsAg: 3.29 $\log_{10}$ IU/mL. Among them, 271, 218, 163 and 81 patients have received ETV therapy for $\geqq$ 2, 3, 4 and 5 years, respectively, with the mean treatment duration of 45.8 ± 18.3 months. The cumulative rates for virological response (VR, HBV DNA <312 copies/mL) were 90.3%, 97.8% and 99.4% at 1, 2 and 3 years, respectively. The cumulative HBeAg loss rates were 12.5%, 32.9%, 50%, 59% and 77.4% at 1, 2, 3, 4 and 5 years, respectively. Multivariate logistic regression analyses identified baseline HBV DNA <8 $\log_{10}$ copies/mL(OR=5.746, *P*=0.0044) and qHBsAg decline from baseline $\geqq$ 50% at 3 months of therapy (OR=4.202, *P*=0.0207) as predictors of VR at one year for the HBeAg-positive subgroup. Multivariate Cox regression analyses identified ALT $\geqq$ 120 IU/L (HR=1.881, *P*=0.0369; HR=2.578, *P*=0.0258, respectively) and baseline qHBsAg level between 5000 to 16000 IU/mL (HR=4.421, *P*=0.0008; HR=4.735, *P*=0.008, respectively) as predictors of HBeAg loss or HBeAg seroconversion during treatment. The cumulative HBeAg seroconversion rates after 3 years of therapy in patients with baseline qHBsAg $\geqq$ 16000, 5000-16000, and <5000 IU/mL were 17.4%, 52.4%, and 27%, respectively (*P*=0.0339). The cumulative HBeAg loss rates after 5 years of therapy in patients with baseline qHBsAg $\geqq$ 16000, 5000-16000, and <5000 IU/mL were 50%, 100%, and 77.8%, respectively (*P*=0.005). **Conclusion:** Baseline HBV DNA and qHBsAg decline at 3 months of therapy are predictors of VR at one year in HBeAg-positive patients. Baseline qHBsAg and ALT levels are predictors of HBeAg loss or seroconversion during ETV therapy in HBeAg-positive patients.