Entecavir and Telbivudine Have Distinct Efficacies on the Restoration of Serum IgG N-glycome in Patients with Liver Cirrhosis

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Background/Objective

We have previously reported that aberrant serum IgG N-glycome was highly associated with the disease severity of chronic hepatitis B and was restored after antiviral treatment. However, efficacies of different therapies on the reversal of aberrant serum IgG glycosylation pattern in liver cirrhosis have never been assessed.

Method

Thirty-nine entecavir-naive and 29 telbivudine-naive patients with HBV-related liver cirrhosis who had been treated for at least 48 weeks were enrolled. Serum IgG N-glycome and cytokine profiles in patients before and after treatment were analyzed using liquid chromatography-mass spectrometry and enzyme-linked immunosorbent assay, respectively.

Result

The level of serum galactose-deficient (total G0) IgG in patients decreased after 48 weeks of entecavir treatment ($P<0.001$) but increased after telbivudine treatment ($P<0.05$). Moreover, the increase of IgG-Fc sialylation was only detected in patients with entecavir treatment. In regard to serum cytokine profiles, 48 weeks of entecavir treatment resulted in stronger declines in serum interleukin (IL)-8 ($P<0.05$) and transforming growth factor (TGF)-β1 ($P<0.05$) levels in patients than did telbivudine. From baseline to week 48, the change in TGF-β1 level (ΔTGF-β1) was correlated with the change in galactose-deficient (Δtotal G0, $r = 0.456$; $P<0.001$), fully galactosylated (Δtotal G2, $r = -0.324$; $P<0.01$), and sialylated (Δtotal S, $r = -0.316$; $P<0.01$) IgG levels. Baseline levels of IgG-G0F and IgG-G2FS glycoforms were significantly correlated with the change in total serum IgG level after 48 weeks of treatment.

Conclusion

Forty-eight weeks of entecavir but not telbivudine treatment reversed aberrant serum IgG N-glycosylation in patients with HBV-related liver cirrhosis. TGF-β1 might determine the efficacies of different antiviral therapies on the restoration of serum IgG N-glycome.