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LETTER TO THE EDITOR

Review on article of effects of tenofovir alafenamide and entecavir in chronic hepatitis B virus patients

Yu-Tong Sun, Qian-Qian Chen

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Abstract

This letter comments on the article which reported that tenofovir alafenamide may increase blood lipid levels compared with entecavir in patients with chronic hepatitis B published on *World J Hepatol* 2023 August 27. We review the related research content, topic selection, methodology, conclusions, strengths and weaknesses of this article. And evaluate it in relation to other published relevant articles.

Key Words: Tenofovir alafenamide; Entecavir; Serum lipid levels; Hepatitis B virus

Core Tip: With the significant increase in the incidence of nonalcoholic fatty liver disease (NAFLD) in China, the number of patients with co-morbid chronic hepatitis B (CHB) and NAFLD has gradually increased. This letter comments on a published study which showned that CHB patients treated with tenofovir alafenamide (TAF) had higher levels of total cholesterol than CHB patients treated with entecavir; however, TAF-induced dyslipidemia did not increase the incidence of NAFLD. We comment on the article.

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TO THE EDITOR

The prevalence of nonalcoholic fatty liver disease (NAFLD) in China has increased significantly in recent decades, giving rise to co-morbid chronic hepatitis B (CHB) and NAFLD in some patients. Many patients with hepatitis B virus (HBV) infection require long-term antiviral drugs such as tenofovir alafenamide (TAF) and entecavir (ETV), which are recommended as first-line agents in the guideline of HBV treatment. It has been shown that TAF has a lipid-enhancing effect in patients with human immunodeficiency virus (HIV) infection. However, A comparison of the effects of TAF and ETV on lipid patients with HBV has not yet been investigated.

The aim of this letter is to discuss the effects of TAF on blood lipid levels and the risk of developing NAFLD in CHB patients, and to compare changes in lipid levels before and after antiviral therapy with TAF or ETV.

We have read with interest the article published on *World J Hepatol* by Lai *et al*[1]. In this study, 336 patients with CHB treated with ETV or TAF were enrolled. The baseline data of patients with CHB and the clinical characteristics, lipids, and metabolic factors before and approximately 1 year after TAF or ETV treatment were statistically analyzed using SPSS 23.0. In addition, the effects of ETV and TAF on high-density lipoprotein, low-density lipoprotein, triglycerides, and total cholesterol (TCHO) were evaluated using a propensity score-matched model.

Post-treatment TCHO levels were significantly higher in the TAF group than in the ETV group. In the propensity score-matched model, TCHO levels were significantly higher than baseline levels in patients in the TAF treatment group, whereas there was no difference in the ETV group. Using logistic regression analysis, body mass index (BMI), gender and other levels were significantly related to TCHO levels. But 1 year of TAF treatment did not increase the incidence of NAFLD. Therefore, in this study TCHO was higher in patients treated with TAF than in patients with CHB who received ETV, but there was no increase in the incidence of NAFLD due to TAF-induced dyslipidemia.

This is a comprehensive study. TAF has been used as a first-line treatment for HIV and CHB infected patients, and can increase blood lipid levels in HIV patients[2]. In addition to comparing the baseline data and clinical features of patients treated with TAF and ETV, this study compared changes in lipid profiles and determined whether NAFLD increased before and after TAF or ETV therapy. The impact and extent of TAF achieving elevated lipid levels compared with ETV, and the correlation between BMI, gender, hypertension, baseline TCHO, CK-MB levels and elevated TCHO levels were assessed.

The research topic is new. In the context of the increasing prevalence of NAFLD and the 84 million people with HBV infection in China, in addition to existing studies showing that TAF can increase lipid levels in patients with HIV, patients treated with TAF had a greater reduction in their lipid profile than those treated with ETV[3,4]. Limited data are available in terms of the effect of TAF on metabolism-related complications in patients with CHB and the effect of ETV on lipids has not yet been reported in post-marketing studies. Therefore, it is important to investigate whether TAF raises lipid levels and increases the prevalence of NAFLD in patients with CHB compared with ETV.

The study is scientifically sound in methodology. Patients with insufficient years of drug use, interference due to other antiviral drugs or comorbidities associated with other liver-related diseases or heavy alcohol intake were excluded, and 336 CHB patients taking TAF or ETV in a single center were enrolled. They were divided into the group receiving TAF and the group receiving ETV. Pre-treatment lipid profiles and repeat lipid assessments were performed 1 year after the initiation of antiviral therapy. Baseline information and data related to clinical characteristics, metabolic levels, and lipids were collected from the enrolled patients before antiviral therapy and after 1 year of treatment. Statistical analysis was performed using SPSS 23.0. Normally distributed continuous variables were expressed as mean ± SD, Student's *t*-tests were performed to assess whether the differences in the treatment groups were statistically significant. Categorical variables were described using frequencies and proportions. This article utilized suitable statistical techniques to examine variables within the in-group and components. Differences in each lipid profile component between pre- and post-treatment were calculated, and the data was analyzed using propensity matching score and logistic regression analysis.

The findings of this study are innovative. It was found that CHB patients treated with TAF had higher elevations in TCHO than those treated with ETV and that metabolic factors were associated with elevated TCHO levels. There have studies found that metabolic factors can reduce the danger of hepatocellular carcinoma in patients with HBV[5]. With few studies on the subject, these findings provide guidance for future treatment of patients with CHB combined with NAFLD.

The study has the following shortcomings: The study period was short; whether TAF and ETV can increase the prevalence of NAFLD in patients with CHB was not effectively verified; this study was a single-center retrospective study, which is prone to retrospective bias and selection bias. Therefore, a large-sample multicenter prospective trial is necessary to verify these findings.

FOOTNOTES

Author contributions: Sun YT drafted the article; Chen QQ made critical revisions related to important intellectual content of the manuscript.

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