

Entecavir/interferon- α -2b/methylprednisolone**S****Hepatitis B viral reactivation and off label use: case report**

A 45-year-old man developed Hepatitis B viral (HBV) reactivation during off-label treatment with methylprednisolone and interferon- α -2b for COVID-19. Additionally, his entecavir treatment was also considered as risk factor for HBV reactivation [*not all dosages stated; route not stated*].

The man was admitted to hospital due to fever and fatigue after his way back from Wuhan. He had a significant history of HBV infection for over 20 years. He was initially treated with adefovir dipivoxil and entecavir; however, 5 years ago his adefovir dipivoxil therapy stopped. Subsequently, he was positive for nucleic acid test for COVID-19. The initial laboratory results were as follows: blood lymphocyte count $1.61 \times 10^9/L$, ALT 56 U/L and AST 30 U/L. After initial laboratory tests, his ALT was increased to 102 U/L and AST was slightly increased to 48 U/L. His HBV DNA was lower than the detection limit. Hepatitis B surface antigen was 1356 cut off index (COI; < 1.000), hepatitis B surface antibody 2 iu/L (2-10 iu/L), hepatitis B e-antigen 0.34 COI (< 1.000), hepatitis B e-antibody 0.563COI (> 1.000) and hepatitis B c-antibody 0.416 COI. On day 6 of admission, a chest computed tomography scan revealed progressive pneumonia. Eventually, he was diagnosed with COVID-19 and hepatitis B virus infection. Hence, he received off-label treatment with recombinant interferon- α -2b and lopinavir/ritonavir for COVID-19. Following this, he was treated with methylprednisolone 40mg once daily. His lymphocyte count continued decreased, CD4+ T cells further declined to 27.14% and liver enzymes ALT and AST revealed no significant changes. However, HBV DNA was increased to 1.11×10^2 IU/mL, although it was actually negative before the admission.

Hence, tenofovir fumarate was added to man's therapy for possible HBV reactivation. As a result, his liver enzymes ALT and AST decreased to 42 U/L and 17 U/L, respectively. Additionally, HBV DNA became lower than the detection limit and the nucleic acid test for COVID-19 also became negative twice then. Then, he was discharged. Both HBV DNA and liver enzymes were within normal range after discharge from hospital.