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CASE REPORT | LIVER

Liver Transplantation in Hepatitis B Reactivation in a Patient With Active HIV Viremia

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ABSTRACT

Acute hepatitis B virus infection is a common contraindication to liver transplantation surgery in the setting of active HIV viremia. This is a case report of a patient with decompensated cirrhosis and acute renal failure in the setting of hepatitis B virus reactivation and active HIV viremia who underwent liver transplantation with sustained graft survival.

INTRODUCTION

Liver transplantation (LT) in patients with HIV and hepatitis B virus (HBV) coinfection can be challenging. This is a successful case of LT in a patient with HIV-HBV coinfection presenting with acute HBV reactivation and liver failure.

Antiretroviral therapy (ART) such as tenofovir has been successful in preventing both HIV and HBV replication.[1] Despite ART, patients with HIV-HBV coinfection can have higher HBV reactivation after immunosuppression with increased risk of liver dysfunction.[2] Complications can arise in patients with HIV-HBV coinfection after LT, including viral coinfections and adverse reactions from immunosuppressant medications and ART.[2] Studies have also shown that HBV viremia in LT patients and one log-10 increase in HBV-DNA levels were associated with an elevated mortality risk; it has become a standard practice for post-LT management to include HBV immunoglobulin (HBIG) and nucleos(t)ide analogs (NUC) to prevent HBV recurrence.[2,3] Our case demonstrates that with proper antiretroviral treatment, patients with concomitantly active HIV and HBV viremia can have successful LTs with good clinical outcomes.

CASE REPORT

A 68-year-old White man with previously well-controlled HIV for 28 years and chronic HBV coinfection for 14 years presented to the emergency department with 1 month of fatigue, jaundice, and pruritus. He was compliant with ART until 3 months before when changes in his insurance led to inability to afford his medications. HIV and HBV viral loads (VLs) were undetectable at his past routine clinic visit, and he had no known cirrhosis. In the emergency room, blood pressure was 90/61 mm Hg; heart rate was 74 beats per minute; and examination revealed abdominal distension, icterus and, confusion with orientation to only place and time. Abdominal ultrasound showed early cirrhosis and large ascites. Laboratory test results showed a platelet count of 40×10^9/L, alanine aminotransferase 113 U/L, aspartate aminotransferase 149 U/L, Model for End-Stage Liver Disease-Na 46 (creatinine 7.1 mg/dL from baseline of 1.0, total bilirubin 27 mg/dL, international normalized ratio 4.17, sodium 130 mmol/L), blood urea nitrogen 115 mg/dL, ammonia 74 μmol/L, HIV VL 729 copies/mL, cluster of differentiation (CD4) 317 cells/μL, HBV VL 3.84 million IU/mL, and negative hepatitis C virus antibody.

The patient required intensive care and continuous renal replacement therapy given worsening oliguric renal failure because of suspected type 1 hepatorenal syndrome. His altered mental status was believed to be multifactorial from uremia and hepatic

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encephalopathy. There were no signs or symptoms of infection to suggest sepsis. Given his decompensated cirrhosis and acute-on-chronic liver failure, the patient was started on ART with emtricitabine 200 mg, dolutegravir 50 mg, and tenofovir 300 mg daily. He was listed for LT despite the presence of HIV and HBV viremia, after a multispecialty discussion outlined previously well-controlled disease with long-term compliance to ART, along with his 65% Model for End-Stage Liver Disease-Na estimated 3-month mortality without a transplant.

One week after admission, the patient underwent an orthotopic LT, with HBIG administered intraoperatively in the anhepatic phase, followed by daily dosing for 1 week. Native liver biopsy showed severely active hepatitis with bridging necrosis, fibrosis, and regenerative nodules. Prophylactic vancomycin, piperacillin-tazobactam, and fluconazole were given for 48 hours after LT. The patient's renal function recovered to baseline without long-term dialysis requirement. At 24 months after LT, the patient had excellent graft function with undetectable HIV and HBV VLs and was maintained on the same ART regimen previously listed.

DISCUSSION

HIV-positive patients have been included as potential LT recipients with the advent of ART if CD4 >100 cells/μL and if there is HIV ribonucleic acid suppression and the absence of an acquired immunodeficiency syndrome-defining illness.[4,5] HBV coinfection occurs in 5%–20% of HIV-positive patients, increasing the risk of end-stage liver disease; however, tenofovir-based therapy has shown maximum viral suppression.[6] Survival rates have improved in the past 25 years, up to 96% and 71% at 1 and 10 years after LT, respectively.[7] HIV-positive patients have a higher risk for the eventual need for LT compared with the general population, given their potential for opportunistic infections and hepatotoxicity from ART.[4,8] Previous studies found that in patients with cirrhosis, those with HIV and HBV or hepatitis C virus coinfection had lower referral rates to transplant centers compared with HIV-positive patients without viral hepatitis coinfection.[9]

Most transplant guidelines require HIV VL <50 copies/mL, with some transplant centers requiring 3 months of negative weekly VL tests before LT.[5] However, it is important to consider a patient's transplant candidacy in a multidisciplinary approach despite detectable VL given a high likelihood of mortality in acute liver failure related to HBV infection. Among a cohort of 114 patients at three-year post-LT follow-up, 1 patient had hepatic decompensation, 2 patients had hepatocellular carcinoma, and 1 patient had HBV-related death.[6] Similarly, another case documented successful LT in a patient with HBV reactivation after chemotherapy initiation.[10] Other studies reported encouraging results after LT for coinfected patients for survival, prevention of HBV replication, and avoidance of HBV recurrence with combination prophylaxis with HBIG and ART.[2,11,12]

Achieving undetectable HBV-DNA at the time of LT in cirrhotic patients with known HBV is crucial for a favorable prognosis. Common practice for patients with HBV includes long-term parenteral HBIG and NUC starting at the time of LT, with lower risk patients receiving a shorter course of HBIG for 1 to 3 months, followed by NUC monotherapy.[13] Serological surveillance of immune markers, HBV-DNA, and liver function tests should be conducted every 6–12 months, in addition to liver fibrosis assessment and hepatocellular carcinoma screening.[2]

Our case demonstrates successful LT in a patient with acute HBV infection despite active HIV viremia and can contribute to the limited literature showing that maintaining graft and recipient survival can be easily achieved in coinfected patients. Considering the high efficacy of ART in both HIV and HBV treatments, active HIV viremia should, thus, be reconsidered to not be a contraindication to LT.

DISCLOSURES

Author contributions: All authors were involved in direct care and treatment of patient, data collection, or writing of the manuscript. M. Shoreibah is the article guarantor.

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