



Case Report

Liver Transplantation in a Patient with HIV and Hepatitis B Co-infection

Bakir Deniz,¹ Mustafa Ilkutli,¹ Tevfik Sumer,¹ Cem Yilmaz,¹ Ezgi Karakas,² Yasin Dalda³

¹Department of Plastic and Reconstructive Surgery, Inonu University Faculty of Medicine, Malatya, Türkiye

²Department of Infectious Diseases and Clinical Microbiology, Inonu University Faculty of Medicine, Malatya, Türkiye

³Department of General Surgery and Liver Transplantation Institute, Inonu University Faculty of Medicine, Malatya, Türkiye

Abstract

HIV-infected individuals may develop co-infection and liver failure due to hepatitis viruses sharing similar transmission routes. While HIV infection was considered a contraindication for liver transplantation in the past, liver transplantation can be performed in these patients today as a result of the progress made in antiretroviral therapies. In this article, we described the liver transplantation procedure we performed on a patient infected with HIV and Hepatitis B virus and on antiretroviral therapy. Post-transplant follow-up and treatment of these patients should be performed carefully and meticulously by a multidisciplinary team.

Keywords: HIV, Hepatitis B, Liver Transplantation

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Before the advent of combined highly active antiretroviral therapy (cART), a positive HIV serological status was considered an absolute contraindication for solid organ transplantation.^[1,2] However, the introduction of cART in 1996 significantly improved the life expectancy of HIV-positive individuals, subsequently increasing the prevalence of end-stage liver disease in this population.^[2] In HIV-infected individuals, liver failure has become a common cause of death, particularly due to coinfection with hepatitis viruses (e.g., hepatitis B and C), which share similar transmission routes with HIV.^[3] This has made liver transplantation (LT) an increasingly viable and necessary treatment option for HIV-positive patients. Today, LT in patients with HIV and hepatitis B coinfection can yield successful outcomes

when approached with careful patient selection and a multidisciplinary strategy. This case report aims to shed light on the transplant process of a patient coinfecting with HIV and hepatitis B, focusing on post-transplant management, challenges, and prognosis.

Case Report

Several precautions and preparatory steps were taken before and during the operation. A meticulous plan was implemented to minimize the risk of HIV transmission and to ensure safety throughout the procedure. The surgical team was thoroughly informed about HIV transmission routes and preventive measures, with special attention paid to avoiding contact with blood and body fluids. All surgeons

Address for correspondence: Yasin Dalda, MD. Department of General Surgery and Liver Transplantation Institute, Inonu University Faculty of Medicine, Malatya, Türkiye

E-mail: yasindalda@gmail.com

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and healthcare staff used double-layer sterile gloves, fluid-resistant gowns, protective eyewear (face shields or goggles), and masks. Special caution was taken while handling sharp instruments such as scalpels and needles, with disposable tools being preferred. The surgical field and all instruments were appropriately sterilized before and after the procedure. To reduce the risk of blood contamination, “hands-free” techniques were employed (e.g., avoiding direct hand-to-hand instrument exchange between the surgeon and assistant/nurse).

The case presented involves a 50-year-old male patient, 164 cm in height and weighing 104 kg, referred from another center due to the need for LT. The patient had no history or current signs of encephalopathy, ascites, or esophageal variceal bleeding. Abnormal laboratory findings included: hemoglobin: 9.7 g/dL; platelets: 212,000; INR: 1.6; creatinine: 1.4 mg/dL; albumin: 2.1 g/dL; total bilirubin: 5.9 mg/dL; alkaline phosphatase: 253 U/L; sodium: 131 mEq/L. MELD-Na score was 26. Tumor markers were within normal limits. ELISA results showed HBsAg: 1107 S/Co, Anti-HBc Total was positive, Anti-HBs was negative, Anti-HIV 263.5 S/Co, and HIV RNA was negative. The patient reported that he had been receiving regular antiretroviral therapy for HIV for 8 years.

After taking all necessary protective measures to prevent HIV transmission, a right lobe graft from an unrelated donor (approved by an independent ethics committee) was transplanted. The native liver appeared atrophic and nodular. The postoperative course of the patient was uneventful. Immunosuppressive treatment was based on tacrolimus and corticosteroids.

During the operation, a needle-stick injury occurred involving the second surgeon and a nurse. For these individuals, post-exposure prophylaxis was initiated immediately after low-to-moderate risk contact, with a one-month course of oral Emtricitabine (FTC) 200 mg + Tenofovir disoproxil fumarate 300 mg + Dolutegravir 50 mg. Anti-HIV tests repeated at the 6th week and 3rd month for both individuals were negative.

Discussion

Significant advances in liver transplantation (LT) for HIV-positive individuals have transformed what was once deemed a contraindication into a viable and increasingly successful therapeutic option. Recent studies demonstrate that LT outcomes in patients coinfecting with HIV and hepatitis B virus (HBV) are comparable to those in HBV-monoinfected recipients, provided that perioperative and long-term management strategies are executed with precision.

^[2] In contrast, outcomes for those with HCV coinfection

remain lower, although recent advances in HCV treatment offer promising improvements.^[4,5]

A major challenge in such cases lies in the management of immunosuppressive therapy. Immunosuppressive therapy, essential to prevent organ rejection, increases the risk of opportunistic infections in HIV-positive patients due to immune suppression.^[3] HIV-infected recipients are inherently immunocompromised, and the added burden of post-transplant immunosuppression requires a delicate balance between preventing graft rejection and minimizing the risk of opportunistic infections and HIV progression. Another critical issue is the potential interactions between immunosuppressive therapy and antiretroviral treatment. Immunosuppressive drugs may interact with antiretroviral medications, which can alter the response to treatment, increase drug toxicity, or reduce therapeutic effectiveness.^[5] Calcineurin inhibitors—particularly tacrolimus—are commonly employed and generally well tolerated. However, when used concomitantly with antiretroviral therapy (ART), close monitoring becomes imperative. Notably, drug-drug interactions between immunosuppressants (e.g., tacrolimus, cyclosporine) and ART agents—especially protease inhibitors and certain integrase inhibitors—are mediated by cytochrome P450 enzymes, primarily CYP3A4. If unmanaged, these interactions can result in either toxic drug levels or subtherapeutic immunosuppression.

In our case, a post-transplant regimen of tacrolimus and corticosteroids was administered, alongside a stable ART combination of tenofovir, emtricitabine, and dolutegravir. This approach effectively mitigated interaction risks while maintaining immunological stability and viral suppression. Critically, the patient’s HIV RNA remained undetectable—a prerequisite for transplantation according to current guidelines, which also recommend a CD4+ count above 100–200 cells/mm³ for eligibility.^[6,7]

In the context of HBV coinfection, lifelong antiviral prophylaxis is essential to prevent viral reactivation. Although our patient had elevated HBsAg and undetectable HBV DNA at the time of transplant, a tenofovir-based regimen was continued. The use of hepatitis B immune globulin (HBIG) remains optional in patients receiving potent antiviral therapy but may be considered in high-risk scenarios. Routine post-transplant HBV DNA monitoring is recommended, particularly in recipients receiving immunosuppressive agents known to promote HBV replication.

An additional concern is occupational exposure during surgery. Despite strict adherence to safety protocols, accidental needle-stick injuries occurred in our case. Immediate initiation of post-exposure prophylaxis (PEP) and structured follow-up prevented seroconversion, underscoring

the importance of institutional preparedness and continuous training for healthcare personnel involved in transplant procedures involving HIV-positive patients.

Ultimately, the successful management of such complex cases hinges on a multidisciplinary approach. Effective collaboration among hepatologists, infectious disease specialists, transplant surgeons, clinical pharmacists, and nursing staff is vital to navigate therapeutic complexities, minimize complications, and ensure favorable long-term outcomes.

Conclusion

In conclusion, liver transplantation is a viable and effective option for patients coinfecting with HIV and hepatitis B, provided that HIV is well-controlled and a multidisciplinary approach is adopted. Careful coordination between transplant and infectious disease teams, along with vigilant post-transplant monitoring, is essential for success.

Key take-home points:

- LT is feasible in HIV-HBV coinfecting patients with undetectable HIV viral load and adequate CD4+ count.
- Drug interactions between ART and immunosuppressants require close monitoring.
- Lifelong HBV prophylaxis and adherence to ART are critical.
- Multidisciplinary care improves long-term outcomes and reduces complications.

Disclosures

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report.

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