
Case report

Kidney Transplantation in a HIV Infected Patient: A Case Report

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Abstract

After introducing the highly active antiretroviral therapy (HAART) into treatment, the life expectancy in patients infected by the human immunodeficiency virus (HIV) has increased dramatically. Although the new therapy significantly improved survival and reduced the AIDS-related mortality, complications such as kidney, liver, and cardiac disease have largely replaced opportunistic infections as the leading causes of death. There is a broad spectrum of disorders leading to the end-stage renal disease (ESRD) in this specific population of patients-from hypertension and diabetes to different forms of glomerular diseases. One of the most common causes of ESRD is the HIV-associated nephropathy (HIVAN). When managing ESRD we may choose between the three possible therapeutic modalities: hemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation. Kidney transplantation has until recently been considered as absolutely contraindicated in HIV positive patients. However, with introduction of HAART, it has become a great alternative as renal replacement therapy in carefully selected candidates with controlled HIV infection. We report the case of the first HIV-infected renal transplant recipient from our Center, being also the first patient in Croatia.

Key words: HIV infection; HIV-associated nephropathy; chronic kidney disease; kidney transplantation

Introduction

After introducing the highly active antiretroviral therapy (HAART) into treatment, the life expectancy in patients infected by the human immunodeficiency virus (HIV) has dramatically increased [1]. Even though new therapy significantly improved survival and reduced the AIDS-related mortality, these patients are now dealing with consequences associated with chronic diseases [1,2]. Complications such as kidney, liver, and cardiac diseases have largely replaced opportunistic infections as the leading causes of mortality in the setting of HIV [3].

Acute kidney injury (AKI) and chronic kidney disease (CKD) are both more common in patients with HIV than in the general population [4-8]. The prevalence and incidence of HIV-related end-stage renal disease (ESRD) are increasing as the prevalence of HIV infection continues to rise [9]. There is a broad spectrum of disorders leading to ESRD in this specific population of patients-from hypertension and diabetes to all kinds of glomerular diseases. One of the most common causes of ESRD is HIV-associated nephropathy (HIVAN) [8]. HIVAN is a collapsing form of focal sclerosing glomerulosclerosis (FSGS) with associated tubular microcysts and interstitial inflammation. It presents with significant proteinuria and can rapidly progress towards the ESRD [10,11]. For this reason all HIV-infected persons should be annually screened for signs of proteinuria and reduced kidney function [8,12].

Hemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation may all be considered as therapeutic options when managing ESRD. Studies have shown that the outcomes are similar in HIV-positive ESRD patients whether they have been treated with HD or PD [12,13]. HAART introduction has also increased life expectancy in HIV-positive patients undergoing dialysis [13]. From this point, kidney transplantation, once absolutely contraindicated, has become a great alternative as renal replacement therapy in carefully selected candidates [1]. We report the case of the first HIV-infected renal transplant recipient from our Center.

Case report

We present a case of a 60-year-old HIV-infected male who was diagnosed with HIV infection in 1990. Arterio-venous fistula was constructed and he started hemodialysis (HD) treatment in 2004 after developing ESRD resulting from the HIV-associated nephropathy (HIVAN). In 2005 the HAART was introduced into treatment. He has regularly followed-up in the Zagreb University Hospital for Infectious Diseases and the laboratory evaluations have shown less than 50 copies of plasma viral RNA over the last 7 years (undetectable HIV).

Due to multiple vein thrombosis and no adequate vascular access he underwent a right-sided hernioplastic operation followed by the Tenckhoff catheter insertion in August 2012. He immediately started the peritoneal dialysis (PD) exchanges. Because of his good physical state and satisfactory regulated HIV viremia kidney transplantation was considered as the treatment of choice. Extensive evaluation was performed to exclude possible contraindications for immunosuppressive therapy. His HAART therapy included raltegravir, abacavir sulfate and lamivudine.

The patient underwent kidney transplantation from a deceased donor on the 3rd of December 2012. He received kidney with 3 mismatches. Initial immunosuppressive therapy included prednisolon, tacrolimus and mycophenolate mofetil with basiliximab induction. Early post-transplant period was complicated with profuse bleeding, which demanded triple retroperitoneal hematoma evacuation (on 5th, 11th and 27th of December). However, no single site of bleeding was found. His coagulogram was within the normal range. Furthermore, 11 days after transplantation his state was additionally complicated with the development of non-ST Segment Elevation Myocardial Infarction (NSTEMI) and *Pseudomonas pneumonia* which was successfully treated with piperacillin/tazobactam according to the antibiogram. Because of the delayed graft function, during the first 30 days after transplantation hemodialysis was performed *via* the right femoral catheter, but after that he was switched to peritoneal dialysis. Percutaneous graft biopsy was performed 24 days after transplantation. Pathohistological evaluation revealed signs of borderline acute cellular rejection. He received three boluses of 6-metilprednisolone (500 mg each). He established good diuresis, and after 44 days was no longer dependant on dialysis. He also experienced a delayed wound healing which prolonged his hospitalization.

Two months after the transplantation he was discharged from the hospital in good condition with creatinine 350 $\mu\text{mol/L}$. His last serum creatinine in the follow-up was 275 $\mu\text{mol/L}$.

During the entire period he was under supervision of infectologists, urologists and nephrologists.

Discussion

In spite of HAART being highly efficient in reducing the risk of HIVAN, the incidence of ESRD in the United States and Europe steadily increases among the HIV-positive patients [14]. Kidney transplantation is a method of choice in treatment of patients with ESRD. As mentioned previously, it may also be considered as one of the treatment options in carefully selected patients with satisfactory immune function and undetectable viral load [1,14].

In the late 90s great improvements could be seen through introducing the new modalities of antiretroviral therapy, opportunistic infection prophylaxis and anti-rejection treatment [1,15]. After introducing the new antiretroviral therapy mortality rates of HIV-infected and HIV-seronegative patients in dialysis program became equal. Moreover, the survival rate for HIV-infected patients increased from 56% to 74% in the period of only a decade [1]. All

this led to reconsidering whether kidney transplantation could play an equally important role as dialysis in patients suffering from severe form of CKD but with well-controlled HIV infection [16].

In 2010 Stock and colleagues undertook a prospective study of 150 transplanted HIV-infected patients who had CD4⁺ T-cell counts of at least 200/mm³ and undetectable plasma HIV type 1 RNA levels while being treated with a stable antiretroviral regimen. Post-transplantation management was provided in accordance with study protocols. The results showed that successful kidney transplantation could be a highly achievable goal in HIV-infected graft recipients. Patient survival rates at 1 year and 3 years were 94.6 \pm 2.0% and 88.2 \pm 3.8%. Mean graft survival rates were 90.4% and 73.7%. These rates were very similar to those of older kidney transplant recipients (\geq 65 years) and those reported for all kidney transplant recipients. The rejection rates in the HIV-infected recipients were unexpectedly higher when compared with recipients who did not have HIV infection. Almost half of these episodes were glucocorticoid-resistant. Furthermore, no evidence of accelerated HIV disease progression was found and immunosuppressive therapy did not lead to an increase in viral load [14].

However, our case demonstrates that the post-transplant course of HIV-positive patients may be very complicated. It is hard to say whether our patient had some clotting abnormality causing profound bleeding after transplantation, while his coagulogram was normal. He had no signs of opportunistic infections, but suffered from multiple complications which may occur in all other patients (myocardial infarction, delayed wound healing, delayed graft function, pneumonia, and acute rejection). Yet, lack of vascular access and peritoneal dialysis in the setting of anuria and necessity for hernia operation, demanded kidney transplantation in order to try to prolong his life.

Conclusions

In conclusion, kidney transplantation may be considered as one of treatment options in carefully selected patients with satisfactory controlled HIV infection. Further efforts are needed in order to prevent serious complications such as severe rejection episodes and numerous interactions between HAART and immunosuppressive agents.

Conflict of interest statement. None declared.

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