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Transient Loss of HIV-1 DNA in an HIV-1 Positive Patient After Kidney Transplantation: A Case Report

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To the Editor:

Solid organ transplantation is increasingly used in human immunodeficiency virus (HIV) patients and is accumulating favorable outcomes from kidney and liver transplants in HIV-1 positive patients.^{1,2}

Antithymocyte globulin (ATG) is used for prevention and treatment of acute rejection following renal transplantation.³ It promotes T-cell depletion as well as modulation of cell surface antigens.⁴ It is possible that this agent may indirectly target and reduce the latent HIV-1 reservoir⁵ and reactivate the latent reservoir.⁶

Here, we report a case of an HIV-1 positive patient who demonstrated a transient clearance of the proviral DNA after receiving ATG as induction immunosuppression post kidney transplant.

CASE REPORT

A 53-year-old man with end-stage renal disease was referred to our institution for kidney transplant evaluation. He was diagnosed with HIV-1 infection 12 years prior with a CD4 T-cell count above 450 cells/mcl and undetectable HIV-1 viral load for more than 6 years on zidovudine, abacavir, and efavirenz therapy.

The patient underwent deceased donor kidney transplantation. Induction immunosuppression with ATG was used given concern for increased allograft rejection risk due to underlying HIV infection. He also received corticosteroids, mycophenolate, and tacrolimus through the peri- and posttransplant period. Antiretroviral therapy was continued,

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and the regimen was intensified with raltegravir, which has been shown to reduce HIV-1 reservoir size in some^{7,8} but not all trials.^{9,10}

HIV-1 proviral DNA was measured serially in whole blood pre- and posttransplant using the Amplacor HIV-1 DNA Test, version 1.5 (Roche Molecular Systems Inc., Branchburg, NJ). In addition, the CD4 T-cell count and plasma HIV-1 RNA viral load were obtained (Figure 1).

HIV-1 proviral DNA, which was positive pretransplant, yet became negative on day 10 posttransplant. However, it returned to be positive on day 16 posttransplant. The patient remained virologically suppressed for 2 years posttransplant, on continued antiretroviral therapy, with excellent allograft function at the last follow-up.

DISCUSSION

Here, we report transient loss of proviral HIV-1 DNA after induction therapy with ATG for kidney transplantation. The mechanism underlying the transient reduction in HIV-1 reservoir size might be due to either immune activation or direct destruction of the latently infected cells by the ATG. However, the rapid reversal to detectable proviral DNA argues that these effects are transient at best.

It would be of great importance to quantitatively analyze the degree of reduction of the latent HIV-1 reservoir in the setting of kidney transplantation and induction therapy with ATG using other techniques to estimate the reservoir size and to further characterize this phenomenon.

In conclusion, our clinical finding is encouraging and could potentially translate activity of the cytoreductive agents on destruction of latently infected CD4 T cells. It is of remarkable importance to further understand the extent of reservoir reduction, which can be achieved with these agents, and their potential role on depletion of latently infected HIV-1 infected cells.

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Figure 1.

Transient loss of HIV DNA after ATG therapy for kidney transplantation. CD4 T-cell count (blue, left axis) and CD4 T-cell percentage of all T cells (orange, right axis) were quantified, and qualitative HIV DNA measured in the peri-transplant period.

ATG = antithymocyte globulin; HIV = human immunodeficiency virus.