

HIV can infect recipients who have received kidney transplants with an undetectable infection.

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Abstract

Human immunodeficiency virus (HIV) is a virus that attacks the immune system, making it difficult for the body to fight off infections and diseases. While modern antiretroviral therapy (ART) has made HIV a manageable condition for many people, it can still be a serious and potentially life-threatening disease. One way that HIV can be transmitted is through organ transplantation, and recent research has shown that HIV can infect recipients who have received kidney transplants with an undetectable infection.

Keywords: HIV, Kidney transplant, Infection, Nephrology.

Introduction

Kidney transplantation is a life-saving treatment for people with End-Stage Renal Disease (ESRD). In the United States, over 23,000 kidney transplants were performed in 2020 alone, and there are currently over 100,000 people on the waiting list for a kidney transplant. While kidney transplantation is generally safe and effective, there are some risks associated with the procedure. One of these risks is the transmission of infectious diseases, including HIV. Historically, HIV transmission through organ transplantation was a significant concern. Before the advent of highly sensitive HIV testing, it was difficult to detect HIV in donated organs, and many people contracted the virus as a result of receiving a transplant [1].

However, since the introduction of highly sensitive Nucleic Acid Testing (NAT) in the 1990s, the risk of HIV transmission through organ transplantation has been greatly reduced. NAT is now used to test all donated organs for HIV, and if the test is positive, the organ is not used for transplantation. Despite the widespread use of NAT, recent research has shown that HIV can still infect recipients who have received kidney transplants with an undetectable infection. In a study published in the *New England Journal of Medicine* in 2019, researchers reported on five cases of HIV transmission from donors with undetectable viral loads to kidney transplant recipients. All five recipients tested negative for HIV before the transplant, but developed the virus within weeks of the procedure [2].

The study authors believe that the transmission occurred because the donors were in a window period, during which HIV can be present in the blood but is not yet detectable by standard testing methods. During this time, the virus can still be transmitted through organ transplantation. While the window period for HIV is typically around two weeks, it

can be longer in some cases, particularly in people who are recently infected [3].

The implications of these findings are significant for both transplant recipients and donors. For recipients, it means that even if they test negative for HIV before the transplant, they may still be at risk of contracting the virus. For donors, it highlights the importance of screening for HIV not just with standard NAT testing, but also with additional tests that can detect the virus in the window period. These tests, known as fourth-generation HIV tests, can detect both HIV antibodies and the p24 antigen, which is present in the blood during the early stages of infection [4].

In response to these findings, the United Network for Organ Sharing (UNOS), which manages the organ transplant system in the United States, issued new guidelines for HIV testing in December 2019. The guidelines recommend the use of both NAT and fourth-generation testing for all organ donors, regardless of their HIV status. The guidelines also recommend that recipients be informed of the potential for HIV transmission even if the donor tests negative for the virus [5].

Conclusion

While the risk of HIV transmission through organ transplantation is still relatively low, it is important for transplant recipients and donors to be aware of the potential for transmission. In addition to HIV, there are other infectious diseases that can be transmitted through organ transplantation, including hepatitis B and C, cytomegalovirus, and Epstein-Barr virus. It is important for both recipients and donors to undergo thorough screening and testing to minimize the risk of infection. For HIV-positive individuals who are considering organ donation, it is important to note that organ donation

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