Mother With HIV Saves Her HIV-Negative Child's Life With Liver Transplant

After this first deliberate transplant from someone with HIV to a person without the virus, does the child organ recipient now have HIV?

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A South African mother living with HIV has donated a portion of her liver to save the life of her HIV-negative child, People magazine reports. This, the world's first-ever deliberate transplant of a liver from an HIV-positive donor to an HIV-negative recipient, has raised a pressing and complex question that remains unanswered: Does the child, who has fully recovered from end-stage liver disease, now have the virus as well?

Publishing their case report in the journal AIDS, a team of South African scientists, including those in surgery, ethics and HIV, describe the case of a 7-month-old child with end-stage liver disease. The child was HIV negative, born to parents who were both living with the virus.

The child was on the waiting list for a deceased donor for 180 days; the average wait is just 45 days. Without a transplant, the child was certain to die.

The mother asked repeatedly to donate a portion of her liver to save her child's life. In their extensive search for a suitable liver donor, clinicians evaluated two other close family members but found they were not good donor candidates for the child. The mother was the sole potential donor.

The mother met various HIV-health-related criteria for being a suitable donor. She was on antiretroviral (ARV) treatment for the virus and had maintained a fully suppressed viral load for at least six months. She also had a CD4 count greater than 200, no active tuberculosis (TB) and no HIV-associated cancers or opportunistic infections.

After a hospital ethics committee approved the liver transplantation from mother to child, both of the child's parents provided informed consent for the operations.

The child received the transplant at 13 months old. Before receiving the portion of her mother's liver, the child was treated prophylactically with ARVs and kept on such medications indefinitely.

More than a year following the surgery, both mother and child have recovered and are doing well.

A test conducted on a sample taken 43 days after the transplant indicated the child had developed HIV antibodies. However, evidence of such antibodies have declined over time; at the 379-day mark post-transplantation, such evidence had dropped nearly below the threshold of detectability.

Researchers have not been able to detect any active HIV infection in the child's blood stream, even with ultrasensitive tests; this raises the possibility that the child did not contract the virus. Until the scientists handling the case can gain a more comprehensive picture of the child's HIV status, the child will remain on ARVs.

In their scientific paper on the case, the researchers issued four theories to explain the results seen in tests conducted in the effort to determine whether the child contracted HIV: 1) the child has developed a very small viral reservoir outside the liver; 2) any detectable HIV reservoir is limited to the liver and the virus has not infected cells outside the organ; 3) the development of antibodies in the child, a process known as seroconversion, was prompted by the mother's liver immune cells; 4) the child's B immune cells have produced HIV antibodies in response to HIV antigens (viral proteins that spur an immune response) in liver cells presenting such antigens.

To read a press release about the study, click here.

To read the study abstract, click here.

To read the People magazine article, click here.
