

A MIRACLE CURE FOR HIV

Relevant for: Science & Technology | Topic: Biotechnology, Genetics & Health related developments

A woman from the U.S has reportedly been cured of the HIV infection, making her the third person ever to be cured. | Photo Credit: Getty Images/iStockphoto

The story so far: There is considerable excitement in the world of medicine after scientists reported that a woman living with HIV (Human Immunodeficiency Virus) and administered an experimental treatment is likely 'cured'. Only three people so far are known to have been cured of HIV.

This week at a Conference on Retroviruses and Opportunistic Infections, Colorado, United States. researchers described the case of a 60-year-old African American woman who was diagnosed with an HIV infection in 2013 was started on the standard HIV treatment regimen of anti-retroviral treatment (ART) therapy consisting of tenofovir, emtricitabine and raltegravir. She was also later diagnosed with leukemia in 2017

In that year she received cord blood, or embryonic stem cells, from a donor with a rare mutation that naturally blocks the HIV virus from infecting cells. She was also given blood stem cells, or adult stem cells, from a relative. The adult stem cells boosted the patient's immunity and possibly helped the cord blood cells fully integrate with the lady's immune system.

A little over three years after the transplant, the lady discontinued the ART and today more than 14 months down, her doctors report that she has no sign of HIV in her blood and also has no detectable antibodies to the virus.

Embryonic stem cells are potentially able to grow into any kind of cell and hence their appeal as therapy, though there is no explanation for why this mode of treatment appeared to be more effective.

Only two people have reportedly been cured of HIV so far and both have relied on bone marrow transplants from donors who carried the mutation, called CCR5 delta 32, that naturally makes one immune to an HIV infection and AIDS.

Timothy Ray Brown, or the 'Berlin patient' staved off the virus for 12 years but died of cancer in 2020. Another patient, Adam Castillejo, was the second reported case of a cure. Both men received bone marrow transplants from donors who carried a mutation that blocks HIV infection. However, the previous transplants involved adult stem cells and these cells from the bone marrow replaced their immune system. The body's natural tendency is to reject foreign stem cells and so both donors suffered side effects such as graft versus host disease where the donor's cells attack the recipient's body. Both men developed severe illnesses throughout their HIV remission but in contrast the woman was discharged from hospital within 17 days of the transplant and did not develop graft versus host disease. Her doctors theorise that it was a combination of the embryonic and adult stem cells that led to a better health outcome. However, because it's only been five-odd years of being HIV-free, it remains to be seen if the lady will live longer than Brown or Castillejo.

Not at all. While this approach is certainly a welcome addition to the arsenal of treatments, stem cell therapy is a cumbersome exercise and barely accessible to most HIV patients in the world. Moreover, this requires stem cells from that rare group of individuals with the beneficial mutation. Anti-retroviral therapy, through the years, has now ensured that HIV/AIDS isn't always

a death sentence and many with access to proper treatment have lifespans comparable to those without HIV.

A vaccine for HIV or a drug that eliminates the virus is still elusive and would be the long sought 'cure' for HIV/AIDS.

As per the India HIV Estimation 2019 report, the estimated adult (15 to 49 years) HIV prevalence trend has been declining in India since the epidemic's peak in the year 2000 and has been stabilising in recent years. In 2019, HIV prevalence among adult males (15–49 years) was estimated at 0.24% and among adult females at 0.20% of the population.

There were 23.48 lakh Indians living with HIV in 2019. Maharashtra had the maximum at 3.96 lakh followed by Andhra Pradesh (3.14 lakh) and Karnataka.

India's National Aids Control Organisation says that ART is "freely available" to all those who require and there are deputed centres across the country where they can be availed from.

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