Medical Xpress

Study: First sustained remission of HIV infection following a bone marrow transplant in absence of protective mutation

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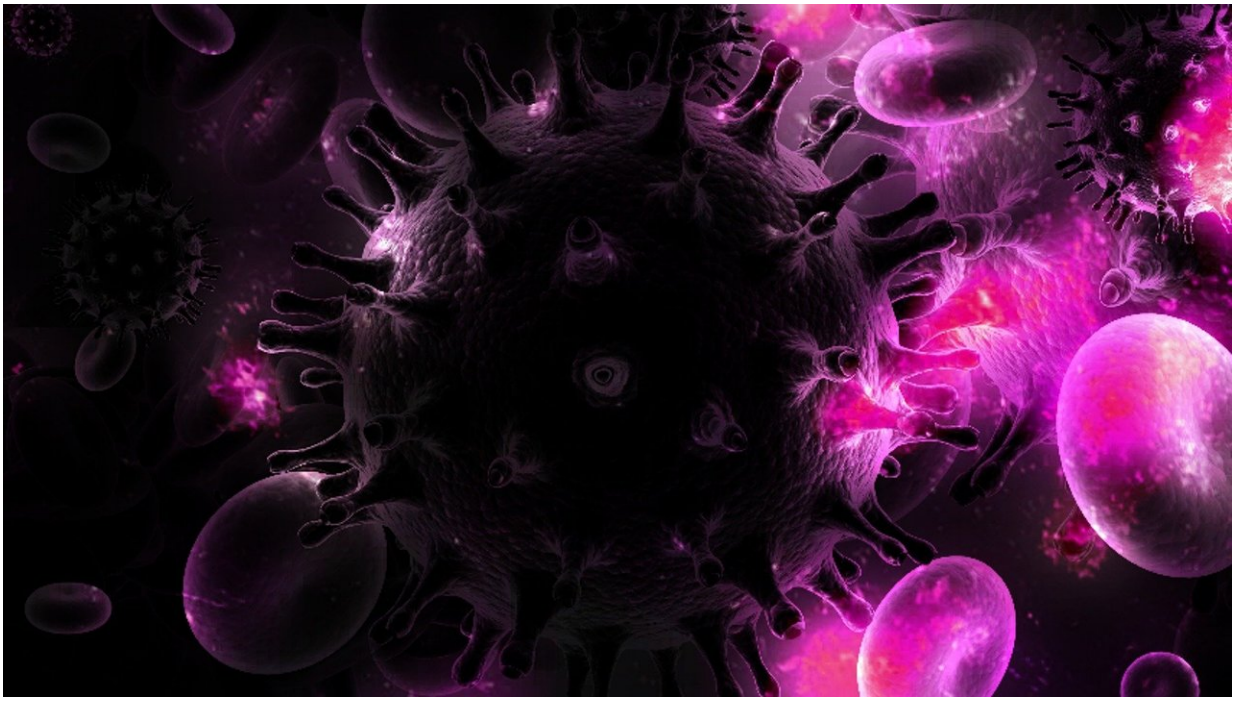

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A total of seven individuals worldwide (two patients in Berlin and patients in London, Düsseldorf, New York, City of Hope and Geneva) are considered likely to have been cured or to be in long-term remission of HIV infection after receiving a bone marrow transplant to treat blood

cancer.

Romuald, the Geneva patient, who is being monitored at Geneva University Hospitals (HUG), is the only one to have experienced HIV remission following a bone marrow transplant without the CCR5-delta 32 mutation. This rare genetic mutation is known to make CD4 cells naturally resistant to HIV.

Unlike in previous cases, where the presence of the CCR5-delta 32 mutation seems to have played a decisive role in the HIV outcome, the study published shows that the Geneva patient's cells remain susceptible to HIV infection. Despite this, the virus remains undetectable in the patient nearly three years after antiretroviral treatment was stopped.

By closely monitoring the patient over an extended period, the scientists were able to demonstrate a progressive reduction in the viral reservoir following the transplant. Virus-carrying cells capable of multiplying, which could be easily detected before the transplant, were no longer detectable in the most recent analyses.

A paper, published in the journal *Nature Medicine*, presents these results together with the hypotheses that the UNIGE, HUG and Institut Pasteur teams are working on to try to explain why this patient has entered remission.

The presence of innate immune cells with strong anti-HIV potential could prevent a rebound in the virus even if there may still be some infected cells in the body. The immunomodulatory treatment that the patient is receiving to control graft-versus-host reactions, which he has repeatedly experienced since the transplant, could also help prevent viral reactivation.

Finally, these graft-versus-host reactions may have led to the viral

reservoir being eliminated so effectively that the CCR5-delta 32 mutation is no longer necessary as no virus capable of multiplying remains in the body. These hypotheses open up promising avenues for research aimed at achieving remission for HIV infection.

More information: Asier Sáez-Cirión et al, Sustained HIV remission after allogeneic hematopoietic stem cell transplantation with wild-type CCR5 donor cells, *Nature Medicine* (2024). DOI: 10.1038/s41591-024-03277-z

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