HIV Vaccine Prompts Five People to Largely Control Virus Without Antiretrovirals

Combined with the drug romidepsin, the HIV Conserv vaccine has allowed them to stop HIV meds without a major viral rebound.

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When combined with the drug romidepsin, the HIV Conserv vaccine has allowed 38 percent of HIV-positive participants in a small trial to go off antiretrovirals (ARVs) and avoid a major viral rebound, aidsmap reports.

This is the first human study of a therapeutic vaccine to yield such success in prompting lasting immune control of the virus—for a maximum of 28 weeks of post–ARV treatment interruption thus far.

The United Kingdom's The Independent erroneously reported that the five participants in the study whose immune systems ultimately gained control of HIV while they were off treatment were "free of the virus." These individuals still have virus in their bodies and are not cured. The British press has quite a track record of making exaggerated reports about progress in HIV cure science.

Researchers in the ongoing BCN02 vaccine trial recruited 15 people who started HIV treatment within 5.5 months (an average of three months) of their estimated time of infection. Initially, participants were given a single dose of the Conserv vaccine, which is composed of various HIV antigens. The corresponding antigens on the virus itself are unlikely to change as the virus mutates and remains a viable virus. These viral proteins were selected in hopes they would prompt an immune response—specifically from CD8 cells—that is more potent and does not waste resources by attacking portions of the virus subject to evasive mutations.

Findings from that single-dose trial, called BCN01, were presented at the 2016 Conference on Retroviruses and Opportunistic Infections (CROI) in Boston.

The investigators then began a second trial, BCN02, with the same 15 participants, in which they gave them two doses of the vaccine nine weeks apart as well as doses of romidepsin at weeks three, four and five. Romidepsin is used in HIV research to reverse the latent, or non-replicating, state of certain HIV-infected cells in an attempt to ultimately drain the viral reservoir, the

existence of which prevents standard ARV treatment from curing the virus.

Using these two interventions together was intended to prompt bursts of viral replication among participants still taking ARVs so that the vaccine-prompted immune response could essentially program itself according to the virus to which it is exposed.

The researchers assessed the level of HIV DNA in participants' cells at week zero, during weeks three to five and at week nine. They also tested the proportion of CD4 cells that were sensitive to HIV at weeks zero, one, three, nine, 10 and 13. Participants, who had been taking ARVs for more than three years but less than four years, were taken off them at week 17 of the study and put back on them if they experienced a significant viral rebound.

Interim findings from this second study were presented at the 2017 CROI in Seattle.

The participants experienced mild flu-like side effects as a result of the vaccine, most commonly headache, fatigue and muscle aches. In all but one participant, their viral loads blipped while they were receiving romidepsin, mostly to between 50 and 400 and to 1,000 in a few of them. For the first few days after each infusion, CD4 cell levels rose by about 200.

The size of the reservoir according to the amount of HIV DNA in cells remained unchanged.

HIV-specific CD8 cell responses rose and became more specialized, that is, more geared to the viral regions to which the vaccine sought to prompt a response.

Thirteen of the 15 participants have stopped their ARVs thus far. Eight of them saw their viral loads rapidly rebound within four weeks, to an average level of about 100,000; these individuals went back on ARVs.

For five other participants, representing 38 percent of the overall group, their viral load has not shot up dramatically. They have remained off ARVs for a respective six, 12, 19, 20 and 28 weeks. While none of them has maintained an undetectable viral load for their entire time off ARVs, they have experienced blips that for the most part involve viral loads rising to around 200, although one person experienced ones as high as 2,000 before resolving and returning to undetectable levels.

The researchers found associations between having a smaller level of viral DNA as well as a more specific CD8 cell response and control of the virus after stopping ARVs.

To read the aidsmap article, click here.

To read the conference abstract, click here.

To view a webcast of the conference presentation, click here.

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