A Cure for HIV/AIDS?

A German doctor claims that he has cured an American patient living in Germany, who is diagnosed with both Leukemia and HIV/AIDS - now this patient has no detectable HIV presence. Is this claim true?

PRACTICAL SCIENCE WITH PHIL FREDA

Some may have heard in the last two weeks or so, that an American man in Berlin, Germany was cured of HIV/AIDS. In some respects, this is a valid conclusion, but many more tests are required to be absolutely sure. Regardless, this is indeed a milestone in the fight against HIV/AIDS.

According to the director of the National Institutes of Allergy and Infectious Diseases, Dr. Anthony Fauci, in a recent FOX news article, the concept is interesting but extremely impractical.
Timothy Ray Brown, an HIV positive American man living in Germany, was also diagnosed with Leukemia.

According to an article on WebMD, Brown was receiving chemotherapy treatments in addition to an HIV drug regimen, but a third type of procedure may have lead to him being cured.

How Viruses and HIV work

Viruses, as they are described in the realm of Biology, are non-living (by our definition) agents that may only "reproduce" in a living host cell.

The virus is taken in by the host cells, because of interacting surface proteins on the virus that are like keys that fit on other surface proteins on the host cell, which are the doors. After taken into the host cell, the exterior coat of the virus is degraded and the viral DNA affects the host cell, instructing it to make copy after copy of new viruses.

This is how viruses are spread in organisms.

The good news is we have an immune system that is made up of various types of white blood cells that seek out and destroy viruses.

The bad news is, the HIV/AIDS virus attacks our immune system and infects our white blood cells.

The virus actually targets the cells responsible for keeping us healthy. According to WebMD, the HIV virus can lie dormant in white blood cells until the cell is activated. This is why treatments do not cure HIV. Substantial amounts of the virus can stay "under the radar."

How the patient was cured

Ironically, it may have been patient Brown's leukemia that led to him beating HIV/AIDS.

According to the WebMD article, in addition to Brown receiving his normal amount of chemotherapy (which killed most of the blood cells: both good and bad), he also received infusions of stem cells from a matched donor's blood and/or bone marrow.

These stem cells are like clean slates. They haven't yet been given jobs or roles. These stem cells may ultimately become blood cells and help rebuild the immune system.

Brown's physician, the German doctor Gero Hütter, tried a novel approach. Since Brown had both HIV and Leukemia, he decided to try and treat both illnesses at one time.

Hütter gave Brown stem cells from a donor that had duplicate copies of a rare gene which made the blood cells almost impenetrable to the HIV virus. All of the new blood cells going into Brown's system were extremely difficult for the AIDS virus to infect.

After many repeated chemotherapy treatments and stem cell infusions, the percentage of attackable blood cells kept decreasing.

Eventually, there were so many new, partial impenetrable white blood cells, that the HIV virus population fell. With very few viable options of cells to infect, the viral populations dwindled and dwindled, ultimately to a point where the virus was not detectable by analysis. The virus currently appears to be gone and no traces have yet been found.

What's the catch?
The problem is the gene is extremely rare in the population, with only 2-percent of Americans and Western Europeans, and 4-percent of Scandinavians carrying the gene (WebMD).

These numbers reflect the percentages that carry the gene, but an individual must have two copies of it in order for it to work. The chances of finding a match are very slim.

In addition, the rigorous treatments involved with cancer, especially chemotherapy, are not at all recommended to a person with a comprised immune system like an individual with HIV or an undiagnosed person for that matter.

What does this mean for HIV/AIDS patients worldwide?
Even though this treatment is extremely unlikely to be available and chemotherapy is required in addition to blood infusions, it has some very promising implications.

According to WebMD, if some form of mild chemotherapy were worked out and implemented, it may be possible to make semi-resistant cells take up a foothold.

Additionally, research is now centered on genetically modifying cells to make them more resistant to HIV. These two technologies coupled together may indeed make this procedure a reality.

This research is still in its infancy, but breakthroughs like this keep the wheels of discovery moving.

One day we may be able to look at diseases like HIV/AIDS as a thing of the past, think about it.

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