An Aggressive Form of HIV Appears to Have Surfaced in Cuba

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Researchers believe they have found an aggressive strain of HIV among Cubans that progresses to AIDS in just three years, instead of the typical 10. Publishing their findings in EBioMedicine, the scientists studied the blood of 73 Cubans recently infected with HIV, including 52 who had received an AIDS diagnosis and 21 who had not, and compared it with the blood of 22 HIV-positive individuals who had progressed to AIDS after a longer, more standard period of time.

Between 2008 and 2011, 1,200 to 1,800 Cubans were diagnosed with HIV each year, of whom 13 to 16 percent received an AIDS diagnosis at the same time. The AIDS diagnosis rate range was a rise from the previous decade.

The researchers believe that a recombinant form of HIV that is a hybrid of subtypes D, A and G, and which has a protease that is particularly fit, is driving this rapid HIV progression. A recombinant virus is an amalgam of other viruses that may arise from an individual becoming infected with two different strains that combine into a new form inside the cells of that person's immune system. A protease is an enzyme that breaks apart proteins used in new virus particles.

Typically, when someone is newly infected with HIV, the virus latches on to the CCR5 coreceptor on the surface of the CD4 immune cell to begin infecting that cell. Later on in the course of untreated infection, the virus will begin to use the CXCR4 coreceptor on the CD4 cell surface—a switch that coincides with a more rapid progression of disease. The recombinant virus identified in the Cuban research appeared to use CDXR4 much earlier than a typical strain of HIV. Additionally, there was a high concentration of a molecule that is part of the immune defense system called RANTES, which binds to CCR5. Its presence suggests that most of the CCR5 coreceptors were no longer available for the virus to latch onto. The individuals also had high viral loads.

To read the study, click here.

To read the press release, click here.