

AIDS-Like Disease Found In Monkeys

By Jessica Berman
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An international group of scientists has found evidence that wild chimpanzees infected with Simian Immunodeficiency Virus - once considered harmless to the apes - can develop a deadly AIDS-like syndrome. Researchers say the discovery could lead to new treatments for HIV, the virus that causes AIDS in humans.

It has long been thought that SIV - the monkey virus that was the original source of the human immunodeficiency virus - was a mild disease, and that chimpanzees and other non-human primates infected with SIV could live for decades without developing AIDS symptoms.

But researchers studying a large group of wild chimpanzees in Gombe National Park in Tanzania report SIV-infected chimps experienced immune system failure and were much more likely than uninfected apes to die prematurely.

The research was led by Beatrice Hahn, a professor of medicine and microbiology at the University of Alabama in Birmingham, and a specialist in the evolution and genetics of immune deficiency viruses in primates.

Hahn says it significant that chimps can develop AIDS just like people infected with HIV-1, one of two viral strains that jumped the species barrier to humans.

"Chimpanzees are 98 percent genetically identical to humans," said Beatrice Hahn. "And their viruses are very closely related to HIV-1 because it was, in fact, the source. So, this similarity was attractive in terms of figuring out what the differences are. But the assumption was that chimps do not get sick, people do get sick. Well, that is no longer true. Chimps do get sick as well."

Researchers observed 94 SIV-infected and uninfected chimps at the start of the study a decade ago. Eighteen of the chimps developed AIDS, and seven died of the disease.

Overall, the researchers found chimpanzees infected with SIV were 10 to 16 times more likely to die prematurely compared to uninfected chimps. They also gave birth to lower-weight offspring and had a higher infant mortality rate.

At the same time, a comparison group of SIV-infected sooty mangabeys, an important monkey in AIDS research, showed no ill-effects from the virus.

The research was carried out by an international consortium of scientists, including veterinarian Karen Terio with the University of Illinois, who conducted the pathology work on the chimps who died.

Terio says many of the simian tissue samples she studied showed a dramatic

loss of critical immune system cells, and looked very much like samples from a human patient who had died of AIDS. Terio says that surprised her.

"We have seen animals that have been naturally infected [with SIV] and just not just seen much of an effect," said Karen Terio. "And all of a sudden I looked at the tissues from this one chimpanzee and it was completely different."

The discovery that some chimpanzees can develop AIDS may help researchers understand why HIV in humans is a much more aggressive disease, according to Beatrice Hahn.

Hahn says the finding could eventually lead to a vaccine or treatments for human HIV:

"The expectation is that by looking at the same thing from two different angles you are going to find out more," she said. "So, if you only study humans, you only get the data you can get. If you have chimpanzees as a comparator [for comparison], perhaps you find out twists of how the virus works and how the immune system interacts with it from the chimpanzees that you did not know existed just by looking at the humans."

Hahn says she and her colleagues will continue to study chimpanzees and other non-human primates infected with SIV for signs of AIDS.

Their research on the Gombe chimps was published in the July 23 edition of the journal *Nature*.
