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Innate lymphoid cells get destroyed in patients infected with HIV

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A research project headed by Henrik Kloverpris, a postdoc at the Department of Immunology and Microbiology at the University of Copenhagen, shows that the so-called ILCs (innate lymphoid cells) - a component of the immune system crucial to maintaining immune system balance - are destroyed in patients infected with HIV. This study highlights the importance of early treatment during an acute HIV infection. If treatment is initiated during the later chronic infection stage - as in current standard procedure - the ILCs are eradicated. The findings were published in the scientific journal *Immunity*, and the research was carried out at Kwa Zulu-Natal Research Institute for TB & HIV (K-RITH) in Durban, South Africa, where Henrik Kloverpris is working currently.

"We can see that the ILCs are eradicated from the HIV patients' blood during acute HIV infection in the first weeks following infection - and since we know that the ILCs in general are important for maintaining balance of the immune system - it is probable that this can have an impact on the development of AIDS and immune deficiencies if the ILCs are destroyed. However, very early treatment a few days after infection protects patients against the loss of ILCs from the blood. Such treatment also protects other important components of the immune system which are similarly retained," explains Henrik Kloverpris. The HIV disease process has not yet been fully mapped. ILC, therefore, may prove to be a key component here, although at present the consequences of ILC loss from the blood for HIV infection are not yet known. Henrik Kloverpris hopes that the new research will pave the way for a better understanding of the disease.

"We hope to take the first step towards a better understand of the progression of the disease so that we can identify new methods to manipulate the immune system and thus prevent the disease from developing. This is important for HIV patients during antiviral treatment, as the immune systems of these patients show increased activity, which is an important factor in the development of AIDS. Looking further ahead, we are hoping to be able to find or develop drugs that can affect the ILCs," says Henrik Kloverpris.

The research was conducted in Alasdair Leslie's laboratory at Kwa Zulu-Natal Research Institute for TB & HIV (K-RITH) in Durban, South Africa, where in some areas the percentage of young women infected with HIV is higher than 40. With such a background population, the researchers were able to study acute HIV infection by testing HIV-negative young women twice a week, and in this way, 'catch' women who turned out to be HIV-positive a few days after their last negative test.

Facts: HIV

HIV stands for human immunodeficiency virus, which can lead to AIDS if left untreated. Unlike some other viruses, the body does not completely rid itself of HIV. HIV attacks the body's immune system. If left untreated, HIV reduces the number of CD4 cells (T cells) in the body, making it more prone to infection. Over time, HIV can destroy so many of these cells that the body can no longer fight off infection and disease.

HIV infection is considered a pandemic by the World Health Organization (WHO). It is estimated that between 40 and 50 million people are infected worldwide, with more than 60 per cent of these occurring in sub-Saharan Africa. HIV-infected people account for 0.6 per cent of the global population. In 2005 alone, between 2.4 and 3.3 million people died from AIDS, of which more than 570,000 fatalities were children. For the most seriously affected countries in Africa, the epidemic has resulted in both economic and social ruin, and is a major cause of increased poverty.

Facts: Treatment

Currently, there is no effective cure for HIV, but with the right treatment and medical care, HIV can be controlled. The medicine used for treating HIV is called antiviral treatment or ART. If taken daily as prescribed, this medicine can extend the life of many people with HIV, keeping them healthy, and, to a large extent, reduce the risk of transferring viruses to others.

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