Medical Xpress

Researchers uncover new piece of the HIV puzzle

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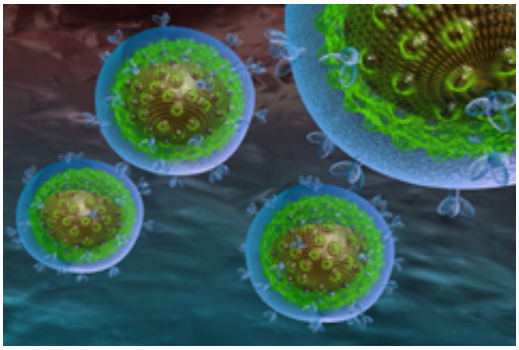

New research has revealed that a key immune system component—innate lymphoid cells (ILC)—is destroyed during acute HIV infection. This may play a key role in understanding the progression of the disease from HIV to AIDS. HIV affects more than 35 million people worldwide.

A research project headed by Henrik Kloeverpris, 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 Kloeverpris 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 Kloeverpris. 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 Kloeverpris 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 Kloeverpris.

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.

More information: Henrik N. Kløverpris et al. Innate Lymphoid Cells Are Depleted Irreversibly during Acute HIV-1 Infection in the Absence of Viral Suppression, *Immunity* (2016). DOI: 10.1016/j.immuni.2016.01.006

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