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Treg cells protect babies from getting HIV infection

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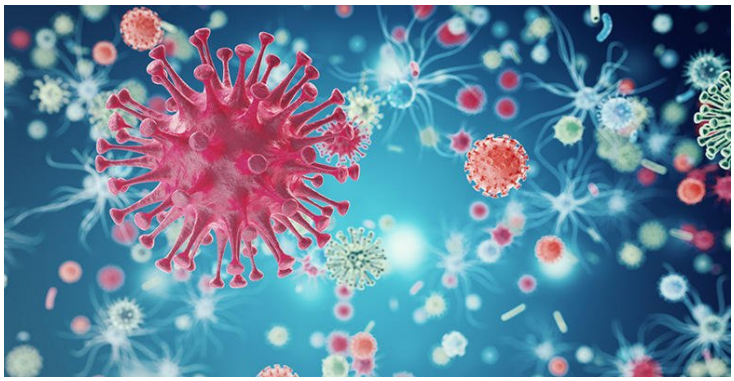

Researchers have found that Treg cells, a type of regulatory lymphocyte, might be protecting babies in the womb from getting infected with the HIV virus when the mother is infected.

"Finding out what protects the majority of babies is important, as it can lead to ways to boost natural immune responses and make individuals resistant to HIV infection," said researcher Peter Kessler from the Emory University School of Medicine.

Scientists had been puzzled for years by the fact that only a minority of babies born to mothers with HIV infection get the infection from their mothers.

Currently, HIV infection can be successfully managed with antiretroviral drugs, but these drugs have to be given for life. Preventing the infection is very important, but there is no vaccine available yet.

Researchers found that levels of Treg lymphocytes were higher in the blood of newborn babies born to mothers with HIV infection who had escaped the infection themselves, compared with babies who were born with HIV infection.

Lymphocytes are cells of the immune system that protect the body by fighting bacteria and viruses. Treg cells, or regulatory T cells, are an important "self-check" in the immune system to prevent excessive immune reactions that could lead to tissue damage.

The researchers examined the blood of 64 babies who were born HIV-uninfected and 28 babies born HIV-infected and found that Treg cell levels were higher in uninfected babies at the time of birth.

In contrast, other lymphocyte types were activated and higher in HIV-infected infants. The HIV virus can only infect cells that are activated, so Treg may protect from HIV infection by suppressing activation of other lymphocytes.

They analyzed the stored blood by flow cytometry, a technique that can differentiate between the different types of cells based on what markers they express on their surface.

Regulatory T cells come in many forms with the most well-understood being those that express the markers CD4, CD25, and FOXP3.

"Even though the number of babies studied is relatively small, these findings indicate that Treg, by controlling immune activation, may lower the vulnerability of the babies to HIV or other chronic infections even before they are born," said Kessler.

These results could pave the way for the development of vaccines or other immune-based therapies that could be used together with medications to prevent the spread of HIV or other infections from mothers to their babies.