Fat Tissue May Be Another Part of HIV Reservoir

September 25, 2015

In addition to possibly being a component of the HIV reservoir, fat tissue may also be a source of harmful chronic inflammation among those living with the virus. Publishing their findings in PLOS Pathogens, researchers studied adipose (fat) tissue in both macaque monkeys infected with SIV, HIV's simian cousin, as well as HIV-positive humans who underwent elective abdominal surgery.

The viral reservoir frustrates cure attempts because it is out of reach of standard antiretroviral (ARV) treatment. A major component of the reservoir is cells infected with the virus that are not replicating; ARVs only work if a cell is active. The brain is also considered a part of the reservoir, since most HIV treatment does not cross the blood-brain barrier.

Even when ARVs are keeping HIV under control, low-level viral replication is believed to lead to a chronic inflammatory state, which may contribute to various harmful outcomes, including disorders associated with aging.

The researchers found that SIV infection is associated with changes in the composition of fat tissues in monkeys. Those primates infected with the virus had higher densities of fat storage cells as well as a mix of cells called stromal vascular fraction (SVF) that includes a high proportion of immune cells. These immune cells—CD4s, CD8s and macrophages—are more activated and show greater indicators of inflammation in the SIV-positive monkeys when compared with those of SIV-negative monkeys.

Additionally, the researchers found detectable virus in the SVF as well as in the macrophages and CD4s within the fat tissue.

The investigators found similar results in humans with ARV-controlled HIV. The virus was detectable in their SVF samples, and there was also evidence of infected and virus-producing cells within the fat tissue—specifically among the adipose CD4 cells.

"[M]odulating adipose tissue may constitute a valuable means of limiting both viral persistence and chronic inflammation in [ARV]-receiving HIV-infected patients," the scientists concluded.

To read a press release about the study, click here.