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Individuals with HIV at higher risk for heart disease

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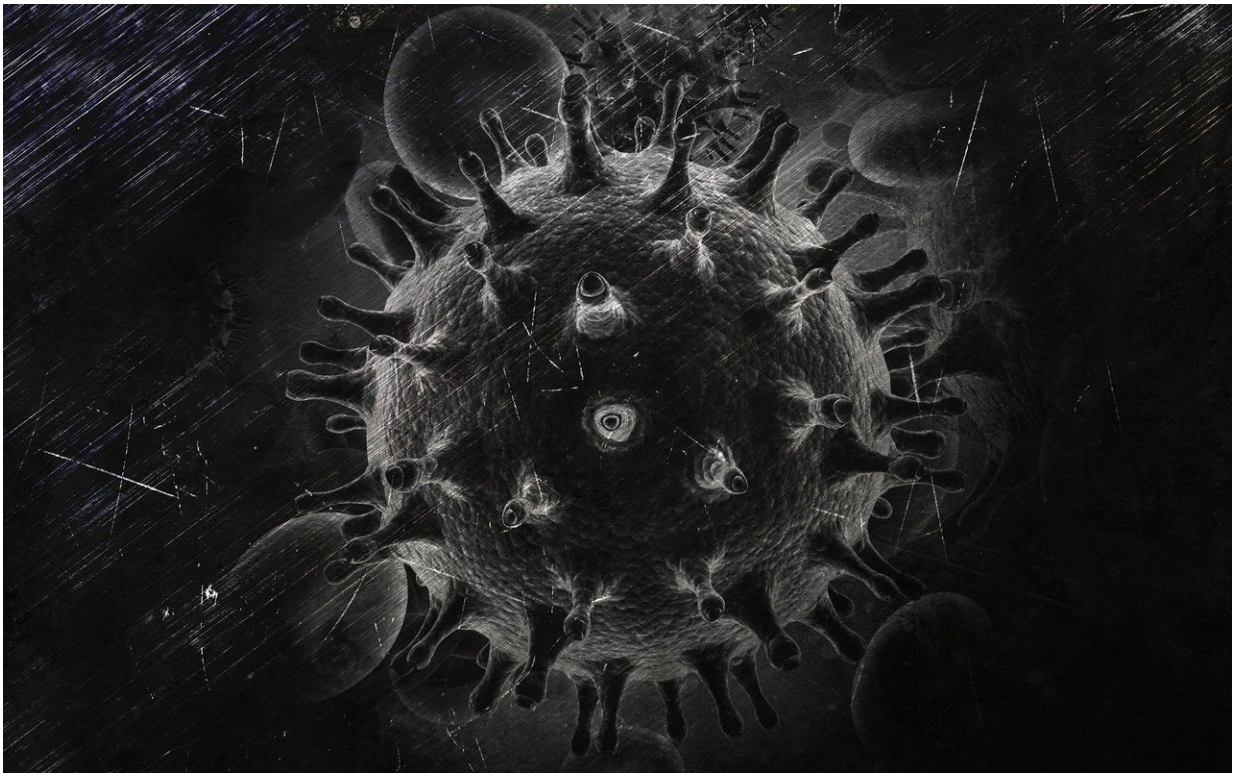

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A review of more than 80 studies reveals that changes in the immune cells of people with human immunodeficiency virus (HIV) infection may increase their risk of cardiovascular disease (CVD). The review is published in the journal Physiology.

Combination antiretroviral therapy (cART) consists of a "cocktail" of several drugs that work together to reduce the amount of detectable virus (viral load) in the bloodstream. Since the development of this combination treatment approach more than 20 years ago, antiretroviral therapy has helped millions of people with HIV escape a once-certain death sentence. However, even with very low viral loads, approximately 20 percent of HIV-positive patients die of heart disease, and studies have shown that treatment with cART is associated with a higher risk of heart attack. Paradoxically, the medications in cART that help people with HIV live longer also have many harmful effects on the cardiovascular system. These drugs have been found to increase oxidative stress (a type of cell damage), impair the body's ability to digest fat and damage blood vessels. But HIV-positive patients who do not take cART are also at risk for CVD, because HIV itself can lead to heart problems.

A team of researchers from Stellenbosch University in South Africa report that persistent immune activation may contribute to the increased risk of CVD seen in patients with HIV. Immune activation is a normal and essential function that occurs when the body responds to infection. However, the constant presence of HIV in the body, even at very low levels, causes the immune system to remain activated continuously, leading to long-term inflammation and depletion of T cells that help the body fight infection. These factors, together with damage to the lining of the blood vessels, can lead to permanent changes in the immune cells.

Increased immune activation and oxidative stress "contribute to the pathogenesis of complications such as CVD, renal disease and cancer," the research team wrote. "Persistent immune activation is a driver of CVD in HIV-infected individuals (treated and untreated)." Future study about the metabolic changes in the immune system and the effect immune function may help reduce the risk of heart disease in people with HIV, added the researchers.

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"HIV and cardiovascular disease: role of immunometabolic perturbations" is published in *Physiology*.

More information: Eman Teer et al. HIV and Cardiovascular Disease: Role of Immunometabolic Perturbations, *Physiology* (2017). DOI: 10.1152/physiol.00028.2017

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