Researchers identify possible risk factors for aneurysm growth in adults living with HIV

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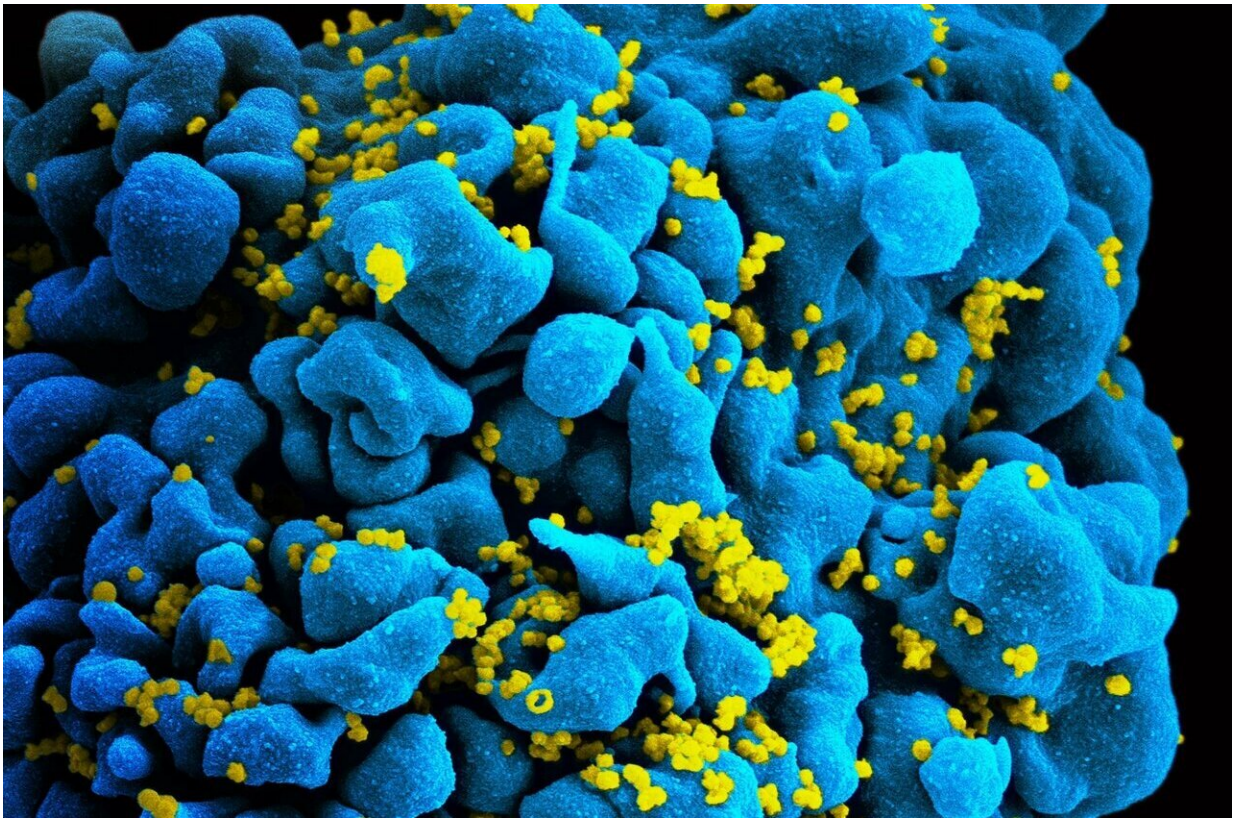

Scanning electromicrograph of an HIV-infected T cell. Credit: NIAID

With advances in antiretroviral therapy (ART), outcomes for adults living with human immunodeficiency virus (ALWH) have largely improved, drastically decreasing the risk of death from opportunistic

infections. However, as this population ages, accelerated vascular disease is of growing concern. In addition to traditional etiologies of cerebrovascular disease, ALWH may develop a cerebral blockage characterized by vessel narrowing and occlusion or aneurysm formation.

While cerebral aneurysms have been reported at increased frequency in a limited number of studies, the risk factors for aneurysm development and outcomes in ALWH are poorly understood.

Researchers from Boston University Chobanian & Avedisian School of Medicine have identified low CD4 (T cell) counts, high viral loads and inconsistent use of antiretrovirals as possible risk factors that contribute to aneurysm formation and growth.

"In adults living with HIV, a history of more severe illness with a larger impact on the immune system may be associated with a higher risk of growth of brain aneurysms," explained corresponding author Anna Cervantes-Arslanian, MD, associate professor of neurology, neurosurgery and medicine at the School.

In an effort to study the possible risk factors for and outcomes of cerebral aneurysms in the ALWH population, the researchers searched medical records between 2000 and 2021 for all patients with both HIV and brain aneurysms who received treatment at Boston Medical Center (BMC).

They then reviewed each chart for specific details including risk factors for aneurysm development and neurologic complications such as strokes and seizures. They also reviewed imaging results over time to check for growth of each aneurysm up until their most recent visit.

"Based on our longitudinal data, there may be a relationship between lower CD4 count, higher viral load, no/inconsistent ART use, and

aneurysm growth. However, it is still not a large enough study to make strong conclusions regarding this association," added Cervantes who also is a neurologist at BMC.

According to the researchers, brain aneurysms can present a high risk given the potential to rupture and cause bleeding in the brain, such as subarachnoid hemorrhage. "It is important to recognize that for adults living with HIV, and in particular those with more impaired immune systems, there may be a higher risk of aneurysm growth," said first author Emily White, MD, a neurology resident at BMC.

The researchers hope this study will raise awareness of the association between HIV and the growth of brain aneurysms. "Ideally these findings will decrease a provider's threshold for screening and encourage future research to investigate the mechanisms of aneurysm formation, and possible treatment targets, to limit the rare but potentially devastating complication of brain hemorrhage," said White.

These findings appear online in the journal *Neurology*.

More information: Emily I White et al, Characteristics and Evolution of Cerebral Aneurysms Among Adults Living With HIV: A Retrospective, Longitudinal Case Series, *Neurology* (2023). DOI: 10.1212/01.wnl.0000903496.30639.a5

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