Association of Viral Persistence and Atherosclerosis in Adults With Treated HIV Infection

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Abstract

Importance

Persons living with HIV (PLWH) have increased risk for cardiovascular disease, and inflammation is thought to contribute to this excess risk. Production of HIV during otherwise effective antiretroviral therapy (ART) has been associated with inflammation.

Objective

To determine whether higher levels of viral persistence are associated with atherosclerosis as assessed by changes in carotid artery intima-media thickness (IMT) over time.

Design, Setting, and Participants

In this cohort study, intima-media thickness, a validated marker of atherosclerosis, was assessed over time in a cohort of treated PLWH with viral suppression. Cell-associated HIV DNA and RNA and change in IMT, adjusted for demographics, cardiovascular risk factors, and HIV-related factors, were examined, as well as which factors were associated with viral persistence. One hundred fifty-two PLWH with undetectable viral loads for at least 6 months before study enrollment were recruited from HIV clinics affiliated with 2 hospitals in San Francisco, California, from January 1, 2003, to December 31, 2012. Data were analyzed from February 7, 2018, to May 12, 2020.

Exposures

Cell-associated HIV RNA and DNA were measured using enriched CD4+ T cells from cryopreserved peripheral blood mononuclear cells.

Conclusions and Relevance

These findings suggest that measurements of viral persistence in treated HIV disease are independently associated with incident carotid plaque development. The size and transcriptional activity of the HIV reservoir may be important contributors to HIV-associated atherosclerosis.