Poorly Treated HIV Is Linked to Higher Risk of Sudden Cardiac Death

Researchers have for the first time properly assessed HIV's association with this health outcome.

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People with HIV who maintain an unsuppressed viral load or a low CD4 count have a higher risk of sudden cardiac death (SCD).

Living with HIV, even when the virus is well treated with antiretrovirals (ARVs), is associated with perhaps double the overall risk of cardiovascular disease (CVD), according to numerous studies. More specifically, research has linked HIV to a higher risk of acute myocardial infarction (heart attack), ischemic stroke, reduced as well as preserved systolic ejection fraction heart failure and peripheral artery disease.

All this said, researchers have remained uncertain about whether HIV is associated with a higher risk of SCD, in part because previous studies of CVD risk among those with the virus have folded SCD data into overall CVD health outcomes.

Seeking clarity on the matter, investigators analyzed data on 144,362 participants of the Veterans Aging Cohort Study (VACS), which recruits veterans when they are diagnosed with HIV through the Veterans Affairs health care system and matches them with HIV-negative veterans according to age, year of diagnosis, sex and race.

Matthew Freiberg, MD, an internist and cardiovascular epidemiologist at Vanderbilt University in Nashville, presented findings from the study at the 2019 Conference on Retroviruses and Opportunistic Infections (CROI) in Seattle.

The study's follow-up period began in April 2003 and continued until a participant experienced an SCD event, died—whether of SCD or another cause—or through the last follow-up date of December 31, 2014.

A total of 43,413 (30 percent) of the study members had HIV and 100,949 (70 percent) did not. Among those with and without HIV, the cohort members had an average age of 49.2 years old and 50.2 years old, respectively. Ninety-seven percent of each group was male. The HIV-positive group was 48 percent African American, 39.8 percent white and 7.9 percent Latino. Among the HIV-negative group 47 percent were African American, 40 percent were white and 8.5 percent were

Latino.

The respective proportions of the HIV-positive and HIV-negative group with the following health conditions were as follows: high blood pressure, 56.9 percent versus 70.5 percent; diabetes, 11.4 percent versus 19.1 percent; LDL cholesterol at 160 or higher, 7.2 percent versus 10.8 percent; HDL cholesterol below 40, 50.3 percent versus 39.1 percent; triglycerides at 150 or higher, 45.2 percent versus 38.3 percent; current smoking, 55 percent versus 49.2 percent; hepatitis C virus (HCV) infection, 28.9 percent versus 13.6 percent; eGFR of 60 or above (indicating good kidney function), 91.6 percent and 92.8 percent; a body mass index (BMI) of 30 or higher, indicating obesity, 25.8 percent versus 29.5 percent; a history of alcohol abuse, 25.7 percent versus 26.4 percent; a history of cocaine abuse, 18.9 percent versus 14.5 percent; chronic obstructive pulmonary disease (COPD), 11.2 percent versus 12.2 percent; and a history of CVD, 13.6 percent versus 17.7 percent.

Upon their entry into the study, the HIV-positive cohort members had a median CD4 count of 385 and a median viral load of 999. A total of 60.5 percent were not yet on ARVs, 17.1 percent were taking a nucleoside/nucleotide reverse transcriptase inhibitor (NRTI) plus a protease inhibitor, 13 percent were taking an NRTI plus a non-nucleoside reverse transcriptase inhibitor and 9.4 percent were taking different types of ARV regimens.

A total of 3,338 members of the overall cohort experienced SCD.

Having HIV was associated with a 14 percent greater risk of SCD compared with being HIV negative. This excess risk of SCD increased to 70 percent for those who sustained an unsuppressed viral load and 57 percent for those who sustained a low CD4 count. Those who maintained a fully suppressed viral load or a high CD4 count did not have an increased risk of SCD compared with the HIV-negative individuals. Risk factors for SCD included being male, currently smoking, having HCV, obesity, alcohol abuse and dependence, anemia, CVD and COPD.

To reach these findings, the study authors adjusted the data to account for differences between the study members and found that compared with the members of the HIV-negative group, the HIV-positive individuals who had a baseline CD4 count below 200 had a 1.3-fold greater risk of SCD; the HIV-positive members who had a baseline viral load above 500 had a 1.17-fold increased risk of SCD.

Then the study authors conducted a so-called time-updated analysis of the CD4 and viral load statistics, which meant they took into account these two factors across the entire follow-up period. They found that compared with those who were HIV negative, those who sustained a CD4 count below 200 had a 1.57-fold higher risk of SCD and those who sustained a viral load above 500 had a 1.7-fold increased risk of SCD.

Among those living with HIV, each additional 10 years of age was associated with a 1.38-fold increased risk of SCD; being male was linked to a 2.04-fold increased risk; currently having CVD was linked to a 1.88-fold increased risk; having controlled high blood pressure was linked to a 1.45-fold increased risk; being a current smoker versus someone who never smoked was linked to

a 1.62-fold increased risk; having HCV was linked to a 1.4-fold increased risk; each increase of 5 points on the BMI scale was linked to a 1.1-fold increased risk; having anemia was linked to a 1.35-fold increased risk; abusing or being dependent upon alcohol was linked to a 1.43-fold increased risk; and having COPD was linked to a 1.24-fold increased risk of SCD.

Using the time-updated CD4 and viral load data, the study authors found that compared with sustaining a CD4 count of 500 or above, sustaining a CD4 count of 200 to 499 or above was associated with a 1.02-fold increased risk of SCD; sustaining a CD4 count below 200 compared with a CD4 count of at least 500 was associated with a 1.31-fold increased risk; and sustaining a viral load of 500 or higher, compared with a viral load below 500, was associated with a 1.74-fold increased risk of SCD.

The study is limited by the fact that it does not include autopsy data and the study sample is overwhelmingly male. Additionally, the authors were not privy to medical data if participants were referred to health care outside of the U.S. Department of Veterans Affairs.

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