Are People With HIV at Greater Risk for Heart Attacks?

In recent years, myocardial infarction risk rose for HIV-positive people while falling for HIV-negative individuals.

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People living with HIV had a 60% greater risk for myocardial infarction, or heart attack, compared with their HIV-negative peers, and the disparity has widened over time, according to research presented at the Conference on Retroviruses and Opportunistic Infections (CROI 2022).

These findings underscore the need for ongoing monitoring and interventions to manage cardiovascular disease in this population, said Michael Silverberg, MD, of the Kaiser Permanente Division of Research in Oakland.

Cardiovascular disease is the leading cause of death in the United States. Previous research has shown that people living with HIV have a higher risk for cardiovascular problems than HIV-negative people, likely attributable to higher rates of traditional risk factors, such as high blood pressure and smoking. Inflammation due to chronic HIV, immune system abnormalities and antiretroviral treatment may also play a role.

But heart disease risk may have shifted over time. Today, the HIV-positive population is aging, but those on effective treatment are less likely to have a low CD4 T-cell count and more likely to have an undetectable viral load. Antiretroviral treatment has changed as well. Protease inhibitors, associated with metabolic abnormalities, are less common while integrase inhibitors, associated with weight gain, are more widely used. Tenofovir alafenamide (TAF) is linked to elevated blood lipids, unlike the older tenofovir disoproxil fumarate (TDF). And abacavir may promote blood clotting. All of these could raise cardiovascular risk.

Silverberg and colleagues assessed changes over time in myocardial infarction rates among HIV-positive and HIV-negative members of two large health systems who had similar cardiovascular risk profiles. They compared two calendar eras: 2005 to 2009 and 2010 to 2017.

The analysis included 9,401 HIV-positive adult participants from Kaiser Permanente Northern California, which serves the San Francisco Bay Area, and Mass General Brigham (formerly Partners Healthcare), which serves Boston and the surrounding region. They were each matched to three or four HIV-negative individuals (for a total of 29,418) with similar demographics and Framingham

cardiovascular risk scores, a measure that incorporates blood pressure, cholesterol levels or body mass index, diabetes and smoking.

Nearly 90% of the study participants were men—reflecting the HIV populations in San Francisco and Boston—and the average age was approximately 44 years. About half were white, about 18% were Black and the rest were other racial/ethnic groups. Around a quarter currently smoked, a quarter were taking medications for high blood pressure and 6% had diabetes.

The characteristics of the HIV-positive group changed over time. During the earlier era, 76% were on antiretroviral treatment—about half on protease inhibitors and half on non-nucleoside reverse transcriptase inhibitors—61% had viral suppression (below 400 copies) and the mean CD4 count was 470. During the later era, 88% were on antiretrovirals, 77% had viral suppression and the mean CD4 count was 587. The proportion taking protease inhibitors fell to 27% while integrase inhibitor use rose to 40%.

Silverberg et al, CROI 2022, abstract 39Courtesy of Michael Silverberg

During 2005 to 2009, the cumulative incidence of myocardial infarction over five years was the same in the HIV-positive and HIV-negative groups, at 1.1% each. But in the later era, the rates diverged. The five-year myocardial infarction rate rose to 1.2% in the HIV-positive group while falling to 0.9% in the HIV-negative group, a statistically significant difference. After adjusting for demographics and risk factors, people with HIV had a 60% greater risk of myocardial infarction compared with the HIV-negative group during 2010 to 2017.

A similar pattern was seen when the researchers looked at 10 years worth of follow-up data and when they stratified the results by sex, though there were too few women to draw firm

conclusions.

The researchers noted that the difference in myocardial infarction risk in the later period appeared to largely be driven by a reduction in the risk for the HIV-negative group more than an increase in the risk for the HIV-positive group. They suggested that HIV-specific factors, such as living with HIV for a longer duration and use of newer antiretrovirals, might have prevented people with HIV from realizing the same improvement as their HIV-negative counterparts.

These findings, Silverberg said, point to the need for ongoing monitoring of trends in cardiovascular disease and more prevention interventions for people living with HIV.

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