HIV/Hep C Coinfection and Each Virus by Itself Increase Hip Fracture Risk

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People living with HIV and hepatitis C virus (HCV) coinfection are more likely to experience a hip fracture as a result of decreased bone mineral density, compared with people not infected with either virus or those living with either HIV or HCV, according to the results of a large study involving Medicaid recipients published online ahead of print by the journal Hepatology. The study also confirms that people living with either HIV or HCV are significantly more likely to experience a hip fracture than those negative for both viruses.

The connection between HIV and decreased bone mineral density is well established. HIV infection itself—likely due to the chronic immune activation and inflammation associated with the chronic disease—and at least some of its treatments are believed to contribute to the higher rates of osteopenia and osteoporosis in those living with the virus. Studies have also suggested that HIV-associated decreases in bone mineral density have resulted in higher-than-normal rates of hip, spine and wrist fractures, compared with age-matched individuals not living with the virus.

Decreases in bone mineral density have also been found in people living with HCV, compared with those not infected with the virus. Whether or not this translates into an increased risk of fractures, however, hasn't been confirmed. In addition, very little is known about the combined effects of HIV and HCV infection on fracture risk.

To shed some light on these outstanding questions, Vincent Lo Re, MD, of the University of Pennsylvania and his colleagues compared hip fracture rates among 37,000 HCV/HIV-coinfected, 277,000 HCV-monoinfected, 96,000 HIV-monoinfected and more than 3 million people uninfected with either virus. All patients included in the analysis were U.S. Medicaid recipients in California, Florida, New York, Ohio and Pennsylvania who received care between 1999 and 2005.

Patients uninfected with either virus were the least likely to experience a hip fracture, with an incidence rate of 1.29 fractures for every 1,000 person-years of follow-up. Among those with HIV monoinfection, the incidence rate was 1.95 fractures per 1,000 person-years. Among those with HCV monoinfection, the incidence was 2.69 per 1,000 person-years. The rate was highest for those with HCV/HIV coinfection: 3.06 fractures per 1,000 person-years of follow-up.

According to statistical analyses of the data conducted by Lo Re's team, people coinfected with both viruses were about 38 percent more likely to experience a hip fracture compared with those living with HCV alone, between 36 and 76 percent more likely to experience a hip fracture compared with those living with HIV alone (depending on gender) and more than twice as likely to experience a hip fracture compared with those not infected with either virus.

The researchers also noted that HCV monoinfection was associated with an increased risk of hip fracture compared with uninfected individuals, and the relative increase was highest in the youngest age groups. Women between 18 and 39 years old coinfected with both viruses were more than three and a half times more likely to experience a fracture; coinfected men between 18 and 39 years old were nearly two and a half times more likely to experience a hip fracture.

People with HCV monoinfection also appeared to be more likely to experience a hip fracture, compared with those living with HIV monoinfection. However, this finding is limited by the fact that HCV-monoinfected individuals, compared with HIV-monoinfected patients, tended to be older, female and white and were more likely to have health problems such as alcohol dependency, asthma, cardiovascular disease, diabetes and arthritis—all of which are associated with a higher risk of bone fractures.

Though the study was not designed to explore why people living with HCV or HIV/HCV coinfection are more likely to experience a hip fracture, Lo Re and his colleagues believe that inflammation—similar to that documented in people with HIV monoinfection—plays a significant role in bone metabolism abnormalities. But it is also possible that modifiable risk factors common among people living with HCV, such as alcoholism, illicit drug use and nutritional deficits, are contributing greatly to bone mineral loss and, with it, serious fracture risk.

"Among Medicaid enrollees," the authors conclude, "HCV/HIV coinfection was associated with increased rates of hip fracture compared to HCV-monoinfected, HIV-monoinfected, and HCV/HIV-uninfected persons. HCV-monoinfected patients had an increased risk of hip fracture compared to uninfected individuals."

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