Early vs. Delayed HIV Treatment Is Linked to Accelerated Bone Loss

Although more research on antiretroviral associated bone loss is needed, the overall health benefits of early treatment outweigh such a risk.

June 30, 2017

Those who start antiretroviral (ARV) treatment for HIV as soon after diagnosis as possible experience a greater decline in bone mineral density compared with those assigned in a study to delay going on ARVs until their immune system deteriorates somewhat.

Publishing their findings in the Journal of Bone and Mineral Research, scientists from the START Bone Mineral Density Substudy randomized 399 HIV-positive individuals with a CD4 count greater than 500 to start ARVs immediately or wait until their CD4s dropped below 350.

The randomized controlled START study, published to much fanfare in 2015, definitively established that there is a net health benefit to starting ARVs early in the course of infection rather than delaying. The large study's robust findings led to global recommendations that individuals begin HIV treatment as soon as possible after diagnosis.

In this newly published substudy, the researchers followed the participants, 195 of whom were in the immediate treatment arm and 204 of whom were in the deferred treatment arm, for an average of 2.2 years. They measured the participants' bone mineral density every 12 months at the lumbar spine and hip through dual-energy X-ray absorptiometry (DXA).

The participants were 32 years old on average and had an average CD4 count of 642. Eighty percent were nonwhite, 26 percent were women.

Those in the immediate treatment group used ARVs for 95 percent of the follow-up period while those in the deferred treatment arm used them for 18 percent of the follow-up period. The most common ARVs used in the participants' treatment regimens were the two components of Truvada (tenofovir disoproxil fumarate/emtricitabine).

During the study's follow-up, bone mineral density at the hip declined by 2.5 percent in the immediate treatment arm and 1 percent in the deferred treatment arm, for a difference of 1.5 percent. Bone mineral density at the spine declined 1.9 percent in the immediate treatment arm and 0.4 percent in the deferred treatment arm, for a difference of 1.6 percent (the figures were

rounded).

Overall declines in bone mineral density were greatest during participants' first year on ARVs. In the immediate treatment group, spine bone mineral density stabilized after the first year of follow-up, while hip bone mineral density declined progressively over two years of follow-up. After the first year of follow-up, overall changes in bone mineral density were similar between the two study arms.

The researchers could not identify any clinical or HIV-related factors associated with greater bone mineral density loss, nor could they pinpoint any factors to do with specific ARV regimens themselves linked to bone loss.

"Better understanding of the longer-term consequences of the observed reductions in [bone mineral density] is needed," the study authors concluded.

To read the study abstract, click here.

To read a press release about the study, click here.
