Both Viread and Reyataz Lead to Greater Bone Density Loss

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Truvada (tenofovir plus emtricitabine) was associated with greater bone loss than Epzicom (abacavir plus lamivudine), according to a study published in the June 15 issue of *The Journal of Infectious Diseases*. The same study found that Reyataz (atazanavir) was associated with greater bone loss than Sustiva (efavirenz), and that these differences held up even when accounting for classic risk factors for changes in bone density.

Reduction in bone mineral density (BMD)—called osteopenia when it is mild and osteoporosis when more severe—has been reported at higher rates in people living with HIV than in their HIV-negative counterparts in multiple studies. This is particularly true of younger HIV-positive men.

Multiple studies have also shown that most people with HIV have minor to moderate bone loss (between 2 and 6 percent) in general within the first two years of starting antiretroviral (ARV) treatment, but this loss is not generally progressive after the first two years. Although several studies have suggested that the tenofovir in Viread, Truvada and Atripla may cause a greater degree of bone loss than other drugs from the same class, no studies have compared Reyataz with Sustiva—both popular first-line treatment options in combination with Truvada or Epzicom—in terms of bone density changes.

Grace McComsey, MD, from Case Western Reserve University in Cleveland, and her colleagues set out to do just that. They compared bone density scans—called dual energy X-ray absorptiometry (DEXA) scans—from 271 HIV-positive people enrolled in the AIDS Clinical Trials Group (ACTG) 5202 study. ACTG 5202 was a four-way comparison of four different ARVs: Viread, Ziagen, Reyataz and Sustiva.

All four groups were similar in terms of their demographics and health. Most of the participants were in their late 30s, and roughly 60 percent were male. All four groups were racially diverse and were of normal body weight. About one quarter had osteopenia of both the spine and waist before starting treatment. On average, less than 8 percent had osteoporosis of the lower spine, and less than 2 percent had osteoporosis of the hip.

On average, loss of bone density was generally mild to moderate, with an average loss of about 3 percent during the first year. There was a slight rise in bone density after the first year, so that over the course of two years, the average loss had diminished to 2.3 percent.

The team found, however, that those taking Truvada had a significantly greater loss of bone density in the spine than those taking Epzicom (3.3 percent versus 1.3) and also in the hip (4 percent versus 2.6 percent). As for Reyataz and Sustiva, loss of bone density in the hip was similar between the two treatments, but those taking Reyataz had greater loss of bone in the spine (3.1 percent versus 1.7 percent). Overall, when Sustiva or Reyataz were paired with Truvada, those participants had a greater degree of BMD loss than those whose Sustiva or Reyataz was paired with Epzicom.

While these losses of bone density may not seem large, the authors note that “the degree of BMD loss [overall, and the difference between treatment groups] should not be perceived as clinically insignificant. Indeed, these decreases are similar in magnitude to the BMD losses sustained during the first [two] years of menopause.”

McComsey and her colleagues hypothesize that the cause of the BMD loss on treatment likely differs between nucleoside reverse transcriptase inhibitors (for example, Truvada), non-nucleoside reverse transcriptase inhibitors (such as Sustiva) and protease inhibitors (such as Reyataz). The researchers conclude: “Studies investigating the mechanisms behind the bone loss with ART initiation are needed.”
