Liver Damage Increases Tenofovir-Induced Kidney Impairment Risk

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People coinfected with both HIV and hepatitis B virus (HBV) who have more significant liver damage (fibrosis) are much more likely to develop mild kidney problems after starting tenofovir (found in Viread, Truvada and Atripla) than people with little liver damage. These data were presented at the 61st Annual Meeting of the American Association for the Study of Liver Diseases, held October 29 to November 2 in Boston.

The antiretroviral (ARV) drug tenofovir—which is used to treat both HIV and HBV—has a rare but well-studied side effect: tubular kidney damage. In most people, reduced kidney function is mild to moderate. In just under 1 percent of people who take tenofovir, however, tubular kidney damage can be more severe and occasionally life-threatening. While rates of kidney damage in people with either HIV or HBV have been assessed—serious liver disease can affect the organ's ability to handle toxins and blood flow, which can put a strain on the kidneys—little is known about the effect of liver fibrosis on the risk of developing tenofovir-induced kidney problems in people infected with both viruses.

To address this unanswered question, Anders Boyd, MPH, from the Hospital Saint Antoine in Paris, and his colleagues followed 137 HIV and HBV coinfected individuals after they started tenofovir therapy. All study participants had taken ARV drugs before. Their average age was 41, and about 90 percent were male. The average amount of time spent on tenofovir during the study was 34 months.

All participants underwent a liver biopsy before starting tenofovir, and 41 were found to have severe liver fibrosis and 96 to have mild liver fibrosis. Kidney function at 12, 24 and 36 months after starting tenofovir was measured by assessing the participants' estimated glomerular filtration rate (eGFR).

Boyd and his colleagues found that liver fibrosis had a profound effect on the likelihood of having reduced kidney function after starting tenofovir. In fact, those who started tenofovir with the most liver fibrosis were 3.74 times more likely to have mild kidney impairment than those with little fibrosis. The greatest difference in kidney function between those with high and low fibrosis scores occurred within the first two years of treatment.

People with more severe liver disease are at increased risk for kidney dysfunction, regardless of

whether they use tenofovir. To determine the actual contribution of tenofovir to this problem, future studies would need to compare individuals with high fibrosis scores who start tenofovir with similar people who do not take tenofovir.

“HIV and HBV coinfected patients treated with tenofovir are at higher risk of [kidney] impairment when exhibiting high liver fibrosis levels, and thereby warranting closer follow-up of [kidney function] in this patient population,” the authors concluded.
