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Tight blood pressure control not enough to temper kidney disease in African-Americans

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Even when their blood pressure is kept strictly under control with the best available medicine, African-American patients with chronic kidney disease (CKD) continue to lose their kidney function over time, research led by a Johns Hopkins team shows. The finding suggests that treating CKD in this population may be vastly more complex than researchers had previously thought, with blood pressure control being only one piece of the therapeutic puzzle.

The study, called AASK (African-American Study of Kidney Disease and Hypertension), is the longest to date focusing on blood pressure in patients with CKD. AASK followed 1,094 African-American patients with this condition for up to 11 years. Through a combination of medications, most of these patients kept their blood pressure in the recommended range for CKD, lower than 130/80. However, the vast majority still went on to develop steadily worsening kidney function, often leading to dialysis, kidney transplantation, or death.

“Kidney disease still progressed at an alarming rate, even when our participants received outstanding medical care for their high blood pressure,” says study leader Lawrence Appel, M.D., professor of medicine at the Johns Hopkins School of Medicine. “Blood pressure is important, but it’s not the whole picture. We still have a long way to go in figuring out the best way to treat patients with CKD.”

Appel and his colleagues at 21 clinical centers across the country chose to focus their study on African Americans, who suffer

disproportionately from kidney disease associated with high blood pressure. In whites, high blood pressure causes about 19 percent of all end-stage renal disease cases, in which kidneys have essentially lost their function. In African-Americans, the corresponding figure is about 37 percent.

Researchers aren't sure why high blood pressure often leads to CKD. The prevailing theory is that high pressure strains delicate tufts of capillaries known as glomeruli, which filter blood and create urine in kidneys.

To investigate whether keeping blood pressure low would slow or possibly stop CKD progression, the researchers designed their study in two phases; the first would take place between February 1995 and September 2001, and the second between October 2001 and June 2007.

In the first phase, the researchers randomly assigned all 1,094 patients to one of three drugs commonly used to lower blood pressure-an ACE inhibitor, a â-blocker, or a calcium channel blocker. Each patient was also assigned to one of two blood pressure goals-a standard goal (about 140/90 or lower), and a more aggressive goal (130/80 or lower). The researchers tracked each patient's blood pressure and kidney function, determined through blood and urine tests, as well as their overall health.

At the end of the first phase, the researchers found that about a third of the patients had lost at least half their kidney function, developed end-stage renal disease, or died, even though almost all of the patients were well within their blood pressure goals. Of the remaining patients, the scientists recruited 759 to continue on to the study's next phase, in which they capitalized on what they'd learned so far. Early findings from the first phase showed that the ACE inhibitor worked better than the other treatments, so the remaining patients began taking that drug. They were also given the more aggressive blood pressure goal of 130/80.

Over the next five years, the researchers again tracked patients' blood pressure, kidney function, and overall health. However, regardless of their new and improved treatment, a third of these patients still lost at least half their kidney function, developed end-stage renal disease, or died.

These results, published in the April 28 *Archives of Internal Medicine*, shouldn't discourage patients with CKD from continuing their blood pressure therapy, says Appel. "Outcomes would certainly be worse if they didn't control their blood pressure," he explains. However, he adds that the findings suggest that other factors beyond just blood pressure may be at play in worsening CKD. Blood pressure spikes at night, high salt intake, or exposure to heavy metals like lead or mercury may influence kidney disease progression. "Lots of different factors need examining," says Appel.

Source: Johns Hopkins Medical Institutions