Kidney disease linked to lower medication use after heart attack

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Patients with kidney disease—especially end-stage renal disease (ESRD) requiring dialysis—are less likely to receive recommended medications after a heart attack, reports a study in the September 2008 *Clinical Journal of the American Society of Nephrology* (*CJASN*).

"This is the first systematic report to investigate whether kidney function is associated with use of and adherence with medications that are recommended for secondary prevention after a heart attack," comments Dr. Wolfgang C. Winkelmayer of Brigham and Women's Hospital in Boston, MA. "We found that use of several medications after a heart attack was lower in patients with chronic kidney disease (CKD) or ESRD. However, 1-year adherence did not differ by kidney function."

The researchers analyzed data on medication use after a heart attack, or myocardial infarction, in approximately 21,500 patients. Seventeen percent of the patients had CKD—loss of kidney function that, in many cases, progresses to ESRD. Another two percent had ESRD—permanent loss of kidney function requiring dialysis or transplantation.

Patients with and without kidney disease were compared for use of medications recommended after myocardial infarction: beta-blockers, angiotensin-converting enzyme inhibitors or angiotensin receptor blockers (ACEIs/ARBs), and cholesterol-lowering "statin" drugs. Along with aspirin, these three types of drugs are an important part of strategies to prevent further events after myocardial infarction.

Overall rates of medication use were low: after leaving the hospital, just 27 percent of patients filled a prescription for a statin drug. Forty-four percent started treatment with ACEIs/ARBs and 57 percent with beta-blockers.

After adjustment for other factors, patients with CKD were 22 percent less likely to start beta-blocker treatment, compared to patients without kidney disease. There was no difference in ACEI/ARB or statin use.

For ESRD patients, rates of medication use were even lower: 43 percent lower for ACEIs/ARBs and 17 percent lower for statins. (Patients with ESRD were also less likely to start beta-blocker treatment, although the difference wasn't significant.)

Among patients who filled a first prescription, rates of continued medication use after one year were 64 percent for beta-blockers, 57 percent for statins, and 54 percent for ACEIs/ARBs. For all three types of drugs, adherence rates were similar for patients with and without CKD. Patients with ESRD were less likely to continue beta-blocker treatment.

The results may help in understanding how medications affect the relationship between kidney disease and cardiovascular disease. "Kidney function is a well-established risk factor for cardiovascular events such as heart attacks and is also associated with a worse prognosis after such events," says Dr. Winkelmayer. "One possible explanation is differences in health service delivery—it may be that patients with more advanced kidney function receive less state-of-the art care after a heart attack, including less acute coronary intervention, less acute medical intervention, and less chronic, secondary prevention." The results also show some important differences in medication use after myocardial infarction by patients with kidney disease, particularly ESRD. However, these differences don't appear to explain the higher cardiovascular risk among patients with low kidney function.

Over time, rates of adherence to all three types of medications for myocardial infarction are surprisingly low—for patients with and without kidney disease. Especially as rates of kidney disease continue to rise, new ways of reducing

cardiovascular risk among patients with low kidney function should be a top priority, the researchers conclude.

The study was limited by a lack of data on vital and laboratory measurements. This included tests to confirm the presence of kidney disease, which was ascertained from health care claims.

Source: American Society of Nephrology