Removal of heart medications by dialysis may increase risk of premature death

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Dialysis patients who take heart medications that are easily removed from the circulation through dialysis may be at increased risk of dying prematurely compared with patients whose heart medications are more difficult to remove. The findings come from a study appearing in an upcoming issue of the *Journal of the American Society of Nephrology (JASN)*.

Beta blockers—drugs used to control heart rhythm, treat angina, and reduce high blood pressure—lower the risk of premature death among people with heart disease who are not receiving dialysis. Beta blockers differ in their dialyzability, or the extent to which they are removed through hemodialysis, and experts suspect that if the filtering effects of dialysis remove these important drugs from the circulation, patients can't experience their full benefit.

Matthew Weir MD, FRCPC, MSc (Western University, in Ontario, Canada) and his colleagues analyzed health information from patients in Canada who had been prescribed a beta blocker that's easily removed by dialysis compared with those whose beta blockers aren't readily removed by dialysis.

The high dialyzability group included 3,294 patients initiating dialysis with atenolol, acebutolol, or metoprolol. The low dialyzability group included 3,294 patients initiating dialysis with bisoprolol or propranolol. Initiation of a high vs. low dialyzability beta blocker was linked with a 1.4-increased risk of dying within 180 days. In an additional analysis of

more than 27,000 patients who were not receiving dialysis, there was no difference between these 2 groups of drugs and premature death. This suggests that the presence of dialysis was an important part of the relationship between bisoprolol/propranolol beta blockers and lower risk of premature death.

"Although we can't draw causal relationships from our observational study, we did see the relationship that we hypothesized: the risk of death was higher in patients whose beta blocker was readily removed from their circulation by hemodialysis," said Dr. Weir. "Changing prescriptions from an easily-removed drug to a difficult-to-remove drug might be a simple way to lower the risk of premature death for people receiving hemodialysis."

In an accompanying editorial, Gautam Shroff and Charles Herzog (Hennepin County Medical Center and University of Minnesota, in Minneapolis) noted that because beta blockers have different characteristics, it would be naïve to assume that dialyzability should be clinicians' sole consideration in attempting to choose the appropriate beta blocker for an individual patient. However, they felt that the study's findings should encourage more thorough investigations on the role of beta blocker dialyzability. "We firmly believe sufficient impetus is now present within the academic community for creation of a well-designed randomized controlled trial to compare specific beta blockers and their effects on all-cause mortality among dialysis patients, with sudden cardiac death as a prespecified adjudicated end point," they wrote.

More information: The article, entitled "Beta blocker dialyzability and mortality in older patients receiving hemodialysis," will appear online at jasn.asnjournals.org/ on October 30, 2014.

The editorial, entitled "Beta-Blockers in Dialysis Patients: A Nephrocardiology Perspective," will appear online at