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Ischemic Heart Disease in Dialysis Patients: Prevention and Management

Hack-Lyoung Kim, MD, PhD,

Division of Cardiology, Boramae Medical Center, Seoul National University College of Medicine, Seoul, Korea

Cardiovascular disease is the leading cause of morbidity and mortality in patients with renal replacement therapy. Indeed, it has been reported that cardiovascular mortality is 10 to 20 times higher in dialysis patients than in the general population, and cardiovascular death accounts for nearly 50% of deaths in patients with chronic dialysis. Diabetes mellitus and hypertension, the two leading causes of ESRD, also contribute to the pathogenesis of ischemic heart disease (IHD) in these patients, as do other traditional risk factors (eg, dyslipidemias, smoking, and sedentary lifestyle). However, patients with ESRD are subject to several unique risk factors that contribute to the development and progression of IHD. Chronic volume overload and anemia, leading to left ventricular hypertrophy, and deranged calcium-phosphate metabolism with vascular and coronary calcification, contribute to the pathogenesis of IHD. Other risk factors that have been implicated include oxidative stress, homocysteine, and myocardial stunning while undergoing dialysis treatment. Additional risk factors include erythropoietin use for treating anemia, as well as use of calcium-based phosphate binders. The complex pathogenesis of IHD in such patients poses unique challenges to its management. However, cardiovascular disease can be prevented or attenuated especially in patients who benefit from early and regular care of cardiovascular risk factors. Specifically, cardioprotective strategy involves optimal treatment of hypertension, diabetes mellitus anemia, fluid overload, dyslipidemia, hyperhomocysteinemia and calcium-phosphate disorders, and smoking cessation. To achieve a maximal efficacy, such treatment has to be initiated as early as possible in the course of renal failure. Noninvasive cardiac study should be under active consideration in patients with dialysis and multiple risk factors, but noninvasive diagnostic testing in uremic patients is less accurate than in nonuremic populations. Because of bleeding tendencies in dialysis patients, the benefits of antiplatelet therapy and platelet glycoprotein IIb/IIIa inhibitors for treating CAD require more research. In addition, a meta-analysis of retrospective studies in 2012 showed that dialysis patients with coronary artery disease receiving coronary artery bypass surgery had a lower long-term mortality rate and fewer postoperative cardiac complications than those receiving percutaneous coronary angioplasty. A large randomized, long-term cohort study is necessary to confirm these issues.