Commentary: Valve choice in dialysis-dependent patients: A question of patient durability

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Central Message

Biological prostheses are appropriate for nearly all dialysis-dependent patients who require heart valve replacement.

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When heart valve replacement is necessary, a surgeon and patient together choose the prosthesis to implant by considering the well-known pros and cons of biological and mechanical valves. Biological valves do not necessarily require anticoagulation therapy, but they can have limited durability. Conversely, mechanical valves invariably require anticoagulation therapy but are not subject to structural valve deterioration. Patients often ask themselves whether they would prefer lifelong warfarin therapy or a late reoperation/reintervention. Generally unspoken, but still informing prosthesis choice, is an additional question: What is the life expectancy (ie, durability) of the patient? In their analysis of valve replacement in dialysis-dependent patients, Manghelli and colleagues¹ find that the answer to this question guides prosthesis choice in this patient group.

Small studies have suggested that biological valves are prone to early calcification and degeneration when placed in patients with end stage renal disease (ESRD).^{2,3} Recognition of this phenomenon led early guidelines to recommend mechanical valve replacement in such patients.⁴ Subsequent guidelines documents backed away from this stance, instead offering the bland (and unhelpful) suggestion that prosthesis choice should be “individualized.”⁵ The data presented by Manghelli and colleagues,¹ in contrast, provide a clear and compelling argument for biological valves as the default option in most dialysis-dependent patients who require heart valve replacement.

Patients receiving dialysis have an average 5-year survival of 40%.⁶ For dialysis-dependent patients who require heart valve replacement surgery, survival is even worse. Although the study was limited by incomplete follow-up (survival data were available for only 81% of patients), Manghelli and colleagues¹ found that 5-year survival was 23% after biological valve replacement and 33% after mechanical valve replacement; the median survivals in the 2 groups were approximately 2 and 3 years, respectively.

After adjusting for comorbid conditions, there was no difference in survival based on prosthesis choice. Survival was poor regardless of valve type, and no patient in the study survived more than 13 years. The article’s central figure tells the story: 5-year survival is dismal in these patients.

Is there a cohort of dialysis-dependent patients who might live longer than 5 years? Manghelli and colleagues¹ answer this question in the affirmative, but note that it is a very small group of patients. Only 7% of patients had an estimated 5-year survival >5 years; these were patients between ages of 30 and 40 years who had good functional status and who did not have diabetes. We must put this statement in context by remembering that 10-year survival was quite rare. Therefore, even in younger dialysis-dependent patients, one can argue persuasively for placement of a biological valve.

Given the documented high procedural mortality and morbidity and limited intermediate survival in dialysis-dependent patients undergoing heart valve replacement, investigation of transcatheter valve replacement options is warranted in this population. The authors have experience with this approach in patients with ESRD, but results of these procedures are not reported.

Manghelli and colleagues¹ provide important guidance for management of ESRD. When considering valve replacement surgery in dialysis-dependent patients, choice of prosthesis must be dictated overwhelmingly by patient

condition. Durability (ie, survival) is the primary consideration, and this should lead to choice of a bioprosthesis in nearly all patients.

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