No rat poison for me

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In this edition of the *Journal*, Anselmi and associates¹ report on the long-term outcomes of bioprosthetic valves in younger patients. The authors identified 416 patients aged 60 years or less who underwent bioprosthetic aortic valve replacement (AVR) with 98.5% complete follow-up. Overall survival at 15 years was $62.1\% \pm 4.4\%$, but freedom from valve-related death was $97.1\% \pm 1.6\%$. Freedom from structural valve deterioration (SVD) was $48.5\% \pm 5.5\%$ in the actuarial analysis and $61.4\% \pm 4.3\%$ when calculated using competing risks. When stratified by different age groups, no significant differences in freedom from SVD were observed. Freedom from SVD was greater than 80% at 10 years, and most occurred after the first decade of implantation.

There has been a significant increase of bioprosthetic valves use in recent years. Brown and colleagues² reported on 108,687 isolated AVRs over a 10-year period from the Society of Thoracic Surgeons database. Bioprosthetic use increased from 43.6% in 1997 to 78.4% in 2006 (Figure 1). Similar trends were seen at our institution (Figure 2, A), with an increase from 20% to more than 60% in patients aged less than 60 years (Figure 2, B).

What is driving younger patients to choose a bioprosthesis apart from the medical contraindications for anticoagulation? Increasing motive is the pursuit of active lifestyle. The momentum of valve choice seems to have shifted from physician recommendation to patient preference. An important aspect of valve choice is increased patient awareness from information gathered online.³ Oftentimes, we see a patient who has already decided on the valve type by using an Internet search and discussing it with the referring cardiologist. Their decision is based on a simple formula: comparing the risk of a repeat AVR versus the risk of taking anticoagulation for 10 years or more. From a large Society of Thoracic Surgeons database study, the operative mortality of repeat AVR was 4.9%.⁴ In one study, the simulated lifetime risk of bleeding was 41% for a 60-year-old man.⁵ Warfarin also is associated with difficulty controlling the international normalized ratio (INR) within the therapeutic level, described by using the term "time within therapeutic range (TTR)." One study showed that in the first 6 months of initiating warfarin, TTR was

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Central Message

Regarding valve choice, more emphasis is placed on patient preference. With the information available on the Internet and the future option of valve-in-valve transcatheter aortic valve replacement, it is critical for physicians to provide good information.

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only 32%.⁶ Patients who are not in TTR are exposed to bleeding risk if INR is higher or thromboembolism if INR is lower. This leads to the fact that warfarin is the top reason (33%) for emergency hospitalizations for drug events in older Americans.⁷

In addition, the valve-in-valve transcatheter aortic valve replacement option has changed the landscape in the patient's decision. Despite the uncertainty of valve durability or valve thrombosis after valve-in-valve transcatheter aortic valve replacement, avoidance of reoperation is a strong factor in valve choice.

FIGURE 1. Use of bioprosthetic valve versus mechanical valve in North America comprising 108,687 patients in 10 years from the Society of Thoracic Surgeons National Database. Reprinted with permission.²

FIGURE 2. A, The use of mechanical and bioprosthesis at the Brigham and Women's Hospital. B, The ratio of bioprosthetic valve use by different age groups at the Brigham and Women's Hospital.

At the end of the day, one cannot argue with current statistics about valve choices. It is patient preference rather than surgeon recommendation that is driving this trend. Nevertheless, it is still crucial for physicians to provide good information to aid the understanding of true risks and benefits. We hope this and similar studies serve as a guide to patients' decisions and expectations.

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