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TO THE EDITOR

What Is the Value of Continuous Monitoring Post-Transcatheter Aortic Valve Replacement?

Rodés-Cabau et al. (1) recently reported on the global arrhythmia burden determined using continuous arrhythmia monitoring with an implantable loop recorder (ILR) in patients with new-onset left bundle branch block following transcatheter aortic valve replacement (TAVR). In this relatively small observational study approximately 17% of TAVR patients with new left bundle branch block developed atrial fibrillation/flutter, and 13%, ventricular arrhythmias in 1-year follow-up. These findings are consistent with the combined experience at our centers in post-TAVR patients with atrioventricular block who required dual-chamber pacemakers (new-onset atrial fibrillation = 25%; ventricular arrhythmias 6 to 30 s = 5%). Rodés-Cabau et al. (1) also report a 20% incidence of severe bradycardia, including 15% of patients who developed high-grade atrioventricular block (HAVB).

Intensive monitoring undoubtedly will reveal arrhythmic findings of unknown significance with the potential to change a patient's management when left to physician discretion. It is conceivable that bias may have influenced treatment decisions in this unblinded study thereby overinflating the need for treatment intensification. One could argue that important arrhythmia detection resulting in the provision of life-prolonging interventions (i.e., anticoagulation for sustained AF and implantation of a defibrillator) occurred in a small portion of the study cohort (5 of 103). Additionally, although 10% of patients required permanent pacing at 1 year, important information on the 9 patients with HAVB requiring a pacemaker, 5 of whom were asymptomatic, is absent, including whether the HAVB may be related to increased vagal tone, the duration and presence of recurrent HAVB episodes, and the rate of the escape rhythm and presence of pauses.

Although ILRs are easy to insert and provide long-term monitoring that is convenient for patients, considerations on the consequences of inappropriate treatment decisions/overtreatment in addition to the societal financial cost with widespread use of ILRs in this patient population are very important. A study where physicians are randomized to receive and incorporate data from ILRs in the care of post-TAVR patients is necessary before drawing the conclusion of the authors that ILRs are needed for "expediting the initiation of treatment" in post-TAVR patients.

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REPLY: What Is the Value of Continuous Monitoring Post-Transcatheter Aortic Valve Replacement?

We read with interest the letter from Dr. Singh and colleagues regarding the MARE trial (1). Unfortunately, we respectfully think that the authors may have misunderstood the main point that led to the design and performance of the MARE trial: the occurrence of new-onset persistent left bundle branch block (LBBB) following transcatheter aortic valve replacement (TAVR). Thus, the trial focused on a very specific and challenging group of TAVR patients, accounting for roughly 10% to 20% of the TAVR population with no conduction disturbances pre-procedure, rather than "all TAVR patients." LBBB post-TAVR has been associated with an increased risk for life-threatening conduction disturbances, left ventricular dysfunction, and sudden death, and some studies have suggested higher overall cardiovascular mortality in such patients (2–4). In addition, the

management of this complication remains unresolved, and this has translated into wide intercenter practice variability, leading to marked differences in hospitalization length and pacemaker implantation rates post-TAVR (2,5). This wide range in practice is occurring even with the use of similar transcatheter valve types. Among other, some centers have been preventively implanting permanent pacemakers in patients with new-onset persistent LBBB. The use of a continuous monitoring device appears therefore to be a reasonable strategy in the absence of a more definite and tailored treatment of such complication.

The interpretation by Singh and colleagues of the findings of the MARE trial also merits further consideration. First, Singh and colleagues suggested that high-degree atrioventricular block (HAVB) in patients with LBBB may not require pacemaker implantation ("the HAVB may be related to increased vagal tone.."). As well established in the guidelines, the presence of HAVB in the presence of LBBB is an indication for permanent pacemaker implantation. In such cases, any HAVB would be an indication for pacing, as the infra-Hisian block already present in an LBBB excludes an atrioventricular nodal-only block. Even performing an electrophysiological study to measure the HV interval would not be very predictive of future "malignant block," and such strategy would probably fall short in terms of cost-effectiveness. Thus, the early detection of HAVB in close to 1 in 10 patients in the MARE study is a finding of major clinical relevance. Whether this early detection and treatment implementation prevented subsequent life-threatening events (syncope in an elderly and frail population or sudden death) cannot be established, but the very low rate of sudden death observed in our study compared with prior studies seems to be a promising finding (2,3). Second, considering that the detection of 5% of tachyarrhythmic episodes leading to a potentially life-prolonging intervention represents a "low rate" may be arguable. As an example, in the coronary field, considerable effort has been expended and costly trials have been performed to prevent stent thrombosis, a very rare (but also life-threatening) event. We think that the 5% rate of tachyarrhythmic events with potentially devastating clinical consequences should be perceived as an issue of high clinical importance that should stimulate further research efforts in the field.

Conduction disturbances remain a frequent and unresolved complication of TAVR, and the management of these complications is among the most confusing and debated topics in the field. The MARE trial was a humble step forward in the comprehension of the natural history of one of the most complex groups of patients with conduction issues post-TAVR. Although we agree with Singh and colleagues that a randomized trial would be ideal to determine the exact role of continuous monitoring in these patients, we think that larger observational data to identify the patients at risk of life-threatening events could be even more important for advancing toward a tailored and individualized treatment strategy. Also, shorter term and less expensive continuous monitoring devices may be considered in the future in order to improve the cost-efficacy ratio of such intervention (about one-half of arrhythmic events occurred within the first weeks following hospital discharge in the MARE trial). Meanwhile, the clinical and financial impact of stroke, syncope with fractures, death, or other arrhythmic complications that could be preventable should not be underestimated.

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