Letters to the Editor

Conduction Abnormalities and Pacemaker Implantations After SAPIEN 3 Vs SAPIEN XT: Depending on Who Is Implanted and How You Implant

Trastornos de la conducción e implante de marcapasos tras implante de SAPIEN 3 comparada con la SAPIEN XT: según a quién se trata y cómo se implanta

To the Editor,

In the last few years, new transcatheter heart valves have been developed to improve outcomes after transcatheter aortic valve implantation. Regarding the Edwards-SAPIEN family, the SAPIEN 3 valve was designed to replace the previous SAPIEN XT, with excellent results in terms of fewer vascular complications and significant reductions in paravalvular leak in the first reports.[1,2] However, an unexpected higher rate of conduction abnormalities has been reported for the SAPIEN 3 compared with the XT, which has raised concerns, and substantial intellectual effort currently focuses on understanding the pathophysiology of this unfavorable outcome.

Husser et al[3] present insights into new conduction abnormalities in patients with "naïve" conduction systems and their impact on pacemaker implantations, with the aim of comparing the 2 devices. The result is of interest in terms of pathophysiology, but lacks clinical impact for 2 reasons:

- The depth of implantation is not reported. The protrusion into the left ventricular outflow tract has become a key element in understanding why some reports have shown higher conduction abnormalities/new pacemaker implantation rates with SAPIEN 3 than with XT. Tarantini et al[4] reported a higher rate of permanent pacemaker implantation in the SAPIEN 3 group compared with XT, strictly associated with deep valve implantations. Nijhoff et al[1] reported a similar rate of new permanent pacemaker implantations with a different implantation strategy in patients implanted with a SAPIEN 3, aiming for a high implantation (70% aortic, 30% ventricular) in contrast with a normal 50/50 implantation in the XT group. Unfortunately, these data are not available for this manuscript and therefore we lack crucial information for a fair comparison between these 2 devices.
- Patients with preprocedural right bundle branch block were excluded. This is one of the strongest predictors for pacemaker implantation after transcatheter aortic valve implantation, recognized in an important meta-analysis, along with first-degree atrioventricular block.[5] We are aware that the goal of the article is to evaluate new conduction abnormalities, so patients with preprocedural bundle branch blocks should be excluded. However, the article should not focus on new pacemaker implantations, since conclusions on a different rate between the 2 devices cannot be made without taking into consideration the preprocedural conduction system characteristics of the host. This selection bias may benefit the SAPIEN 3 valve, since a patient with an impaired conduction system (ie, right bundle branch block) may develop complete atrioventricular block with SAPIEN 3 and not with XT.

For the time being, there is no transcatheter heart valve that fits all patients, given that there is a device-host interaction that leads to specific complications related to the preprocedural characteristics of the device and host. Patients with a specific condition such as right-bundle branch block may benefit from 1 device in preference to others. Understanding the optimal implantation strategy per device (ie, depth of implantation) may minimize complications.

CONFLICTS OF INTEREST

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Available online 2 March 2016

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