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Surgical Perspective on Undertreatment of Aortic Stenosis in Women

Addressing unique challenges, optimizing treatment methods, and the importance of valve performance and hemodynamics for women with AS.

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Calcific aortic stenosis (AS) is one of the most prevalent valve lesions globally and significantly impairs quality of life and survival.[1] Without treatment, 5-year mortality is as high as 94% in patients deemed unsuitable for transcatheter or surgical intervention.[2] Despite advancements in diagnosis and treatment, disparities in the management of AS among different patient demographics, particularly between genders, persist. Women with AS are frequently subjected to undertreatment and substandard care compared to men.[3,4] This article delves into the surgical perspective on the undertreatment of AS in women, highlighting unique challenges, avenues for addressing these issues, optimizing treatment methods, and the importance of valve performance and hemodynamics in this patient population.

UNIQUE ISSUES IN WOMEN WITH AS

The pathophysiology of AS in women presents distinct differences compared to men that may contribute to disparities in diagnosis, treatment, and outcomes. AS in women often presents with more fibrosis and less calcium, while the ventricles have a higher wall thickness, a smaller left ventricular cavity, and a lower left ventricular mass index.[5] Women with AS present with more pronounced symptoms, at an older age and later disease stadium, and with a higher surgical risk.[6] A significant proportion of women present with smaller anatomic structures, including the aortic valve annulus, aortic root, the thoracic cavity, and peripheral vessels, all of which have certain implications on procedure planning and outcomes. Data from a randomized trial showed that 60% of female patients received a surgical valve ≤ 21 mm in label size (vs 13.3% in male patients).[7] From a surgical point of view, the smaller thorax may prevent surgeons from performing minimally invasive procedures in an already small site.[8] The surgeon's gender can also affect surgical outcomes, as shown in a recent analysis in which female patients had better outcomes when operated on by a female surgeon.[9]

ADDRESSING UNDERTREATMENT

There is a tendency for a gender bias in the clinical setting, where the symptoms reported by women may be misinterpreted by both female patients and physicians, attributing symptoms to noncardiac causes. This lack of awareness is thought to be the most common reason why diagnosis and treatment of AS is delayed in women.[10] In a cohort of 2,429 consecutive patients with diagnosed severe AS (49.5% women), women were less likely to undergo aortic valve replacement.[11] The IMPULSE study demonstrated that female patients more often received a transcatheter treatment than surgical valve replacement, which seems reasonable given the older age and higher surgical risk at the time of presentation.[6] Addressing the undertreatment of AS in women requires a multifaceted approach. First, it is crucial to enhance awareness among health care providers about the gender-specific manifestations and risks associated with AS. Interdisciplinary heart teams—including cardiologists, cardiovascular surgeons, and imaging specialists—should adopt a gender-inclusive approach to decision-making. Patient education also plays a vital role; women should be informed about the significance of their symptoms and the potential risks of delaying treatment, empowering them to advocate for timely and appropriate care.

OPTIMIZING TREATMENT METHODS

The recent findings indicating elevated mortality rates after surgical aortic valve replacement (SAVR) in women are cause for concern and warrant focused attention.[8,11,12] It is required to integrate gender-specific considerations into the decision-making process for selecting the most appropriate intervention (transcatheter aortic valve replacement [TAVR] vs SAVR) and ensure meticulous procedural

planning to tailor the approach to individual patient needs. TAVR, being less invasive, may be particularly beneficial for women who are at higher risk of complications from open surgery. Moreover, women are at an increased risk of receiving smaller prosthetic valves, leading to a higher incidence of patient-prosthesis mismatch (PPM), a factor that can adversely affect various outcomes.[13] Effective procedural planning should incorporate strategies for predicting the optimal prosthesis type and size, determining the most suitable access route, and assessing the need for aortic root enlargement. From a surgical perspective, it is imperative to promote education among surgeons regarding the benefits of minimally invasive techniques for women. Contrary to some opinions suggesting increased procedural challenges in women, some authors indicate that with proper training and technique adaptation, these challenges can be effectively managed.[14]

Data of the SMART trial were recently published,[15] and results of the RHEIA trial are expected with the year.[16] These recent randomized trials, which focus on small anatomies and women with AS, will potentially influence future guidelines and practice standards.

SIGNIFICANCE OF VALVE PERFORMANCE AND HEMODYNAMICS

The performance of a prosthetic valve and its hemodynamic characteristics, aiming for low gradients and the absence of regurgitation, are crucial for relieving symptoms, improving exercise tolerance and quality of life, and enhancing survival. In addition, good hemodynamics are associated with durability and the long-term benefit of a valve replacement procedure.[17] In the smaller-sized aortic root anatomy of women, the concept of supra-annular valves may optimize valve opening area and gradients during SAVR and TAVR and minimize the risk of PPM.[18,19] The guidelines even recommend a transcatheter rather than a surgical procedure if the risk for PPM is high.[20] For patients undergoing SAVR, aortic root or annulus enlargement has been shown to allow implantation of a larger valve, but the risks and benefits have to be balanced.[21] To achieve the best possible hemodynamics, a meticulous preprocedure planning of valve type and size and potential concomitant procedures such as annular enlargement is key.

CONCLUSION

The underdiagnosis and undertreatment of AS in women is a multifactorial issue. By recognizing and addressing the unique challenges faced by women with AS, diagnostic and treatment strategies can be adopted accordingly. Emphasizing the importance of valve performance and hemodynamic optimization can significantly improve the outcomes for women with AS. It is imperative that gender-specific research and clinical trials are executed to fill the existing knowledge gaps. ■

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