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Inflammatory Markers in Bicuspid Transcatheter Aortic Valve Replacement

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Background

Aortic stenosis (AS) has a prevalence of 2%. Valve replacement is the definitive treatment for AS, with transcatheter aortic valve replacement (TAVR) offering a minimally invasive alternative to surgery.

Bicuspid aortic valve (BAV) is the most common congenital cardiac abnormality. BAV patients are predisposed to AS, and comprise a distinct, younger TAVR patient population. Given limited prior work on inflammatory markers for TAVR risk assessment, this study sought to investigate if white blood cell count (WBC) correlates with BAV TAVR patient severity and post-TAVR outcomes.

Methods

A single-center retrospective analysis was performed on patients with BAV who underwent TAVR from 2014 to 2018 (N=37). Patient demographics, symptomatic severity (NYHA class) and anatomic severity: aortic valve area (AVA) and indexed aortic valve area (AVAI) were collected. WBC prior to TAVR and post-TAVR complications/readmissions were also collected. Correlations between WBC, patient severity, and adverse outcomes were assessed using the Pearson and Spearman correlation tests, two-sample t-tests, and the Wilcoxon rank sum test.

Results

A statistically significant correlation ($p = .041$) was found between elevated pre-procedure WBC and patient NYHA class. No association was found between pre-procedure WBC and AVA ($p = .723$), AVAI ($p = .961$), or adverse outcomes/readmission post-procedure ($p = .116$).

Conclusions

A statistically significant correlation between pre-procedure WBC and NYHA class demonstrates that WBC is an accurate predictor of BAV patient's functional symptom severity and could thus serve as a readily-accessible metric to stratify BAV TAVR patients in pre-procedure planning. No correlation existed between WBC and anatomic valve severity.