



White Blood Cell Count in Bicuspid Transcatheter Aortic Valve Replacement

Pantelic MN¹, Nona P², Jacobsen G², Villablanca P², O'Neill B², Eng M², Frisoli T², Lee J², O'Neill WW², Wang DD²

¹Wayne State University School of Medicine, Detroit, MI,

²Henry Ford Health System's Center for Structural Heart Disease, Detroit, MI



INTRODUCTION

Bicuspid aortic valve (biAV) is the most common congenital cardiac anomaly. It follows that biAV patients, with their predisposition to early-onset aortic stenosis (AS), represent a younger, male-dominant cohort within transcatheter aortic valve replacement (TAVR) at large. As TAVR continues to expand to lower risk populations, there will undoubtedly be emphasis on identifying relevant biomarkers to improve TAVR planning, including specifically in the biAV patient population.

Inflammation is known to contribute to AS pathogenesis, yet to date, few studies have examined the role inflammatory markers could play in TAVR planning. Based on limited work demonstrating utility of inflammatory markers in the tricuspid TAVR population (1), the present study characterized white blood cell count (WBC) in the biAV TAVR population, and sought to determine whether WBC correlates with patient severity and adverse outcomes in biAV TAVR.

METHODS

A single-center retrospective analysis was performed on biAV patients who underwent TAVR between 2014 and 2018 (N = 37).

Eligibility Screen
N = 37 patients had biAV and AS requiring repair, received a TAVR, and had a pre-procedure WBC on file.

Data Collection
Age, sex, imaging data, NYHA class, pre and post-procedure WBC, and adverse outcomes/readmissions up to 1 year

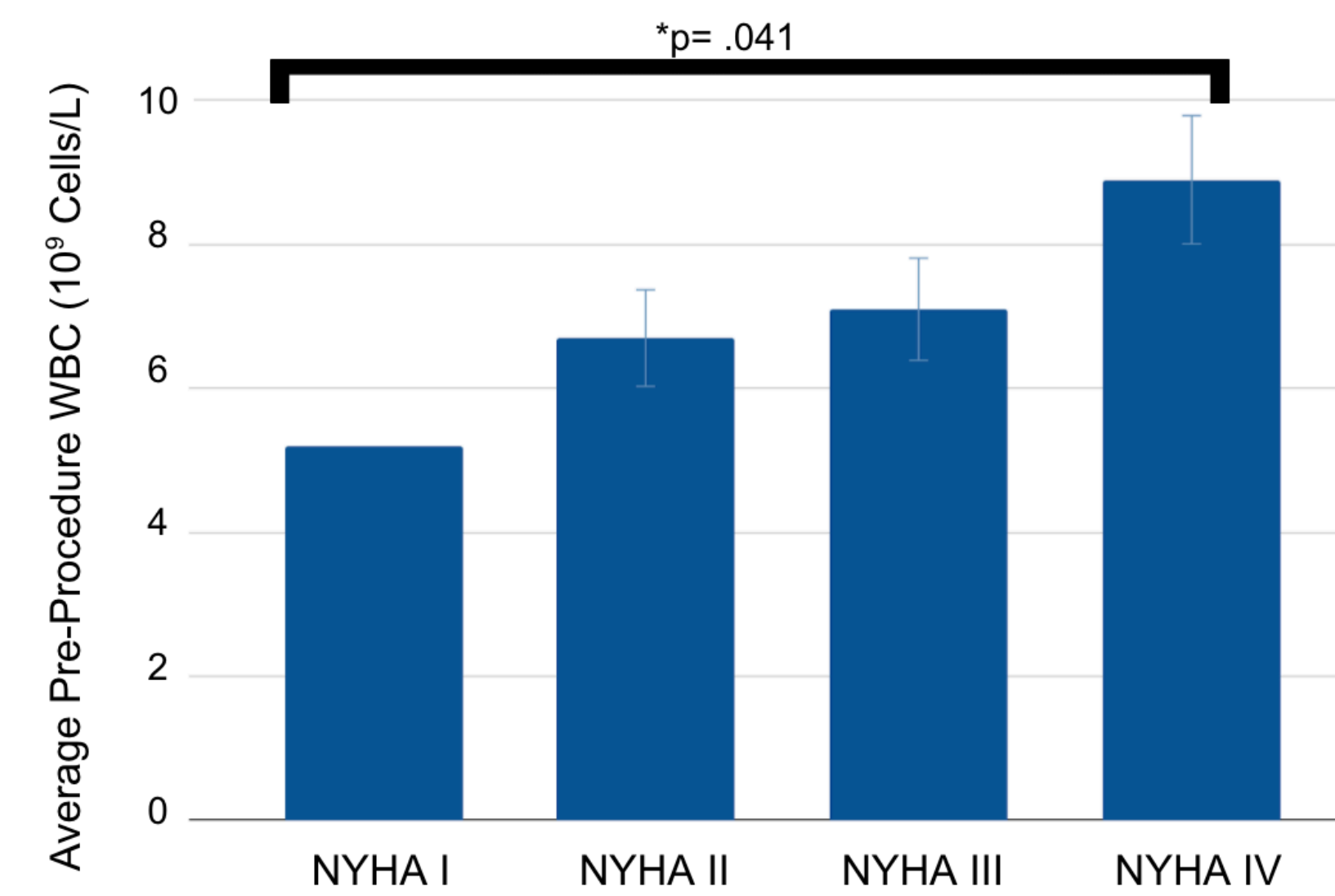
Data Analysis
Correlations assessed with Pearson and Spearman tests, two sample t-tests, Wilcoxon rank sum test.

Patient Characteristics

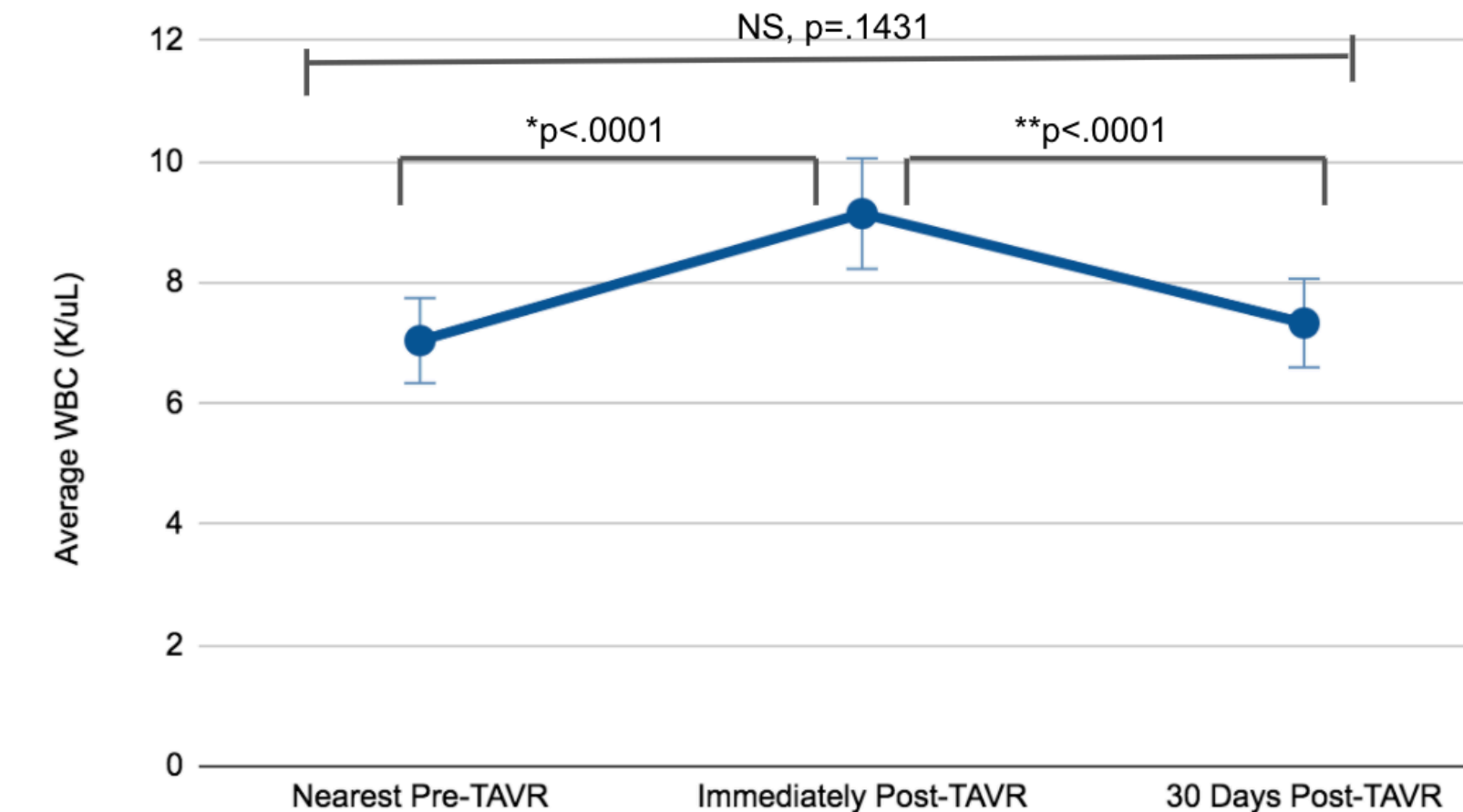
Average Age		69.7 ± 8.5
Sex	M	62.2%
	F	37.8%
NYHA Class	I	2.7%
	II	27.0%
	III	62.2%
	IV	3%

DATA

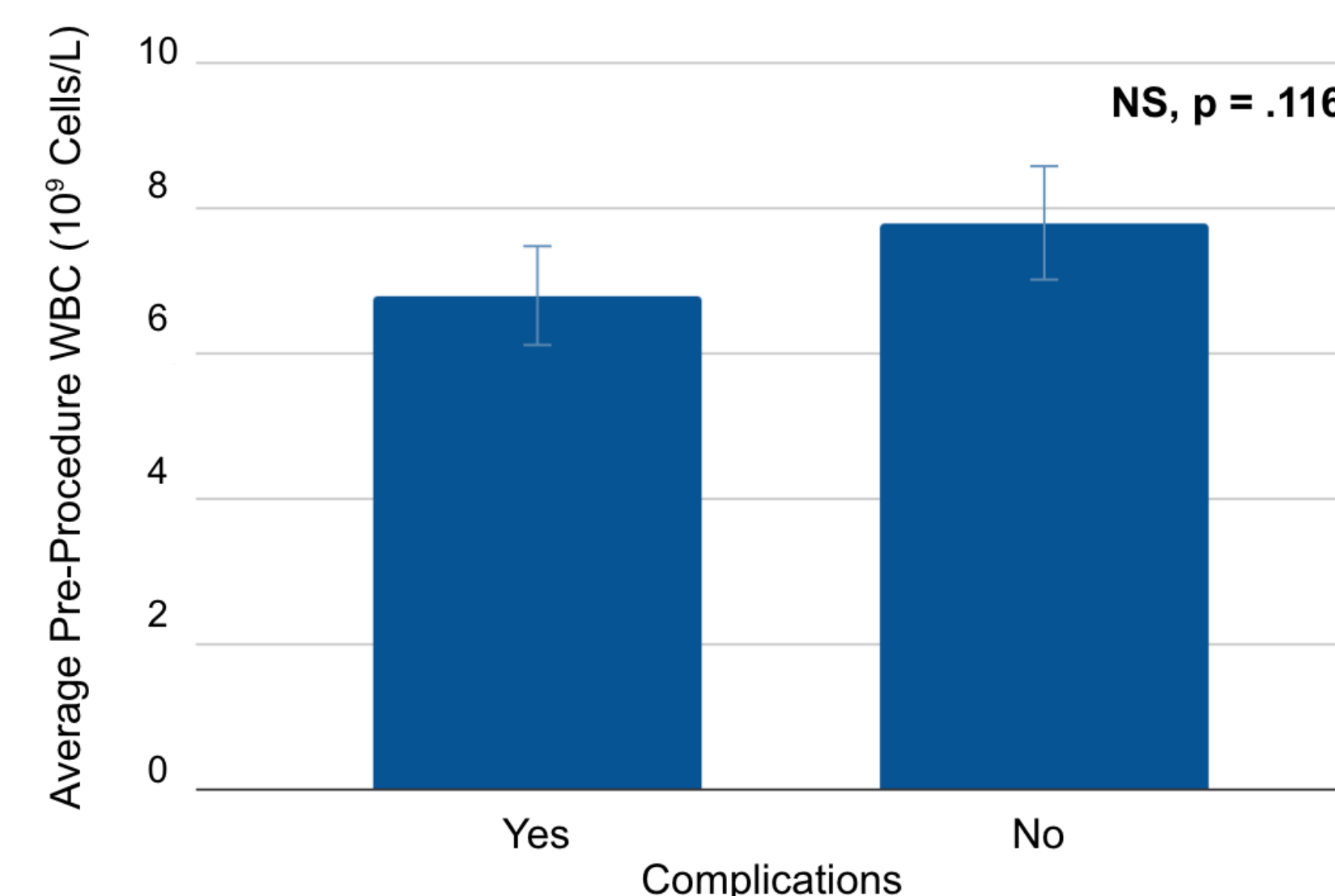
BAV Patient Pre-Procedure Functional Symptom NYHA Class vs. Average pre-Procedure WBC



Changes in Average WBC Over Time in BAV TAVR Sample



BAV Patient Complications/Readmissions Within 1 Year vs. Average Pre-Procedure WBC



RESULTS

A statistically significant correlation (p=0.041) was found between elevated pre-procedure WBC and patient NYHA class. No association was found between higher pre-TAVR WBC and adverse outcomes/readmissions (p=0.116). A statistically significant increase was observed in WBC immediately post-TAVR (p<0.0001), yet no significant WBC decrease was seen 30 days post-TAVR (p=0.143).

CONCLUSIONS

WBC levels are routinely measured in the setting of pre-TAVR procedural planning. An inflammatory response is typically associated with worse clinical outcomes.

This study is the first to demonstrate WBC as a predictor of symptom burden for bicuspid aortic valve patients awaiting TAVR beyond traditional frailty modeling.

These findings may have implications for disease and procedural risk-stratification for TAVR centers in evaluation of patients with severe bicuspid aortic valve disease.

REFERENCE

1. Condado JF et al. NLR and PLR Can Risk Stratify Patients in TAVR. Int J Cardiol. 2016;223:444-449.

ACKNOWLEDGEMENTS

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