

161. Prognostic Implications of Inflammatory and Nutritional Status in Patients Undergoing Valvular Heart Surgery

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Background: This study aimed to evaluate the prognostic role of inflammatory, using neutrophil-to-lymphocyte ratio (NLR) and nutritional status using prognostic nutritional index (PNI) in predicting survival in patients who underwent valvular heart surgery.

Methods: 1,048 patients who underwent valvular heart surgery were stratified into three groups according to their inflammatory and nutritional status before surgery: (1) no inflammation and normal nutrition, (2) inflammation or malnutrition alone and (3) concomitant inflammation and malnutrition. The endpoints of interest were all-cause mortality and adverse events (composite of death and heart failure [HF] hospitalization). Optimal cut-off of NLR and PNI for predicting all-cause mortality were determined based on Youden index with receiver-operating characteristic analysis. The association of inflammatory and nutritional status with all-cause mortality and adverse outcomes were examined using Cox proportional hazards analyses, adjusted for demographics, cardiovascular risk factors and diseases, medications and valvular surgeries.

Results: Over a median follow-up of 3.9 years (IQR: 2.0 to 6.1 years), 139 (13.3%) patients died (51 [4.9%] were due to cardiovascular causes) and 109 (10.4%) patients were hospitalized for HF. Based on the optimal thresholds of $NLR > 4.06$ (inflammation) and $PNI < 45.8$ (malnutrition), 714 (68.1%) patients had no inflammation and normal nutrition, 214 (20.4%) patients had either inflammation or malnutrition and 120 (11.5%) patients had concomitant inflammation and malnutrition. Among the three groups, patients with concomitant inflammation and malnutrition had the highest risk of all-cause mortality (hazard ratio [HR]=2.09, 95% confidence interval [CI]=1.59-2.73, $p < 0.001$; Figure 1) and adverse events (HR=1.55, 95% CI=1.26-1.91, $p < 0.001$; Figure 1). NLR and PNI together increased the predictive ability of Society of Thoracic Surgeons (STS) score for all-cause mortality (area under the curve [AUC]: 0.775 vs 0.730, $p = 0.004$; Figure 2).

Conclusion: Concomitant inflammation and malnutrition is common and is strongly associated with mortality and HF in patients undergoing valvular heart surgery.

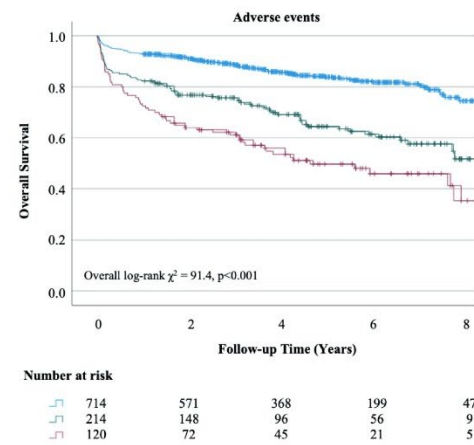
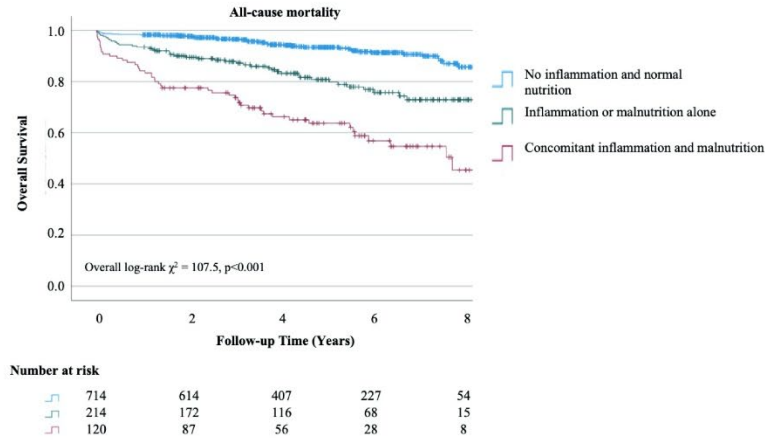


Figure 1: Kaplan-Meier curves for all-cause mortality and adverse events by inflammatory (NLR) and nutritional (PNI) status

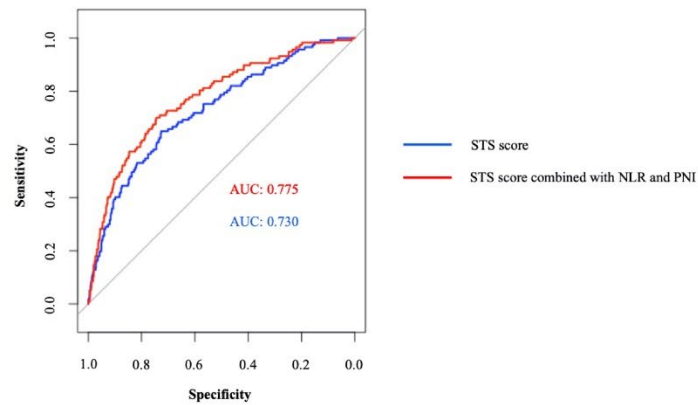


Figure 2: Receiver-operating characteristic curves of STS score and STS score combined with NLR and PNI to predict all-cause mortality

Clinical Implications: My study will help enable cardiovascular clinicians to improve the current risk stratification strategies of valvular heart surgery by considering the inflammatory and nutritional status of patients before surgery.