

Prognostic Significance of Preoperative Neutrophil-to-Lymphocyte Ratios in Surgery for Acute Type A Aortic Dissection

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Introduction

- Neutrophil-to-Lymphocyte Ratio (NLR)
 - Inexpensive and readily available biomarker
 - Negative prognostic indicator in cardiac surgery
- Limited studies have evaluated significance in surgery for acute type A aortic dissection (ATAAD)

Hypothesis

Elevated preoperative NLR is an independent predictor of worse outcomes in ATAAD surgery, especially if it continued to be elevated 24 hours from symptom onset

Methods: Data

- Single institution study
- Patients undergoing ATAAD repair from 2001 to 2020
- Preoperative NLR values were calculated
 - Median/quartile values used as cutoff points

Methods: Analysis

- Primary endpoint: in-hospital death
- Secondary endpoints: stroke, atrial fibrillation, coagulopathy, acute renal failure, and unplanned reoperation
- Receiver operative curves (ROC) used to evaluate predictive value of NLR cutoff points
- Univariate and multivariate regression used for primary and secondary endpoints

Results

- 613 of the 650 patients (94.3%) had preoperative NLR values
 - Median value: 7.8 (interquartile range: 4.6-12.3)
- Primary outcome occurred in 94 patients (14.5%)
- 317 (48.7%) underwent repair more than 24 hours from symptom onset
- Overall, median preoperative NLR was slightly higher in the primary outcome group (8.0 vs. 7.7, $p=0.325$)
- When presenting ≥ 24 hours from symptom onset, preoperative NLR was much higher in the primary outcome group (8.6 vs. 6.8, $p=0.037$).

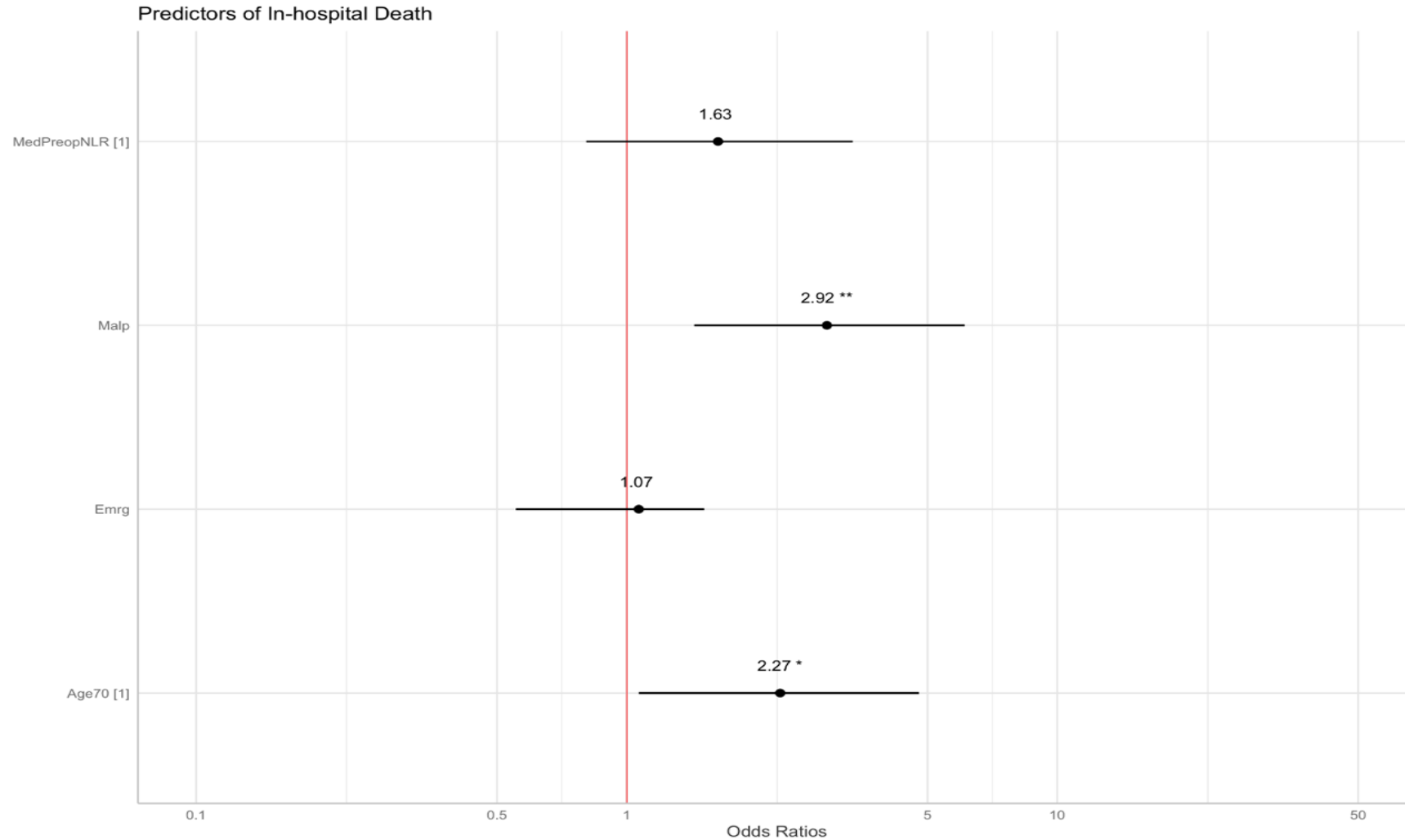
Results

- Median value NLR of 7.8 used as cutoff point in patients ≥ 24 hours from symptom onset
 - AUC: 0.620 (0.471-0.769); in-hospital death
- Significant predictor of the primary outcome, coagulopathy, and acute renal failure following repair (Table)

Univariate Table

Postoperative Outcomes	Odds Ratio	95% CI
In-hospital Death	2.05	1.05-4.13
Stroke	1.65	0.80-3.45
Atrial Fibrillation	1.51	0.94-2.43
Coagulopathy	2.28	1.27-4.16
Acute Renal Failure	1.99	1.23-3.24
Unplanned Reoperation	1.28	0.60-2.75

Multivariate Forrest Plot



Conclusion




- Preoperative NLR: accessible and inexpensive inflammatory biomarker with prognostic implications in surgical repair of ATAAD
- Appears most useful to predict postoperative complications in patients undergoing repair more than 24 hours from symptom onset
 - might signify ongoing acuity in illness and portend worse postoperative outcomes.

Thank You!



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