NEUTROPHIL-LYMPHOCYTE RATIO AND OUTCOMES IN PATIENTS WITH ATRIAL FIBRILLATION:
ANALYSES FROM ENGAGE AF- TIMI 48 TRIAL

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Background

- Neutrophil-to-lymphocyte ratio (NLR), is calculated as a simple ratio between the neutrophil and lymphocyte counts measured in peripheral blood (CBC).
- NLR is a readily available biomarker and has been associated with major adverse cardiovascular (CV) events.
- However, the association of NLR with bleeding events and CV death in patients with atrial fibrillation (AF) is unexplored.

Methods

- We determined NLR at baseline in 19,697 patients enrolled in ENGAGE AF-TIMI 48, a randomized trial comparing edoxaban versus warfarin in patients with AF at moderate to high risk of stroke, followed for a median of 2.8 years.
- Baseline NLR as a continuous variable and as cut-points were analyzed. Based on previous literature we have defined 3 NLR cut-points [<1.5 (low); 1.5-4.0 (average); and >4.0(high)].
- We studied the correlation among baseline NLR, hsCRP, and GDF-15 and analyzed the association of baseline NLR with ISTH major bleeding events and CV mortality, in models adjusted for relevant clinical covariates.
- The adjusted model included the individual components of the following scores:
  - CHADS2VASC: age, sex, heart failure, hypertension, previous stroke or TIA, history of PAD, prior MI, history of CAD, diabetes
  - HAS-BLED: chronic kidney disease, history of abnormal liver function, prior major bleeding or predisposition to bleeding, medication usage predisposing to bleeding, alcohol use
  - CHARLSON: pulmonary disease, end-organ damage, gastric or peptic ulcer, dementia, rheumatoid arthritis, skin ulcer cellulitis, depression, hemoglobin <13 g/dL, race, cancer.

Results

- NLR histogram in the total population
- NLR, hsCRP and GDF-15 correlation coefficients
- Adjusted spline curves for NLR and the probability of outcomes (Major bleeding, MACE, and CV death)

Conclusion

- NLR is a simple, easy, and widely available biomarker, obtained from a CBC, with no additional cost.
- In the ENGAGE AF-TIMI 48 trial, there was a weak-moderate correlation among baseline NLR and other inflammatory biomarkers.
- NLR predicted major bleeding, MACE, and CV death even after adjustments for ischemic, bleeding, and comorbidities.
- Edoxaban consistently reduced major bleeding, MACE, and CV death across NLR groups.