DOES NEUTROPHIL- TO- LYMPHOCYTE RATIO PREDICT OVERALL SURVIVAL IN PRIMARY MYELOFIBROSIS.

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Introduction

Consequently, activation of the Jak-STAT pathway plays a central role in the pathogenesis of PMF and resulting profound chronic inflammation (1, 2). The neutrophil-to-lymphocyte ratio (NLR) is an inflammatory biomarker that, when elevated, has been consistently associated with poor clinical outcomes in a variety of malignancies (3,4). The results of studies investigating the effect of NLR on overall survival in patients with PMF are conflicting

Aim

The aim of this study was to determine how NLR predicts OS in PMF patients.

Methods

Patients with PMF fulfilling WHO 2016 criteria were retrospectively analysed in the period from 2011 to 2024., who were registered at the National Hematology and Transfusion Center of Azerbaijan. All data were collected from medical records. Survival analyses were performed using the Kaplan-Meier method and Cox regression analysis. p-values <0.05 were considered statistically significant.

Results

A total of 72 PMF patients were retrospectively evaluated. Of these, 34 (47.2%) were male. Median age was 58.5 years, 17(23.6%) patients were young (under 50 years). Median follow-up was 28.67 months.

Median NLR was 5.08. Maximum cut-off for NLR in ROC curve analysis was 4.71. Patients were divided into two groups based on NLR: ≥4.71 high NLR group and <4.71 low NLR group. One patient (2.6%) in high NLR group died after a 205.81 month complications of splenectomy vs 9 (26.5%) patients in low NLR group. Median overall survival was 109 months.

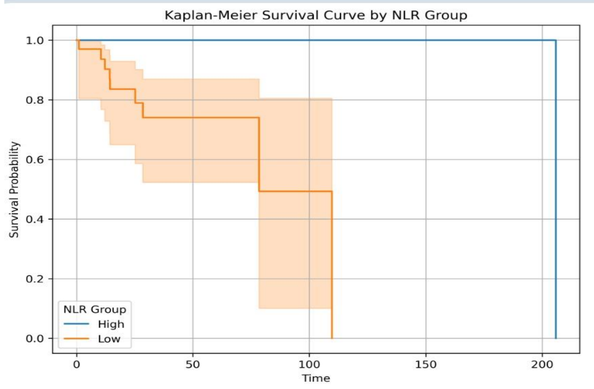
As expected from NLR, higher values were statistically significantly associated with higher WBC count (**p<0.001**), higher absolute neutrophil count (**p<0.001**). No differences in absolute lymphocyte count were observed between the two groups. Higher NLR values were also associated with older age (60 vs 57; p-0.349), high Jak2V617F allele burden (67.7 vs 22.68: 0.178), high platelet count (349.5 vs 313: 0.517), lower LDH (490.65 vs 534: 0.768), lower TSS (13.5 vs 15.33: p-0.643), but they were not statistically significant.

In our cohort, high NLR values were associated with significantly better median OS vs low NLR (**p-0.001**).

Table 1. Patients characteristics

Variable	High NLR, N=38	Low NLR, N=34	P value
Age	60.0 (IQR 12.75)	57.0 (IQR 13.75)	0.349
Male **Female**	19 (50 %) 19 (50 %)	15 (44.12%) 19 (55.88%)	0.739
Jak2,allele burden	22 (51.16%)	45 (24.32%)	0.005
Hgb, g/dl	12.65 (IQR 9.6)	11.25(3.92)	0.212
WBC, $\times 10^9$/L	19.69 (IQR 14.86)	8.65 (IQR 6.04)	**<0.001**
ANC, $\times 10^9$/L	15.11 (IQR 8.92)	5.61 (IQR 5.16)	**<0.001**
ALC, $\times 10^9$/L	1.98 (IQR 1.63)	2.08 (IQR 1.32)	0 731
MPN TSS	13.5 (± 9.34),N = 20	15.3 (± 12.7),N= 12	0.643

Graphic 1. Survival curves of high vs low NLR group PMF patients.



Discussion and summary

The association of elevated NLR in myelofibrosis is controversial**. M. Lucijanic** et al. analyzed 102 patients and found that NLR ≥10 was associated with shorter OS (HR=2.05; p=0.030).(5). Another retrospective study published by **Laganà** et al. found that patients with a baseline NLR ≥2 had a longer OS than patients with NLR <2 (6). In our study, we identified optimal cut-off values of NLR 4.71 for survival analysis using ROC curve analysis and compared the high NLR (≥4.71) group with the low NLR group. We showed that higher NLR was associated with significantly better OS than lower NLR. The limitations of our study are the retrospective design and the small number of participants. We believe that NLR is a valuable prognostic factor for predicting OS in PMF. However, we need large prospective studies to define the exact cut-off and impact of NLR.

References

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