

The Predictive Role of the Pretreatment Neutrophil/Lymphocyte, Lymphocyte/Monocyte, and Platelet/Lymphocyte Ratios in Multiple Myeloma Patients: A Single-Center Experience

Salma Elashwah ^{1*}, Hayam Ghazy ¹, Shaimaa El-Ashwah ², Mohamed Awad ¹, Tawfik ElKhodary ¹

MM-220 ¹ Medical Oncology Unit, ² Clinical Hematology Unit, Oncology Center, Mansoura University, Faculty of Medicine, Mansoura, Egypt



Abstract

The biological behavior of multiple myeloma is determined by genetics and the marrow microenvironment. Inflammatory cells are the major sources of cytokines in MM-infiltrated bone marrow, and they can mediate immune suppression in MM. The current risk stratification for myeloma patients is mainly based on tumor biology, tumor burden, and patient characteristics. No factors related to inflammatory microenvironment have been enrolled.

Objectives

To evaluate the prognostic value of cellular components of the systemic inflammatory response, including NLR, LMR, and PLR, on overall survival (OS) in MM patients.

Materials

A retrospective study, including 190 MM patients, with F/M (38.4%/61.6%) and mean age 57.22 ± 9.87 years who presented at Oncology Center, Mansoura University during 2008–2019.

Methods

We determined the optimum cutoff points for the NLR, LMR, and PLR as predictors for OS based on the receiver operating characteristic (ROC) curve.

Table 1: Performance characteristics of NLR, LMR and PLR for prediction of death.

	AUC	SE	p	95% CI	Cut off
NLR	0.516	0.046	0.710	0.426-0.607	1.99
LMR	0.601	0.043	0.021	0.517-0.684	3.33
PLR	0.567	0.044	0.122	0.481-0.654	80.1

Results

Overall survival (OS) was significantly improved in patients without renal impairment ($P=0.002$), serum albumin >3.5 mg/dl ($P=0.006$), LDH $<$ ULN ($P=0.032$), ISS stage I ($P=0.014$), NLR <1.99 ($P=0.028$), and LMR ≥ 3.33 ($P=0.004$) compared to other groups. OS was not affected by age more than 60 years ($P=0.13$), serum calcium $>$ ULN ($P=0.215$), PLR <80.1 ($P=0.147$), or lytic lesions more than 3 ($P=0.781$) compared to other groups.

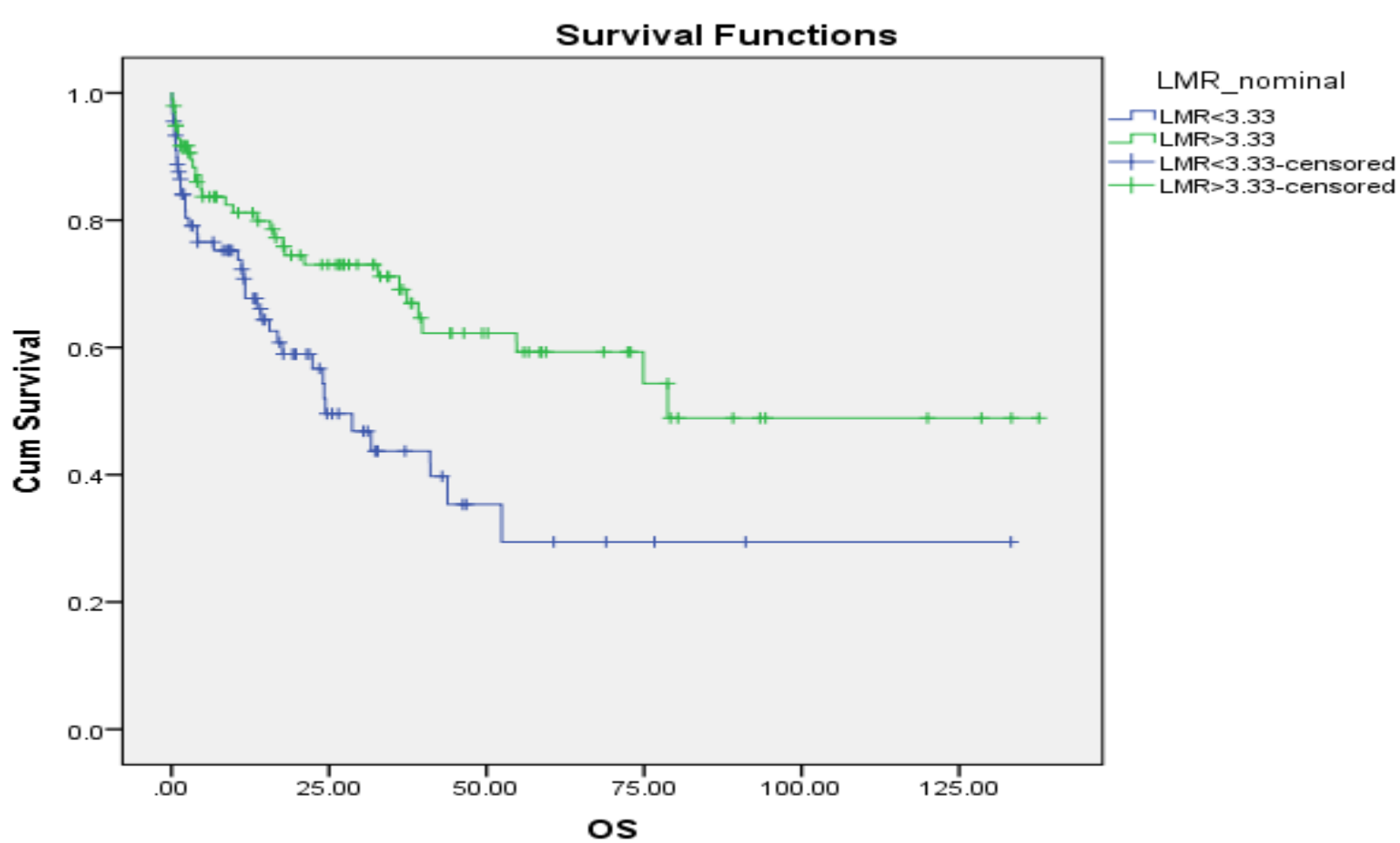


Figure 1: KM analysis shows the OS for patients with MM according to lymphocyte to monocyte ratio.

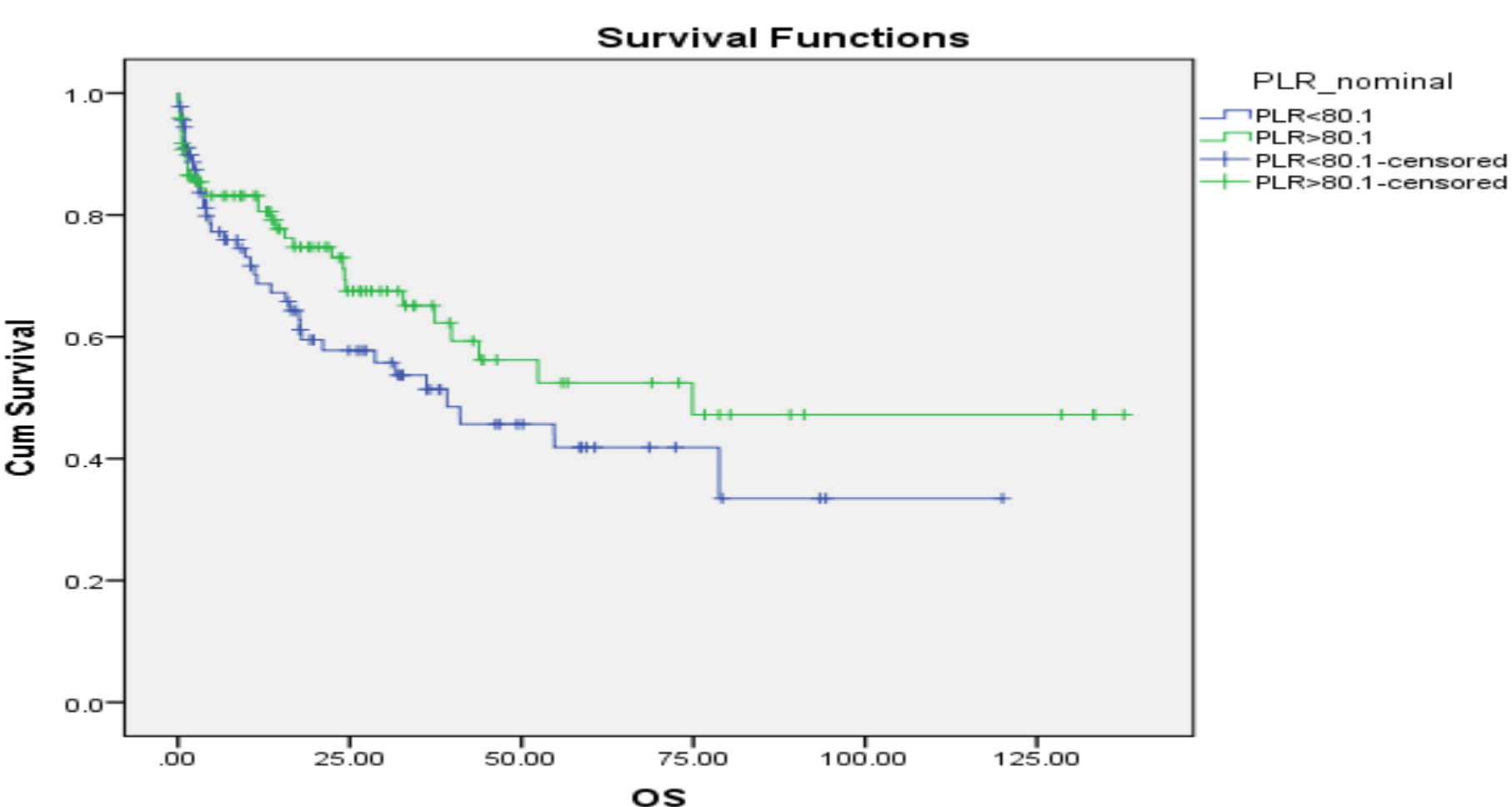


Figure 2: KM analysis shows the OS for patients with MM according to platelet to lymphocyte ratio.

Summary

Neutrophil/lymphocyte ratio and lymphocyte/monocyte ratio can be used in daily practice as a predictor for survival in multiple myeloma.

References

- Wongrakpanich, S., et al(2016). The prognostic significance of neutrophil-to-lymphocyte and platelet-to-lymphocyte ratios in patients with multiple myeloma. Journal of clinical laboratory analysis, 30(6), 1208-1213.
- Solmaz, S., et al(2018). Is the platelet-to-lymphocyte ratio a new prognostic marker in multiple myeloma?. Journal of Laboratory Physicians, 10(4), 363.