

# Baseline NLR and PLR predicts survival in cutaneous melanoma

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## Introduction

- In response to malignancy, there is a systemic inflammatory response syndrome measurable in the peripheral blood<sup>1-3</sup>
- Aberrations in the baseline (at diagnosis) peripheral blood **neutrophil-lymphocyte (NLR)** and **platelet-lymphocyte ratio (PLR)** are associated with outcomes in numerous cancers<sup>4,5</sup>
- The baseline NLR and PLR has not been studied in early cutaneous melanoma; the rationale for this study

## Methods

- Retrospective **cohort study with 10 years follow-up**
- Inclusion: patients with **biopsy proven melanoma undergoing wider re-excision and sentinel lymph node biopsy (SLNB)**
- Exclusion: no preoperative bloods, inflammatory or connective tissue diseases, pregnancy, chemotherapy, multiple melanomas or concomitant malignancies

## Statistical Analysis

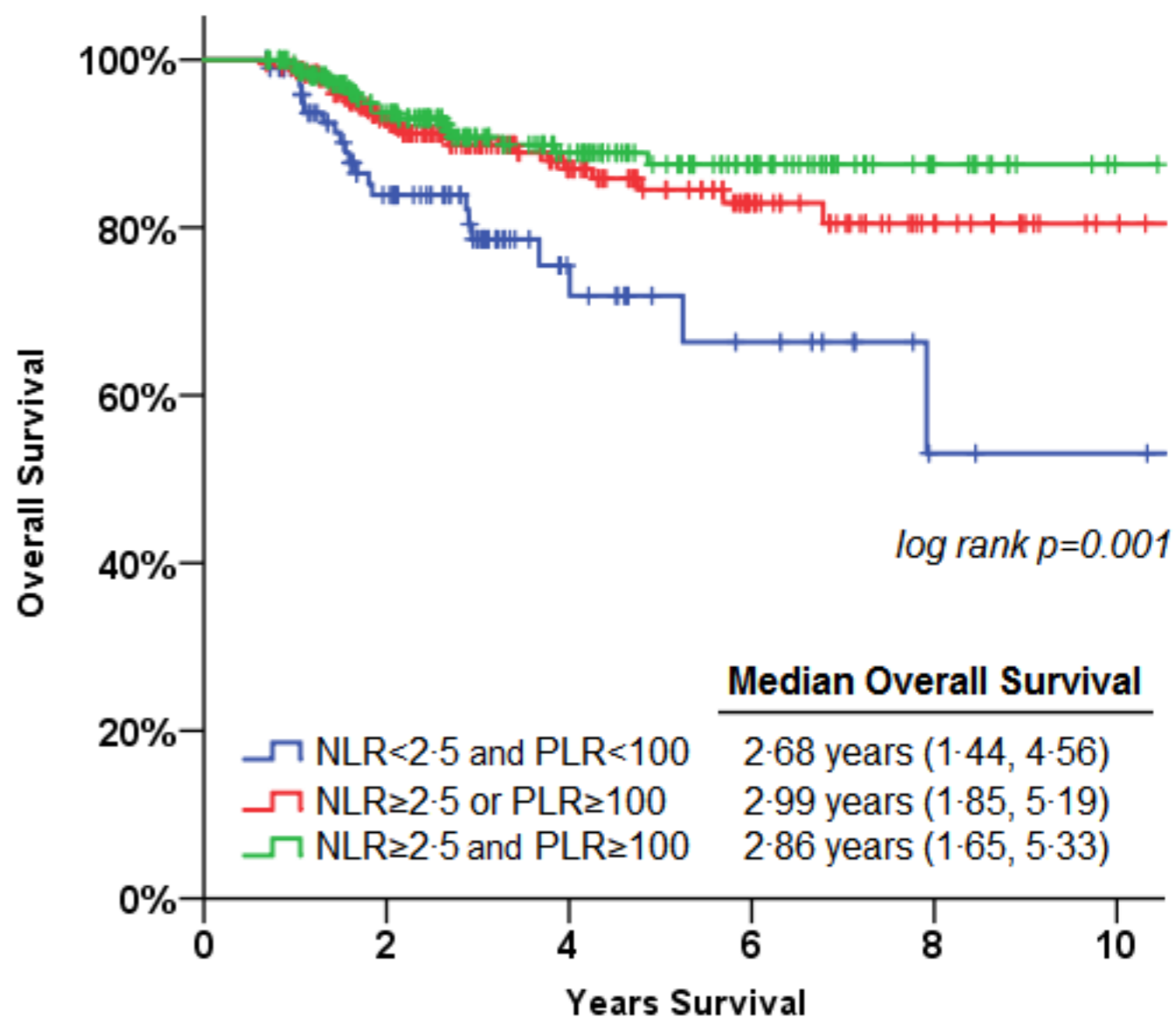
- The thresholds of NLR (2.5) and PLR were determined using CutOff Finder™ and based on ROC Manhattan distances
- Cox proportional hazards models were used to estimate hazard ratios (HR) with 95% confidence intervals (CI) for overall and melanoma specific survival, adjusted for important confounders\*
- For a difference in hazards of 0.8, with 90% power and 5% significant; we required n=227

## Results

- 1269 eligible; 569 included (165 males)
- AJCC Stage 1 (60%), Stage 2 (14%), Stage 3 (26%)
- SLNB positive for melanoma in 26%
- 67 deaths (11.8%); 57 (10%) from melanoma
- NLR/PLR strongly predicts survival (upper figure)
- Stratifying for SNLB status, NLR strongly predicts survival (lower figure) and identifies the immune naive
- A baseline NLR >2.5 predicts melanoma specific survival (adjusted HR 0.50 [95% CI 0.26, 0.97], p=0.04)

## Conclusions

- **Baseline NLR and PLR is associated with survival** in early stage cutaneous melanoma
- **Baseline NLR and PLR could be used to stratify 'poor immune responders' to adjuvant therapy**



Overall survival and baseline biomarkers	Crude Risk		Adjusted Risk*	
	HR (95% CI)	p-value	HR (95% CI)	p-value
NLR	<2.5	1 (referent)	1 (referent)	0.005
	≥2.5	0.55 (0.33, 0.94)	0.42 (0.23, 0.77)	
NLR-low and PLR-low	1 (referent)		1 (referent)	
NLR-high or PLR-high	0.33 (0.16, 0.67)	0.002	0.26 (0.12, 0.59)	0.007
NLR-high and PLR-high	0.39 (0.22, 0.71)		0.40 (0.20, 0.78)	

\*Adjusted for age, mitotic count per mm<sup>2</sup> and Breslow thickness (mm) as continuous variables; sex, presence of ulceration, vascular invasion, TILs, regression, microsatellites and the total number of sentinel lymph nodes containing metastatic melanoma as categorical variables.

