



Pretreatment Naples Prognostic Score for Prognostic Stratification in Advanced Non-Small Cell Lung Cancer Treated with Immune Checkpoint Inhibitors



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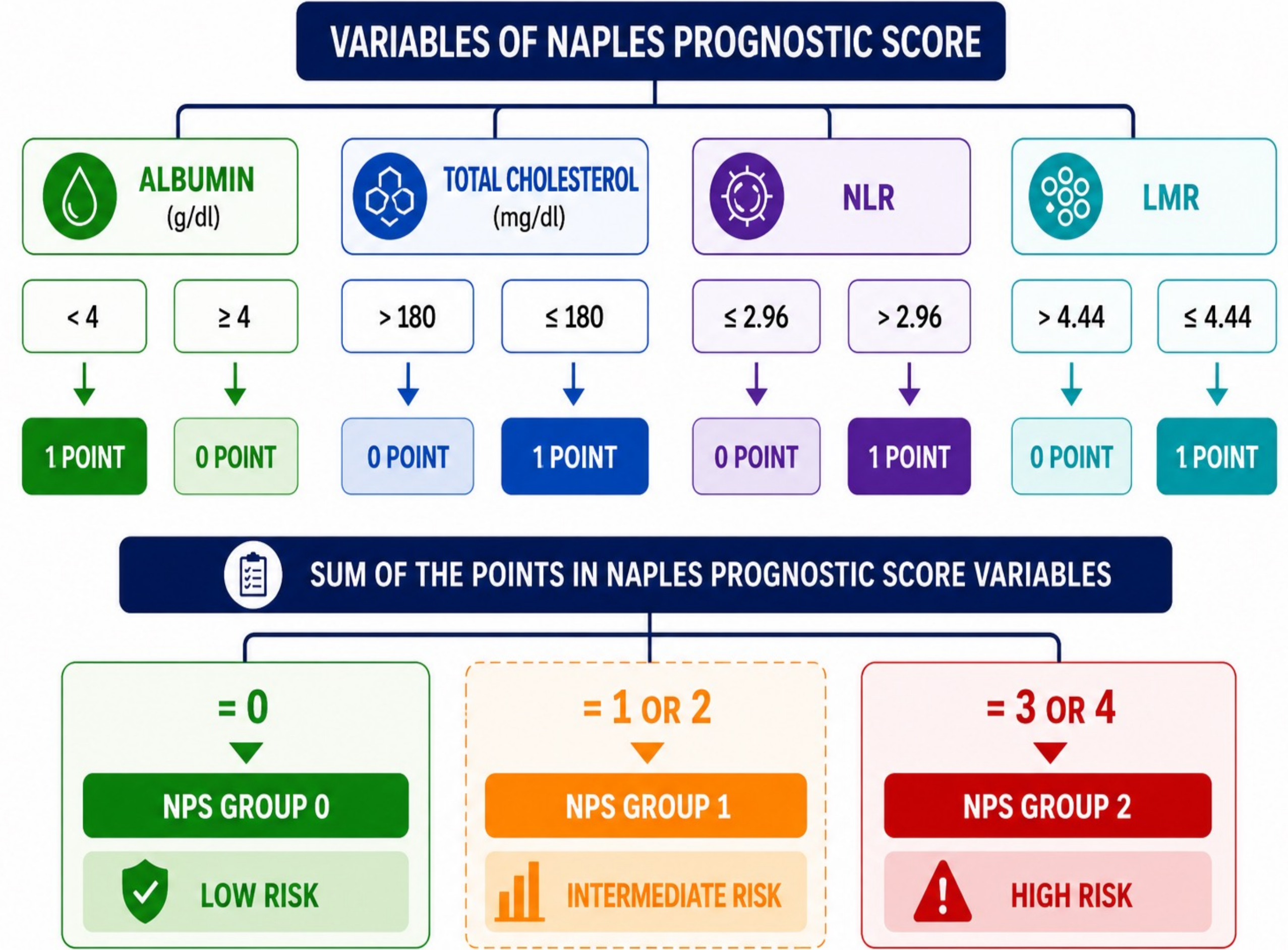
BACKGROUND & AIM

- ICI-based therapy has transformed advanced NSCLC, but outcomes remain heterogeneous.
- Naples Prognostic Score (NPS) integrates systemic inflammation and nutritional status using albumin, total cholesterol, neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR)
- Aim:** To investigate whether pretreatment NPS is associated with survival outcomes in patients with advanced NSCLC receiving ICI-based therapy.

METHODS

- Retrospective single-center cohort; May 2018-August 2024.
- Eligible patients had advanced NSCLC without actionable EGFR, ALK, or ROS1 alterations and received first- or second-line pembrolizumab or nivolumab.
- 216 patients were screened; 122 were included after exclusion for incomplete clinical/laboratory data (n=59), lipid-lowering therapy (n=29), active infection or rheumatologic disease (n=4), or previous/concomitant malignancy (n=2).
- OS and PFS were estimated using Kaplan–Meier analysis, and prognostic factors were evaluated with Cox proportional hazards regression.

NAPLES PROGNOSTIC SCORE



NPS, Naples Prognostic Score; NLR, neutrophil-to-lymphocyte ratio; LMR, lymphocyte-to-monocyte ratio.

Figure 1. Pretreatment NPS components and group classification.

STUDY COHORT AND CHARACTERISTICS BY NPS GROUP

- 122 patients: NPS Group 0, 10 (8%); Group 1, 43 (35%); Group 2, 69 (57%).
- Median age 63.3 years; 80% male, 83% current/former smokers, and 79.5% ECOG PS 0–1.
- 56% adenocarcinoma; 47% received chemo-immunotherapy and 56% were treated in the first-line setting.
- Baseline characteristics were generally comparable across NPS groups.
- Higher NPS was associated with more metastatic sites (p=0.002) and a less favorable best response (p=0.012).

SURVIVAL BY NPS GROUP

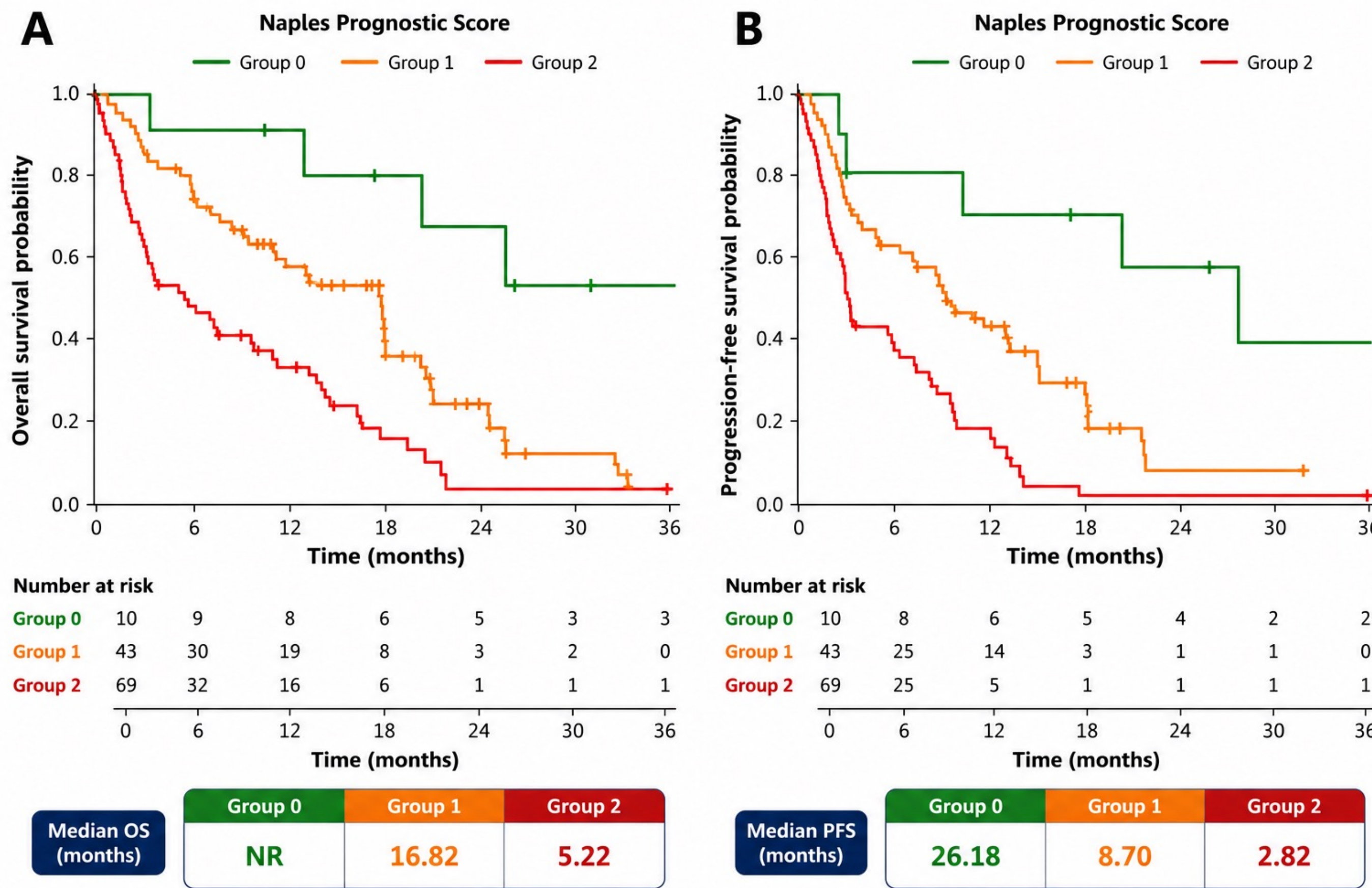


Figure 2. Kaplan-Meier curves for OS (A) and PFS (B).

RESPONSE

BEST RESPONSE TO IMMUNOTHERAPY BY NPS GROUP				
Best response	NPS Group 0 n=10	NPS Group 1 n=43	NPS Group 2 n=69	Overall N=122
Complete response (CR)	1 (10.0%)	1 (2.3%)	0 (0.0%)	2 (1.6%)
Partial response (PR)	4 (40.0%)	15 (34.9%)	14 (20.3%)	33 (27.0%)
Stable disease (SD)	3 (30.0%)	12 (27.9%)	13 (18.8%)	28 (23.0%)
Progressive disease (PD)	2 (20.0%)	15 (34.9%)	42 (60.9%)	59 (48.4%)
Total	10 (100%)	43 (100%)	69 (100%)	122 (100%)

Higher NPS was associated with a progressively less favorable response profile, with PD increasing from 20.0% in Group 0 to 60.9% in Group 2 (p=0.012).

MULTIVARIABLE COX REGRESSION

MULTIVARIABLE ANALYSIS - OVERALL SURVIVAL		
Variable	p	Adjusted HR (95% CI)
ECOG PS ≥2 (ref: ECOG PS 0-1)	<0.001	5.71 (3.21-10.16)
NPS Group 1 (ref: Group 0)	0.05	2.93 (1.00-8.53)
NPS Group 2 (ref: Group 0)	0.002	5.45 (1.89-15.70)

MULTIVARIABLE ANALYSIS - PROGRESSION-FREE SURVIVAL		
Variable	p	Adjusted HR (95% CI)
ECOG PS ≥2 (ref: ECOG PS 0-1)	<0.001	4.69 (2.74-8.04)
NPS Group 1 (ref: Group 0)	0.09	2.17 (0.87-5.36)
NPS Group 2 (ref: Group 0)	0.002	4.17 (1.70-10.18)

HR: hazard ratio; CI: confidence interval; ECOG PS: Eastern Cooperative Oncology Group performance status; NPS: Naples Prognostic Score.

CONCLUSION

- Pretreatment NPS was independently associated with both OS and PFS in patients with advanced NSCLC receiving ICI-based therapy.
- As a simple, inexpensive, and routinely available score, NPS may complement established clinical factors such as ECOG PS for baseline prognostic stratification.
- Prospective multicenter validation is needed before routine clinical implementation.

TAKE-HOME MESSAGE

A high pretreatment Naples Prognostic Score identifies patients with advanced NSCLC who have substantially poorer survival during ICI-based therapy.