



Higher prognostic nutritional index (PNI) is associated with reduced 90-day postoperative mortality

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Introduction

Prognostic nutritional index (PNI) is indicative of nutritional status. Low PNI is associated with poorer postoperative outcomes in patients with cancer¹. In this study, we evaluated the relationship between PNI and postoperative 90-day mortality in older adults with cancer.

Methods

We retrospectively studied 3203 cancer patients ≥65 years, who underwent elective surgery at Memorial Sloan Kettering Cancer Center (MSK) between 2015 and 2018. This cohort included patients who underwent preoperative geriatric assessment, had a postoperative hospital length of stay of ≥1 day and a 90-day follow-up.

PNI was calculated as follows: $([10 \times \text{preoperative albumin (g/dL)}] + [0.005 \times \text{absolute preoperative peripheral lymphocyte count (per mm}^3)])^2$.

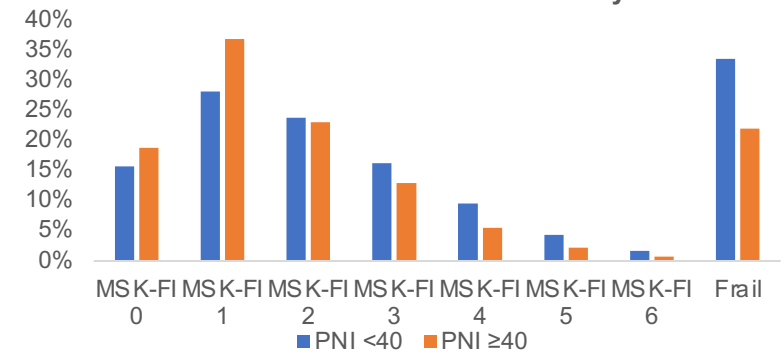
Frailty was assessed using the MSK Frailty Index³ and comorbid conditions were obtained using ICD-9 and ICD-10 codes.

Five 30-day postoperative outcomes were assessed including ICU admissions, hospital readmissions, ED visits, major and minor complications. Multivariate regression analysis was performed to evaluate the relationship between PNI and 90-day mortality.

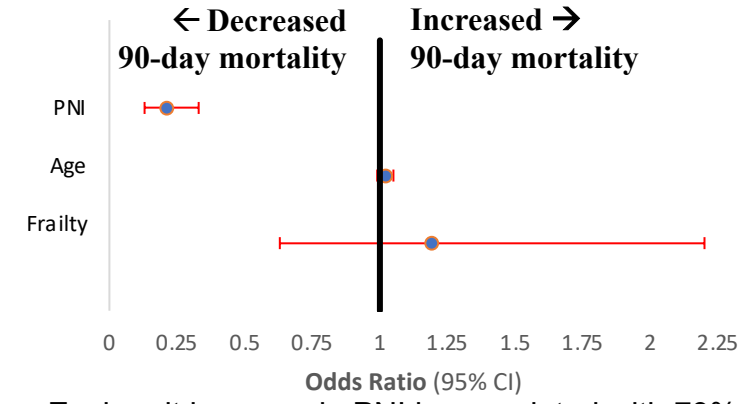
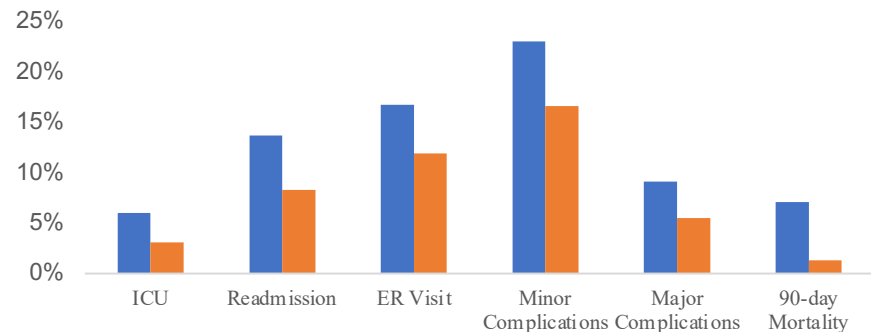
Results

Characteristics (Whole Cohort:3203)	PNI <40 (957)	PNI ≥40 (2246)
Age (mean / SD)	74.3 (6.7)	72.3 (6.0)
Male	471 (49%)	1106 (49%)
Diabetes Mellitus	240 (25%)	478 (21%)
COPD	188 (20%)	407 (18%)
Coronary Artery Disease	242 (25%)	439 (20%)
Kidney Disorder	165 (17%)	218 (10%)
ASA-PS I	0	3
ASA-PS II	68 (7%)	330 (15%)
ASA-PS III	777 (81%)	1810 (81%)
ASA-PS IV	112 (12%)	103 (5%)
Metastatic Disease	178 (31%)	267 (20%)
Hospital Length of Stay	8.0	5.3

Lower PNI is associated with frailty



Lower PNI is associated with poorer postoperative outcomes



Each unit increase in PNI is associated with 79% reduction in 90-day mortality.

Conclusions

- After adjusting for age, frailty, comorbid conditions, and American Society of Anesthesiologist Performance Scale (ASA-PS), PNI ≥40 is significantly associated with decreased 90-day mortality.
- Lower PNI is associated with poorer postoperative outcomes and frailty.
- Future studies should assess if interventions to improve PNI are associated with better postoperative outcomes.

References

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