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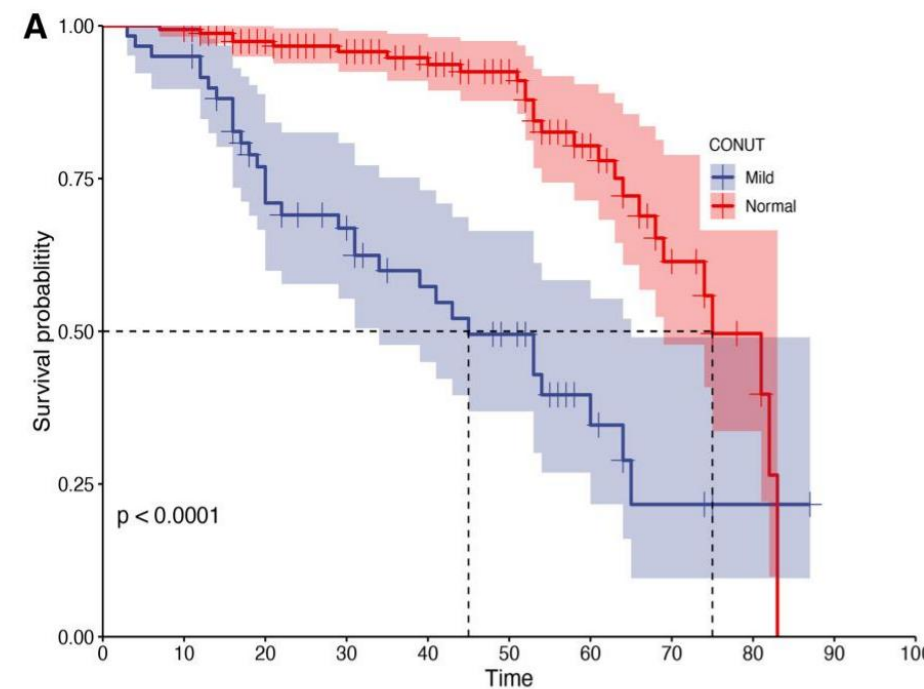
1-4 Department of Thoracic Surgery; Key Laboratory of Cardio-Thoracic Surgery; Clinical Research Center for Thoracic Tumors of Fujian Province; National Key Clinical Specialty of Thoracic Surgery, Fujian Medical University Union Hospital, Fuzhou, China | 5 Department of Cardiac Medical Center Nursing, Fujian Medical University Union Hospital, Fuzhou, China | Wenjie Yuan, Qinzhaohuang, and Xin Yan contributed equally.

Introduction

Baseline nutritional status may influence treatment tolerance and long-term outcomes after neoadjuvant therapy for non-small cell lung cancer (NSCLC). We tested whether the pretreatment Controlling Nutritional Status (CONUT) score improves postoperative prognostic stratification.

Methods

This single-centre retrospective cohort included patients with stage II-III NSCLC who received at least one cycle of neoadjuvant systemic therapy followed by definitive lung resection at Fujian Medical University Union Hospital from January 2018 through December 2023. Baseline CONUT was categorized as normal (0-1) or mild (2-4). Overall survival (OS) and disease-free survival (DFS) were evaluated using multivariable Cox models. Time-dependent ROC analysis, C-index, calibration, decision-curve analysis, and bootstrap validation assessed model performance.



226 patients

Post-neoadjuvant surgical cohort

3.759

Higher baseline CONUT:
adjusted HR

0.83

Final model C-index

Primary Findings

Of 248 initially eligible patients, 10 with missing covariates and 12 who did not proceed to surgery were excluded, leaving 226 patients (mild CONUT, n=60; normal CONUT, n=166). Median follow-up was 38.0 months. Higher baseline CONUT was associated with worse OS and DFS (adjusted HR, 3.759; 95% CI, 2.189-6.455; P<0.001). Mild CONUT was also associated with longer operations and hospital stays, less downstaging, and more grade III or higher complications. Adding CONUT increased the model C-index from 0.69 to 0.83.

Additional Findings

- Time-dependent CONUT AUCs for OS were 0.684, 0.754, and 0.690 at 1, 3, and 5 years, respectively.
- The final model included smoking history, SII, CONUT, and PNI; delta C-index versus the model without CONUT was 0.14 (95% CI, 0.05-0.23; P<0.01).
- Calibration intercepts and slopes were close to 0 and 1, and decision curves showed positive net benefit across clinically relevant thresholds.

Table 1. Cohort and model performance

Measure	Result
Cohort	226 patients: mild CONUT n=60; normal CONUT n=166
Survival association	Adjusted HR 3.759 (95% CI, 2.189-6.455); P<0.001
CONUT time-dependent AUC	1 year 0.684; 3 years 0.754; 5 years 0.690
Final model C-index	0.83 (95% CI, 0.801-0.856)
Model without CONUT	C-index 0.69 (95% CI, 0.653-0.726)
Incremental discrimination	Delta C-index 0.14 (95% CI, 0.05-0.23); P<0.01
Grade III or higher complications	Mild 16.67% vs normal 2.41%; P=0.007

Note: CONUT was measured before neoadjuvant therapy. The final model included smoking history, SII, CONUT, and PNI.

Conclusion

Baseline CONUT independently stratified long-term risk after neoadjuvant therapy and resection for NSCLC and added prognostic information beyond conventional clinical factors. The nomogram may support postoperative risk stratification and individualized follow-up, but external multicentre validation is required before routine implementation.

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Ethics

Ethics Committee of Fujian Medical University Union Hospital (No. 2024KY018); informed consent was waived for this retrospective study.

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