

ORIGINAL ARTICLE

Aspartate Transaminase-to-Albumin Ratio (ATAR), a Novel Prognostic Index, Predicts Outcomes in Patients with Small-Cell Lung Cancer

Shan Liu¹, Hanxiao Ren¹, Ruiling Zu², Dongsheng Wang², Ping Leng^{1,#}, Huaichao Luo^{2,#}

These authors contributed equally to this work

¹ College of Medical Technology, Chengdu University of Traditional Chinese Medicine, Chengdu, Sichuan, China

² Department of Clinical Laboratory, Sichuan Cancer Hospital & Institute, Sichuan Cancer Center, School of Medicine, University of Electronic Science and Technology of China, Chengdu, Sichuan, China

SUMMARY

Background: Small cell lung cancer (SCLC) is characterized by high invasion rates, rapid progression, and poor prognoses. Thus, identifying SCLC patients at high risk of progression and death is critical to improve long-term survival. In this study, the aspartate transaminase-to-albumin ratio (ATAR) was examined as a prognostic factor for SCLC patients.

Methods: We screened 196 SCLC patients from December 2013 to September 2022 at the Sichuan Cancer Hospital. The data was collected from patients' medical information as well as from their blood results during diagnosis. Using the Youden index as a cutoff value, patients were divided into high-risk (> 0.54) and low-risk (≤ 0.54) ATAR groups. We analyzed the prognostic factors for overall survival (OS) using the Kaplan-Meier method, univariate and multivariate analyses, Cox regression, and the C-index.

Results: There were 109 (55.6%) smokers among the patients, and the median OS was 17.55 months. The Kaplan-Meier analysis indicated that patients with high-risk ATAR had significantly lower OS ($p < 0.0001$). A multivariate analysis demonstrated that elevated ATAR is an independent adverse predictor of OS ($p < 0.001$, HR = 1.907). Our study found that ATAR is an independent predictor of survival outcomes in SCLC, which was superior to ALB, PNI, and SII in predicting outcomes in low-risk and high-risk groups (all $p < 0.05$). Models combining ATAR with ALB, PNI, and SII showed more powerful prognostic value than their corresponding original models. Moreover, the prognostic indicator ATAR can significantly stratify stage I - II and III - IV SCLC patients ($p < 0.05$).

Conclusions: Peripheral blood ATAR prognostic index can be used as an independent predictor of SCLC patients before treatment.

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Correspondence:

Huaichao Luo, MM
Department of Clinical Laboratory
Sichuan Cancer Hospital & Institute
Sichuan Cancer Center
School of Medicine
University of Electronic Science and Technology of China
No. 55, Section 4, South People's Road
Chengdu 610041, Sichuan
People's Republic of China
Phone: + 86 2885420344
Email: luo1987cc@163.com

Ping Leng
College of Medical Technology
Chengdu University of Traditional Chinese Medicine
Chengdu 611137
China.
Email: 596353806@qq.com

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Supplementary Data

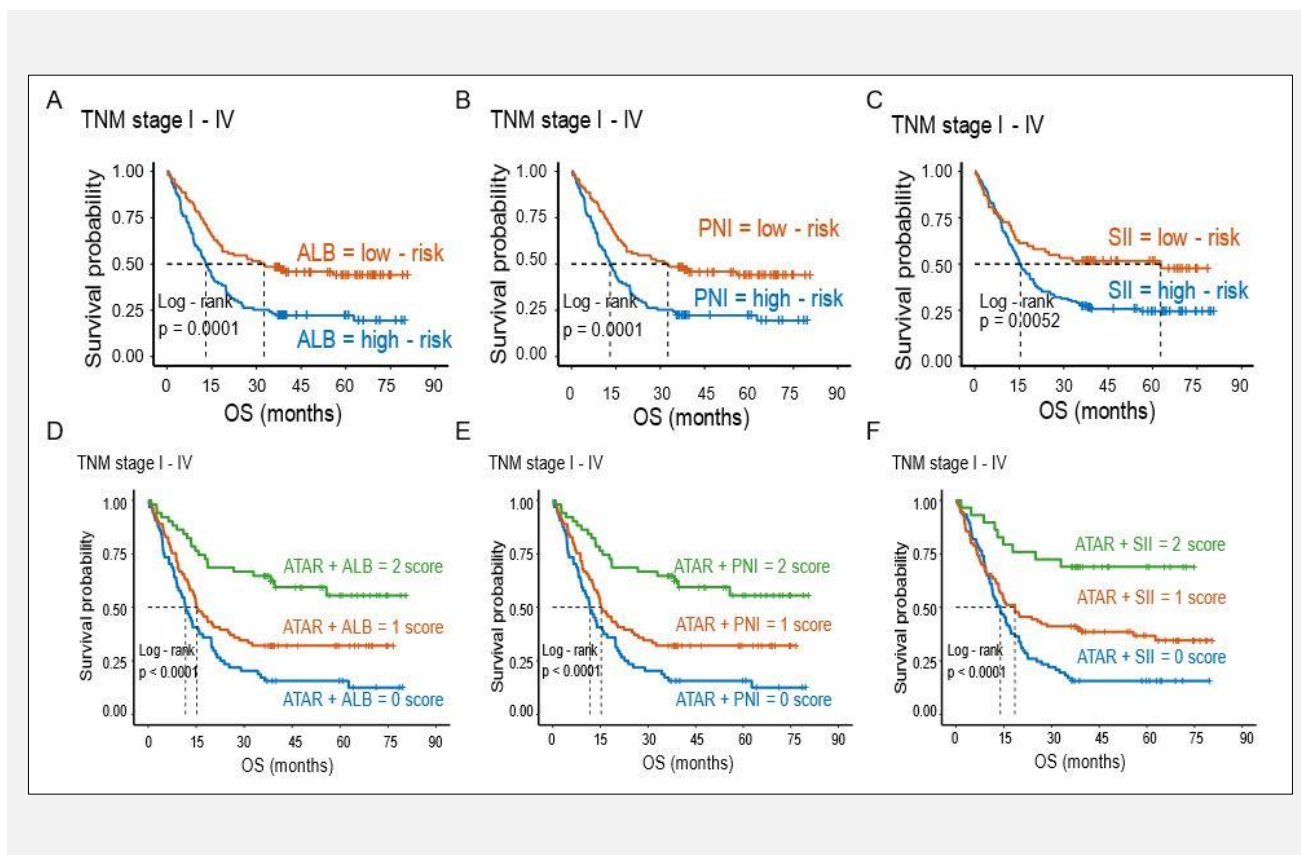


Figure S1. Kaplan-Meier plots of OS for stage I - IV SCLC patients.

Kaplan-Meier plots of OS by ALB (A), PNI (B), SII (C), Kaplan-Meier plots of OS by the new model combining ATAR and ALB (D), and PNI (E), and SII (F).