

# Advanced Lung Cancer Inflammation Index May Predict Recovery Following Stroke Thrombolysis

## Key Takeaways

- ALI captures nutritional reserve and systemic inflammation by integrating BMI, serum albumin, and NLR, potentially outperforming single inflammatory indices in prognostication.
- Retrospective cohort of 784 AIS patients receiving IVT within 4.5 hours used mRS at 3 months; mRS 2–6 defined nonexcellent recovery.
- Highest ALI quartile showed lower adjusted risk of poor outcome versus lowest quartile (OR 0.487; 95% CI, 0.310–0.767), supporting independent association.
- Restricted cubic splines indicated a nonlinear J-shaped curve, with sharply increasing risk below the 25th ALI percentile and a plateau at higher values.
- Because inputs are routinely collected, ALI could be implemented as a low-cost early triage tool to prompt intensified supportive care, though prospective mechanistic validation remains necessary.

*Advanced lung cancer inflammation index (ALI) predicts 3-month recovery after thrombolysis for acute ischemic stroke, with low ALI signaling higher risk.*

A novel inflammatory biomarker known as the advanced lung cancer inflammation index (ALI) may help predict recovery outcomes in patients with acute ischemic stroke (AIS) who were treated with intravenous thrombolysis (IVT), according to findings from a new multicenter study published in *Translational Neurology and Neurosurgery*.<sup>1,2</sup>

Researchers found that lower ALI levels were independently associated with poorer functional recovery 3 months after thrombolytic treatment, suggesting the marker could serve as a practical prognostic tool in stroke management.<sup>1</sup>

## Understanding ALI and Stroke Outcomes

Although it was originally developed as a prognostic marker in advanced non–small cell lung cancer, ALI has increasingly been investigated in cardiovascular and cerebrovascular diseases because it reflects both nutritional and inflammatory status.<sup>1,2</sup> The index combines body mass index (BMI), serum albumin levels, and neutrophil-to-lymphocyte ratio (NLR) using the formula:  $ALI = BMI \times Albumin / NLR$ .<sup>1</sup>

Inflammation is known to play a major role in ischemic stroke progression and poststroke recovery. Elevated inflammatory markers have previously been associated with worse neurologic outcomes following thrombolytic therapy.<sup>3,4</sup> Researchers noted that because ALI incorporates multiple physiologic parameters, it may provide a more comprehensive assessment of patient prognosis than individual biomarkers alone.<sup>1</sup>

## Study Evaluates ALI in Patients Receiving IVT

The retrospective multicenter study included 784 patients with AIS who were treated with IVT within 4.5 hours of symptom onset across 3 stroke centers in China.<sup>1</sup> Patients were followed for at least 3 months after treatment.

Investigators evaluated functional recovery using the modified Rankin Scale (mRS), defining nonexcellent outcomes as scores ranging from 2 to 6. Patients were stratified into quartiles according to ALI levels.<sup>1</sup>

The investigators found that patients with lower ALI scores were significantly more likely to experience nonexcellent outcomes following thrombolysis. Specifically, after adjustment for confounding variables, patients in the highest ALI quartile demonstrated substantially lower odds of poor functional recovery compared with those in the lowest quartile (OR, 0.487 [95% CI, 0.310-0.767];  $p = .002$ ).<sup>1</sup>

Additionally, restricted cubic spline analyses revealed a nonlinear J-shaped relationship between ALI and recovery outcomes. Risk for poor recovery increased substantially below the 25th percentile of ALI values before plateauing at higher levels, suggesting a potential threshold effect.<sup>1</sup>

### **Clinical Implications for Pharmacists and Stroke Care Teams**

The findings may hold important implications for pharmacists and multidisciplinary stroke care teams involved in acute treatment decision-making and poststroke management.

Because ALI relies on routinely collected clinical data—including BMI, albumin, and white blood cell counts—it could potentially serve as a low-cost, accessible biomarker for early risk stratification in AIS.<sup>1</sup> Researchers suggested that identifying patients with low ALI levels may help clinicians recognize individuals at elevated risk for poorer recovery and tailor supportive interventions accordingly.<sup>1</sup>

Previous studies have also linked elevated ALI scores with reduced mortality risk among patients with stroke and cardiovascular disease, further supporting its prognostic relevance.<sup>2,5</sup> In one analysis of National Health and Nutrition Examination Survey data, higher ALI levels were associated with lower all-cause mortality among patients with stroke.<sup>5</sup>

Investigators cautioned that additional prospective and multicenter studies are needed to validate the findings and clarify the biological mechanisms underlying the association between inflammation, nutritional status, and stroke recovery<sup>1</sup>; however, the current results add to growing evidence supporting inflammatory biomarkers as meaningful prognostic indicators in AIS management.

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