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Letter to the Editor

The Glucose-to-Lymphocyte Ratio can Serve as a Predictor of Post-Stroke Mortality Only if all Factors Determining this Mortality are Analysed

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Letter to the Editor

We read with interest the article by Lian *et al.* regarding a retrospective study on the association between the glucose-to-lymphocyte ratio (GLR) and 28-day mortality in 1,307 patients with ischemic stroke (IS) [1]. The study found that an elevated GLR is associated with increased 28-day mortality in IS patients, suggesting that GLR can serve as a biomarker for short-term risk stratification in this patient population [1]. While the study is pioneering, certain aspects warrant discussion.

The first point concerns the retrospective study design [1]. Retrospective studies have limited explanatory power [2]. Data quality is generally low, data may be missing, and only associations - rather than causal relationships - can be demonstrated. Furthermore, such studies are susceptible to recall and selection biases, present challenges in controlling for confounding factors, and generally offer a lower level of evidence compared to prospective studies [2].

A second point is that the GLR does not account for all mortality risk factors. Although GLR may serve as a biomarker for systemic inflammation and metabolic disturbances, post-stroke mortality does not depend solely on the presence of post-stroke inflammation or metabolic derangement. Risk factors for post-stroke mortality that may not be captured by the GLR include: stroke severity (usually measured using the NIHSS score), infarct size and location (strokes in the anterior circulation are associated with lower mortality than those in the posterior circulation), involvement of large arteries, low Glasgow Coma Scale (GCS) score at admission, comorbidities such as atrial fibrillation, cardiomyopathy or heart failure, chronic obstructive pulmonary disease (COPD), prior stroke or transient ischemic attack (TIA), chronic renal insufficiency, arterial hypertension, and inpatient complications following the stroke (e.g., pneumonia, other infections, sepsis), as well as cardiac and pulmonary complications).

The third point is that the outcome and mortality of a stroke depend heavily on the treatment administered during the acute phase [3]. Patients who reach the hospital early - and thus qualify for and actually receive thrombolysis or thrombectomy - exhibit lower post-stroke mortality than patients who do not receive this treatment [4]. Since early invasive treatment improves stroke outcomes, modern stroke management prioritizes early pharmacological or mechanical therapy in specialized treatment units. Did patients who underwent thrombolysis or thrombectomy actually show lower 28-day mortality?

The fourth point concerns the discrepancy regarding the finding that the GLR was associated with increased mortality in non-ventilated, but not in ventilated, patients with ischemic stroke (IS) [1]. One would expect ventilated patients to be more severely affected and thus at higher risk for an unfavourable clinical course. What was the explanation for this unexpected finding?

The fifth point is that the GLR was determined only once within 24 hours of admission [1]. To assess measurement variability (test-retest variability), it would have been useful to measure the GLR, for example, within one hour of admission as well as at 12 and 24 hours post-admission. It is known that the GLR can fluctuate significantly depending on the time of measurement during the hospital stay [5].

The final point is that the term "cognitive heart failure" listed in Table 1 is incorrect [1]. If the authors actually meant "congestive heart failure," this should be corrected.

Overall, the risk of mortality following a stroke should not be assessed solely on the basis of GLR determination. Rather, additional parameters influencing post-stroke mortality should be included.

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References

1. Lian C, Zhu D, Li X, Jia Z. Association between the Glucose-to-Lymphocyte Ratio and Mortality in Patients with Ischemic Stroke: Based on the MIMIC-IV Database. *Ann Indian Acad Neurol*, May 29, 2026. Doi: 10.4103/aian.aian_877_25
2. Talari K, Goyal M. Retrospective studies - utility and caveats. *J R Coll Physicians Edinb*, Dec 2020; 50(4):398-402. Doi: 10.4997/JRCPE.2020.409
3. Moraes MA, Jesus PAP, Muniz LS, Costa GA, Pereira LV, Nascimento LM, *et al.* Ischemic stroke mortality and time for hospital arrival: Analysis of the first 90 days. *Rev Esc Enferm USP*, Apr 14, 2023; 57:e20220309. Doi: 10.1590/1980-220X-REEUSP-2022-0309en
4. Heo NH, Lee MR, Yang KH, Hong OR, Shin JH, Lee BY, *et al.* Short- and long-term mortality after intravenous thrombolysis for acute ischemic stroke: A propensity score-matched cohort with 5-year follow-up. *Medicine (Baltimore)*, Nov 5, 2021; 100(44):e27652. Doi: 10.1097/MD.00000000000027652
5. Cai S, Wang Q, Ma C, Chen J, Wei Y, Zhang L, *et al.* Association between glucose-to-lymphocyte ratio and in-hospital mortality in intensive care patients with sepsis: A retrospective observational study based on Medical Information Mart for Intensive Care IV. *Front Med (Lausanne)*, Aug 24, 2022; 9:922280. Doi: 10.3389/fmed.2022.922280