

Letter to the Editor



Letter to the Editor: Is the Glucose/Potassium Ratio Reliable to Predict Patient Outcomes for Traumatic Brain Injury?

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► See the article “The Role of the Glucose Potassium Ratio in the Management of Traumatic Brain Injury” in volume 19 on page 82.

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Conflict of Interest

The author has no financial conflicts of interest.

Dear Editor:

I read with great interest the article by Marini and Sein²⁾ regarding the role of the glucose-potassium ratio in the management of traumatic brain injury (TBI). The authors showed a statistically significant relationship between the high glucose-potassium ratio (cut-off value, 50) and poor clinical outcome (mRS 4 or more) using multivariate logistic regression analyses. I commend the authors for their achievements in developing a useful biomarker for predicting poor prognosis following TBI, which has not yet been established.^{1,3-5)} However, I would like to comment on a few issues that require consideration. The study included 76 of 251 patients during the study period. They mentioned that patients with moderate, severe, or mild TBI requiring surgery were included; however, ‘requiring surgery’ is not a clear criterion. Additionally, 15 and 14 patients were excluded because of the criteria and data unavailability, respectively. Among the 47 patients included, there was no mention of any who died, and it was necessary to clarify whether there was any selection bias in the determination of the exclusion criteria. In addition, the authors did not provide information regarding the status of diabetes, metabolic syndrome, or insulin resistance as well as pharmacological history, including intake of oral hypoglycemic agents, insulin, or beta-blockers, which might have acted as potential confounding factors influencing the outcomes.

There is also a significant issue concerning the levels of glucose and electrolytes. The authors are presumed to have measured these values several times after admission. However, there was no mention of whether the values were selected at a consistent time point or if average values were used in the analyses. Additionally, the absence of the timing for mRS scoring could have influenced the results. Clearly defining such key variables that could greatly affect the outcome and reduce measurement errors would significantly impact the credibility of the paper.

In conclusion, I extend our congratulations to the authors for highlighting this intriguing scientific matter. While this study has limitations, such as being based on a small cohort and the variables not being strictly set, it is valuable because it investigated important and practical clinical variables. The authors’ research forms a foundational basis for a broader study with a prospective design that could evaluate this biomarker in TBI, thereby aiding in the formation of treatment policy decisions.

REFERENCES

1. Fujiki Y, Matano F, Mizunari T, Murai Y, Tateyama K, Koketsu K, et al. Serum glucose/potassium ratio as a clinical risk factor for aneurysmal subarachnoid hemorrhage. *J Neurosurg* 129:870-875, 2018
[PUBMED](#) | [CROSSREF](#)
2. Marini JI, Sein ME. The role of the glucose potassium ratio in the management of traumatic brain injury. *Korean J Neurotrauma* 19:82-89, 2023
[PUBMED](#) | [CROSSREF](#)
3. Matano F, Fujiki Y, Mizunari T, Koketsu K, Tamaki T, Murai Y, et al. Serum glucose and potassium ratio as risk factors for cerebral vasospasm after aneurysmal subarachnoid hemorrhage. *J Stroke Cerebrovasc Dis* 28:1951-1957, 2019
[PUBMED](#) | [CROSSREF](#)
4. Shibata A, Matano F, Saito N, Fujiki Y, Matsumoto H, Mizunari T, et al. Serum glucose-to-potassium ratio as a prognostic predictor for severe traumatic brain injury. *J Nippon Med Sch* 88:342-346, 2021
[PUBMED](#) | [CROSSREF](#)
5. Wu XY, Zhuang YK, Cai Y, Dong XQ, Wang KY, Du Q, et al. Serum glucose and potassium ratio as a predictive factor for prognosis of acute intracerebral hemorrhage. *J Int Med Res* 49:3000605211009689, 2021
[PUBMED](#) | [CROSSREF](#)