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Letter to Editor

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Prognostic value of copeptin in patients with acute ischemic stroke

Wen-Jun Tu[1], Hui Chen[1], Li-Hua Cui[1]

[1] China Rehabilitation Research Center, Beijing 100068, China

Dear Editor

Stroke is the second leading cause of mortality in the China and one of the leading causes of severe morbidity. An early risk assessment with estimate of the severity of disease and prognosis is pivotal for optimized care and allocation of healthcare resources. Reliable prognostic markers available during the initial phase after acute stroke may aid clinical decision-making.

Vasopressin (AVP) is a potent synergistic factor of corticotropin-releasing hormone as hypothalamic stimulator of the hypothalamo-pituitary-adrenal axis.[1] Some studies found increased AVP levels in patients with ischemic stroke were correlated with stroke severity[2] and outcome.[3] Copeptin is released in an equimolar ratio to AVP, and is more stable in the circulation and easy to measure.[4]

We designed a preliminary prospective cohort study to evaluate the prognostic value of copeptin in acute stroke patients. Adult patients with a persistent neurological deficit due to ischemic stroke were eligible. Sixty-nine nonconsecutive patients admitted at 3 hospitals with a diagnosis of acute ischemic stroke confirmed by CT scanning were evaluated. All patients provided informed consent. In patients who died within 24 hours after admission or in patients who were discharged, data from admission or until discharge were collected. The National Institute of Health Stroke Scale (NIHSS) score was assessed on admission. Functional outcome was obtained on days 90 according to the modified Rankin Scale (mRS) blinded to copeptin levels. Poor functional outcome at 3 months was considered as a mRS score > 2. Blood samples were collected on admission and immediately centrifuged and sera stored at –70°C. Copeptin was measured with a sandwich immunoluminometric assay.[1] Discrete variables are summarized as counts (percentage), and continuous variables as medians and interquartile ranges (IQRs). Two-group comparison of not normally distributed data was performed using Mann–Whitney U test, and a Kruskal–Wallis one-way analysis of variance was used for multi-group comparisons.

The median age of the 69 patients was 62 years (IQR, 55 to 84), 61% were men and the median NIHSS score on admission was 7 points (IQR, 3 to 12). In 38 patients (55%) with a poor functional outcome (13 patients died), copeptin levels were higher compared with those in patients with a favorable outcome (23.5; IQR, 10.6 to 64.3 pmol/L vs. 7.5; IQR, 3.8 to 13.6 pmol/L; $P < 0.0001$). Multivariate logistic regression analysis adjusted for age and NIHSS score showed that copeptin was an independent predictor of poor functional outcome (odds ratio = 3.12; 95%CI, 1.54–6.46). The area under the receiver operating characteristic curve of copeptin was 0.64 (95%CI, 0.58–0.71) for poor functional outcome.

These preliminary results confirm an important conclusion; copeptin levels are a useful tool to predict outcome 3 months after acute ischemic stroke. Copeptin, though not a specific biomarker, is an attractive tool for routine clinical use because it is easy and quick to measure. As a limitation, the effects of copeptin on long-term clinical outcome were not included in the study protocol, so these relationships were not examined beyond the 90-day clinical outcome.

References

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Corresponding Author: Wen-jun Tu
China Rehabilitation Research Center, Beijing 100068, China
Email: twjun8387@163.com