Urea/Creatinine Ratio

- Association between dehydration trajectory, delayed cerebral ischemia, and functional outcome in patients with aneurysmal subarachnoid hemorrhage: assessment of interaction and mediation
- On-admission and dynamic trend of laboratory profiles as prognostic biomarkers in COVID-19 inpatients
- Dehydration Status at Admission Predicts Recurrence in Patients with Traumatic Chronic Subdural Hematoma
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- The effect of renal denervation in an experimental model of chronic renal insufficiency, The REmnant kidney Denervation In Pigs study (REDIP study)

Blood Urea/Creatinine Ratio is considered to be an ideal biomarker of dehydration.

Zhang et al. investigated the association between the Urea/Creatinine Ratio trajectory and delayed cerebral ischemia (DCI) as well as functional aneurysmal subarachnoid hemorrhage prognosis. Additionally, they explored the role of DCI as a mediator and its interaction with dehydration.

Consecutive aSAH patients were reviewed. A latent class growth mixture model (LCGMM) was applied to classify the dehydration trajectory over 7 days. Multivariate logistic regression was conducted to examine associations between dehydration trajectories, DCI, and poor outcome. Furthermore, causal mediation analysis combined with a four-way decomposition approach was employed to quantify the extent to which DCI mediates or interacts with dehydration in influencing poor outcomes.

A total of 519 aSAH patients were included. By applying the LCGMM method, we categorized participants into three dehydration trajectory groups: low group (n=353), decreasing group (n=97), and high group (n=69). Multivariate analysis demonstrated that dehydration trajectory was independently associated with both DCI and poor outcome. The effect of dehydration trajectory on poor outcome was partially mediated by DCI, involving both pure mediation and mediated interaction. Specifically, the excess relative risk of DCI was decomposed into four components: controlled direct effect (66.42%), mediation only (16.35%), interaction only (6.09%), and mediated interaction (11.16%).

Among aSAH patients, dehydration trajectory was significantly associated with poor functional outcome, with DCI serving as a partial mediator through both direct and interaction effects ¹⁾

Zhang et al. provide compelling evidence that dehydration trajectory over time is a key determinant of outcomes in aSAH, with delayed cerebral ischemia playing a partial mediating role. Their application of advanced statistical techniques adds credibility and depth to the findings. However, limitations related to the surrogate marker for hydration, retrospective design, and need for external validation should temper overinterpretation. Nonetheless, this work lays a strong foundation for further prospective, mechanistic, and interventional research.

1)

Zhang P, Tu Q, Tong M, Shi K, Yang T, Wang J, Zhang W, Pang Q, Li Z, Xu Z. Association between dehydration trajectory, delayed cerebral ischemia, and functional outcome in patients with aneurysmal subarachnoid hemorrhage: assessment of interaction and mediation. J Neurointerv Surg. 2025 Mar 20:jnis-2024-022953. doi: 10.1136/jnis-2024-022953. Epub ahead of print. PMID: 40113247.

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