



Letter to the Editor

Letter to the editor: “Risk factors associated with acute kidney injury in patients with traumatic brain injury: A systematic review and meta-analysis”

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The recent article by Zhang et al., entitled “*Risk factors associated with acute kidney injury in patients with traumatic brain injury (TBI): A systematic review and meta-analysis*” is a comprehensive and methodologically sound meta-analysis [1]. A critical appraisal of the diagnostic criteria employed across the included studies, which may have influenced the reported incidence of acute kidney injury (AKI) and, consequently, the study’s conclusions, is nevertheless warranted.

Notably, among the 20 studies analyzed, seven (35 %) utilized modified definitions of AKI, and four (20 %) did not report the use of either serum creatinine or urine output in the diagnostic process. As Zhang et al. acknowledge, the original AKI definitions (e.g., KDIGO, RIFLE, AKIN) mandate the use of both serum creatinine and urine output for diagnosis, whereas the modified versions accept either criterion independently. This variability is concerning, as more than half of the included studies did not fully adhere to the comprehensive diagnostic standards, potentially underestimating AKI incidence.

This issue aligns with findings from several recent studies, which demonstrate that omitting urine output criteria can lead to significant underdiagnosis. For instance, a retrospective cohort of 1376 ICU patients reported a 20 % AKI incidence using KDIGO criteria based solely on serum creatinine, rising to 38 % when urine output was incorporated [2]. Similarly, a prospective study involving 260 patients applying RIFLE criteria observed a 24 % AKI incidence using creatinine alone versus 45 % when urine output was also considered [3]. Furthermore, another study employing AKIN criteria found an AKI incidence of 28 % with creatinine alone, which increased to 55 % with the addition of urine output data [4]. Importantly, the inclusion of urine output not only increased diagnostic sensitivity but also enabled earlier AKI detection (median of 13 h vs. 24 h with serum creatinine alone) [2].

These data strongly suggest that exclusive reliance on serum creatinine compromises the timely and accurate identification of AKI, particularly in neurocritical care populations where renal complications may evolve rapidly. We therefore believe that the pooled AKI incidence reported by Zhang et al. (19 %) may be a substantial underestimation. This limitation should be carefully considered when interpreting the meta-analysis findings, particularly regarding the strength and generalizability of the identified risk factors.

Future research would benefit from the consistent application of standardized AKI diagnostic criteria that incorporate both serum creatinine and urine output. Such rigor is essential to ensure the accurate estimation of AKI incidence and to inform the development of robust predictive models and clinical guidelines for this vulnerable population.

Availability of data and materials

Not applicable.

CRediT authorship contribution statement

Julien Moury: Conceptualization, Writing – original draft, Writing – review & editing. **Nathan De Lissnyder:** Writing – original draft, Writing – review & editing. **Soufiane Habryka:** Writing – original draft, Writing – review & editing. **Sydney Blackman:** Writing – original draft, Writing – review & editing. **Sarah Dahma:** Writing – original draft, Writing – review & editing. **Ilann Oueslati:** Writing – original draft, Writing – review & editing. **Patrick M. Honore:** Conceptualization, Supervision, Writing – original draft, Writing – review & editing.

Consent for publication

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Ethics approval and consent to participate

Not applicable.

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Declaration of competing interest

The authors declare to have no competing interests.

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