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Predicting Intracerebral Hemorrhage Expansion [Letter]

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Dear editor

We have carefully read the article titled "Predicting Intracerebral Hemorrhage Expansion with Inflammation Indices, Non-Contrast Computed Tomography Signs, and Computed Tomography Angiography Spot Sign", recently published in Neuropsychiatric Disease and Treatment by Ji et al.[1] Intracerebral hemorrhage (ICH) poses a significant challenge in clinical practice, as its expansion is associated with accelerated neurological deterioration and increased mortality, exceeding 40% within the first month.[1,2] In recent years, there has been growing interest in inflammatory biomarkers, such as interleukin-6 and C-reactive protein (CRP), which have proven useful in predicting complications, including hematoma expansion and perihematomal edema.[2] This article highlights the relevance of combining inflammatory biomarkers with imaging findings for early risk stratification, aligning with current personalized medicine strategies in cerebrovascular diseases.

The study by Ji et al[1] provides an innovative perspective by integrating multiple clinical, inflammatory, and radiological parameters to enhance the prediction of hematoma expansion, a critical phenomenon associated with poorer functional outcomes and higher mortality. The inclusion of inflammatory indices, such as the neutrophil-to-lymphocyte ratio (NLR) and C-reactive protein (CRP) levels, underscores the importance of systemic inflammatory status as a predictor of intracerebral bleeding progression.[3,4] These biomarkers, along with advanced radiological signs—such as the "black hole sign" and the "spot sign" on CTA—strengthen the model's predictive capacity to anticipate hematoma expansion, enabling early therapeutic interventions.[5] Additionally, the use of the BAT score provides a practical tool for rapid risk assessment in acute clinical settings.[1,2] The validation of predictive models like the one proposed by Ji et al[1] aligns with recent research emphasizing the utility of biomarkers not only for outcome prediction but also to guide clinical interventions, particularly in resource-limited settings.[2] This multidimensional approach represents a step forward in evidence-based medicine and offers a valuable tool for clinical decision-making in critical scenarios.

However, the study presents some methodological limitations that could be addressed in future research. First, the retrospective and single-center design limits the generalizability of the findings, suggesting the need for multicenter validations with more diverse populations to confirm the model's utility. Second, the reliance on Computed Tomography Angiography (CTA) may restrict its applicability in resource-limited settings, highlighting the importance of developing alternative models based exclusively on NCCT.[1,2] It would be relevant to explore in greater depth how the modulation of inflammatory biomarkers, such as CRP, could influence long-term clinical outcomes and whether early intervention strategies based on these markers might alter the disease course. Additionally, variability in the interpretation of radiological signs emphasizes the need to standardize imaging protocols to reduce interobserver discrepancies and improve the reproducibility of results across different centers.[1,2] Finally, integrating emerging biomarkers, such as secretoneurin, in future studies could further enhance the precision of predictive models and improve clinical outcomes.

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Disclosure

The authors report no conflicts of interest in this communication.

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