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## **L-lactate in acute mesenteric ischemia: toward integrated diagnostic and therapeutic stratification**

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**Key words:** mesenteric ischemia, L-lactate, prognosis.

Dear Editor,

We read with great interest the article entitled “L-lactate in acute mesenteric ischemia: a reliable biomarker for diagnosis and prognosis?”.<sup>1</sup> The authors provide valuable insight into the prognostic role of preoperative L-lactate levels in patients with Acute Mesenteric Ischemia (AMI), a condition associated with substantial diagnostic challenges and high mortality. Identifying reliable biomarkers for early risk stratification is of undeniable clinical importance. Nevertheless, we believe that several additional aspects could further enhance the clinical impact and scientific depth of this important study.

First, current literature emphasizes that contrast-enhanced Computed Tomography Angiography (CTA) is the cornerstone imaging modality for the diagnosis and prognostic assessment of suspected AMI.<sup>2</sup> CTA enables accurate identification of arterial occlusion, venous thrombosis, non-occlusive hypoperfusion, bowel wall thickening, pneumatosis intestinalis, and portal venous gas. While the present study focuses primarily on biochemical markers, integrating L-lactate levels with radiologic findings could have allowed the development of a more comprehensive diagnostic and prognostic model. Correlating lactate

levels with specific imaging features may provide better stratification of patients at risk for transmural necrosis or the need for extensive resection.

Second, the management paradigm of AMI has evolved in recent years. Beyond the traditional open surgical approach, early endovascular revascularization strategies have gained increasing attention. Systematic reviews suggest that, in selected patients, endovascular treatment may reduce bowel resection rates and improve short-term outcomes compared with open surgery.<sup>3</sup> In this context, analyzing L-lactate levels according to the type of revascularization (open vs. endovascular) could yield valuable information regarding the biomarker's prognostic performance in different therapeutic settings and potentially support more individualized treatment strategies.

Third, rather than relying on a single preoperative lactate measurement, evaluating lactate dynamics—particularly lactate clearance—may offer stronger prognostic information. In critically ill populations, early lactate clearance has been associated with improved survival and better hemodynamic recovery.<sup>4</sup> In AMI, where tissue hypoperfusion is central to pathophysiology, serial lactate measurements could reflect ongoing ischemia or response to intervention more accurately than a static threshold value. Incorporating dynamic lactate assessment might therefore improve clinical decision-making.

Fourth, emerging evidence suggests that more intestine-specific biomarkers, such as Intestinal Fatty Acid-Binding Protein (I-FABP), may detect mucosal injury earlier than systemic markers like lactate.<sup>5</sup> Serum I-FABP levels have been shown to rise shortly after the onset of intestinal ischemia, reflecting early epithelial damage. Combining L-lactate with more specific biomarkers could improve diagnostic accuracy and allow the construction of multiparametric predictive models, potentially overcoming the limited specificity of lactate alone.

Finally, AMI represents a heterogeneous clinical entity encompassing arterial embolism, arterial thrombosis, non-occlusive mesenteric ischemia, and mesenteric venous thrombosis. These etiological subtypes differ significantly in pathophysiology, clinical course, and mortality risk.<sup>6</sup> Evaluating biomarker performance according to aetiology could provide more targeted and clinically applicable insights. It is plausible that the prognostic value of L-lactate may vary between embolic, thrombotic, and non-occlusive forms of AMI, and subgroup analyses might reveal meaningful differences.

In conclusion, the study makes an important contribution by highlighting the prognostic relevance of L-lactate in AMI. Future investigations integrating imaging findings, revascularization strategies, dynamic lactate monitoring, and intestine-specific biomarkers—while accounting for etiological heterogeneity—may provide stronger and more clinically actionable evidence in this challenging field.

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**Conflict of interest:** The author declares no potential conflict of interest, and all authors confirm accuracy.

**Availability of data and materials:** All data generated or analyzed during this study are included in this published article.