THE ANATOLIAN JOURNAL OF CARDIOLOGY

Official journal of the TURKISH SOCIETY OF CARDIOLOGY

Comment on "Dysregulation of Serum miR-212-3p Serves as a Biomarker to Predict Disease Onset and Short Term Prognosis in Acute Coronary Syndrome Patients"

LETTER TO THE EDITOR

To the Editor,

We read with great interest the article by Luo et al[1] on serum miR-212-3p as a diagnostic and prognostic biomarker for acute coronary syndrome (ACS).[1] The authors report strong associations, including an area under the curve of 0.952 and a hazard ratio of 5.077 for predicting major adverse cardiovascular events (MACE). These findings appear statistically robust, yet several methodological issues restrict their clinical interpretation.

The study compared ACS patients only with individuals showing coronary arterial atherosclerosis (CAA) and non-significant stenosis (<50%), excluding healthy participants. This omission limits the ability to determine whether elevated miR-212-3p is specific to ACS or simply reflects atherosclerotic burden. The study excluded patients with chest pain attributable to causes other than ACS, which limits assessment of the biomarker's performance in real-world diagnostic settings. In emergency practice, distinguishing ACS from other acute chest pain etiologies is critical for appropriate triage. Without inclusion of such comparator groups or healthy controls, the reported diagnostic specificity of miR-212-3p cannot be generalized beyond the study population.

The authors suggest that miR-212-3p may serve as an early biomarker before cardiac troponin I (cTnI) elevation. However, blood samples were collected only once at admission, and the reported correlation between miR-212-3p and cTnI ($r = 0.936$) indicates synchronous release rather than temporal precedence. To validate early diagnostic potential, serial sampling at defined intervals is required. A single time point cannot reveal dynamic expression patterns or confirm that miR-212-3p rises earlier than cTnI.

All ACS patients underwent percutaneous coronary intervention (PCI), while CAA controls did not. This introduces an intervention-related bias, as the observed MACE incidence of 28.91% reflects outcomes in revascularized patients rather than the full ACS population. The prognostic significance of miR-212-3p may therefore be confounded by procedural or treatment-related effects. Including medically managed patients or conducting stratified analyses would strengthen claims of independent predictive power.

Several relevant confounders were also not addressed. Factors such as left ventricular ejection fraction, renal function, and post-PCI medication use are known to influence cardiovascular outcomes and should be adjusted for in the analysis. Moreover, the single-center design and modest sample size (n = 238) restrict generalizability. The proposed "multidimensional risk assessment model" integrating

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Available Online Date: March 13, 2026

Cite this article as: Şentürk N, Cömert AD. Comment on "dysregulation of serum miR-212-3p serves as a biomarker to predict disease onset and short term prognosis in acute coronary syndrome patients". *Anatol J Cardiol.* 2026;30(6):401-402.

DOI: 10.14744/AnatolJCardiol.2025.6050

miR-212-3p and cTnI is speculative and requires validation in larger, prospective cohorts.

In conclusion, Luo et al[1] provide interesting preliminary evidence linking serum miR-212-3p to ACS severity and prognosis, but methodological limitations preclude its immediate clinical application. Future studies should include healthy and non-ischemic chest pain controls, apply serial temporal sampling, incorporate both revascularized and conservatively treated patients, and perform comprehensive multivariable adjustment. Only through such rigorous design can the diagnostic and prognostic value of miR-212-3p be reliably established.

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: The authors declare that this study received no financial support.

REFERENCE

1. Luo B, Du W, Jiang G, et al. Dysregulation of serum miR-212-3p serves as a biomarker to predict disease onset and short-term prognosis in acute coronary syndrome patients. *Anatol J Cardiol*. 2025;29(12):693-700. [CrossRef]