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Letter to the Editor

More appropriate study design needs to confirm the diagnostic utility of S100A4 protein

Dear Editor,

The diagnosis of an acute myocardial infarction (AMI) is a diagnostic challenge. Diagnosis based on the combination of chest pain, electrocardiography (ECG), and elevations in biomarkers of cardiac injury. Symptoms are frequently atypical or absent and ECG abnormalities may be nonspecific. As a result, the rise and/or fall of blood biomarkers are cornerstone of AMI diagnosis. The S100 proteins are a family of two calcium-binding proteins that have EF-hand type conformation. The EF hand is a helix-loop-helix structural domain or motif found in a large family of calcium-binding proteins like cardiac troponins.

Previously S100A1 serum levels were found significantly increased in patients with AMI[1]. On the basis of this observation, Gong et al[2] have investigated diagnostic utility of S100A4 protein for AMI. When compared with troponin which is most accepted cardiac biomarker form the same molecular family results of study is promising. They have reported that circulating S100A4 levels in patients who presented with AMI were significantly higher while compared control group. They have observed that elevated plasma S100A4 levels could be a novel biomarker for early diagnosing of AMI.

Ideal biomarker can have clinical value if it is accurate, it is readily available, it is acceptable to the patient, it is easy to interpret by clinicians, it has high sensitivity and high specificity for the outcome, it is not present in normal serum and non-cardiac tissue, it has immediate release (early detection), it has long time window for diagnosis but < 24 hours to permit diagnosis of recurrent ischemia, its release proportional to injury size and its results available in less than 1 hour and it has "Rule out" strategy[3]. In this present study, fasting blood samples were collected 10-12 hours after admission with diagnosis of AMI. However, the time interval between pathological appearance of infarction and death is quite brief, e.g. 6 hours[4]. A 12-hour delay for blood sampling is not reliable in acute conditions. Moreover, patients who have an acute ST elevation myocardial infarction (STEMI), reperfusion therapy should not await the results of cardiac biomarkers. Patients with postponed their blood sampling would be expected to have higher biomarker concentrations at presentation, or any time thereafter, compared with the patients whose blood are collected very early after AMI onset, therefore, accuracy of this cardiac biomarker becomes questionable.

In conclusion, despite the advancements in cardiology diagnosis of AMI is frequently enigmatic. Biomarkers are sine qua non diagnostic tools for clinicians. As authors conducted S100A4 protein is very strong candidate biomarker for AMI diagnosis. I believe further studies with appropriate design will support findings of this pivotal study.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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