Analysis and clinical significance of microRNA-499 expression levels in serum of patients with acute myocardial infarction


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ABSTRACT. The aim of this study was to investigate the expression level of microRNA-499 and its clinical significance in serum of patients with acute myocardial infarction (AMI). We recruited 59 patients with AMI and 60 healthy individuals undergoing physical examination in our hospital during the same period as controls. Peripheral blood was drawn in the morning on the same day of microRNA extraction. The expression level of microRNA-499 was analyzed by real-time fluorescent quantitative polymerase chain reaction (qPCR). The sensitivity and specificity of the clinical diagnosis of AMI were analyzed by a receiver operating characteristic (ROC) curve. Fluorescent qPCR analysis showed that the expression of microRNA-499 in serum of patients with AMI was significantly higher than in controls (P < 0.05). MicroRNA-499 was detected in blood serum 3 h post-AMI, reaching a peak after 12 h and declining after 15 h. The area under the ROC curve (AUC) for the gold standard cardiac troponin I (cTnI) was 0.971 [95% confidence interval (CI): 0.951-1.000], and for the microRNA-499, AUC = 0.915 (95%CI: 0.826-1.000). When the microRNA-499 levels
in patient and control (> 1.5) sera were compared, the sensitivity of microRNA-499 in judging AMI was found to be 86.37% and the specificity was 93.47%. Our results demonstrated that the expression levels of microRNA-499 in serum of patients with AMI were abnormal. Its high sensitivity and specificity for the diagnosis of AMI suggest that it would be useful as an auxiliary index for clinical diagnosis of AMI.

**Key words:** Acute myocardial infarction; MicroRNA-499; Sensitivity; Specificity