

MicroRNAs as an Early Diagnostic Predictor of Heart Failure Complicated Acute Myocardial Infarction

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Abstract

MicroRNA detection is considered to be a promising way for the development of early noninvasive diagnostics in patients with myocardial infarction (MI). MicroRNA is stable in biological substance which can be successfully isolated from various tissues. MicroRNA expression levels do not differ by gender and age, quantitative analysis of microRNA expression can be carried out using standard laboratory techniques. Objective: to evaluate the expression level of microRNA 208a-5p and microRNA 499, as well as associated clinical signs and symptoms in patients with MI and acute heart failure (AHF) class II-IV to Killip. Materials and methods: 250 patients treated in ICU with MI were examined. Males were 67.2%, females – 32.8%. The average age was 65.2 ± 2.7 years. Patients were divided into (I) 126 persons with MI and AHF, (II) 124 with MI without AHF. MicroRNA expression in plasma was detected by real-time polymerase chain reaction. Results: In group I patients, the normalized expression level (NUE) of microRNA 208a-5p - 24(16;34). It was statistically higher than in II - 14(9;20) NUE, $p < 0.05$. Serum microRNA 499 of patients in group I was 9 (7;12) NUE, in group II- 5 (4;7) NUE, respectively, $p < 0.05$. Conclusions: patients with MI and AHF had statistically higher expression level of microRNAs 499 and 208a-5p-24 that also correlated with severity of AHF. It seems as perspective prognostic marker of HF development after MI.

Keywords

MicroRNA, Myocardial Infarction, Acute Heart Failure