MiRNA AS A NOVEL BIOMARKER OF MYOCARDIAL INJURY: STUDIES ON CABG PATIENTS

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Background: MicroRNAs (miRNA) are non-coding, small (20-25 nucleotides), endogenous, single-stranded RNAs. MicroRNAs modulate gene expression by binding to complementary sequences in the 3' untranslated regions in mRNA resulting in translation inhibition or mRNA degradation. There is increasing evidence that miRNAs play a critical role in many pathological processes such as cancer and cardiovascular disease. Moreover, recent studies indicate changes in miRNA expression in heart diseases. The studies on rat model show that plasma miRNA-208 may be a useful biomarker of myocardial infarction. The aim of this study was to investigate expression of miRNA-208 in plasma of coronary artery bypass graft (CABG) patients and its correlation with the myocardial infarction biomarkers and the clinical state of the patients.
Methods: The study included analysis of miRNA-208 expression in plasma samples from 30 patients undergoing the CABG surgery. The samples were collected before, 3h, 6h and 12h after the surgery. Total RNA was isolated from plasma with *mir*Vana PARIS Kit. MicroRNA expression was analysed using TaqMan-based real-time PCR.
Results: Preliminary data indicate that miRNA-208 is present only in the plasma collected after CABG surgery (n=30). The expression of miRNA-208 increases to a detectable level already 3h after surgery (n=21) and decreases to undetectable level (Ct>40) in 12h after operation (n=14). Additionally, expression of miRNA-208 in plasma corresponded to plasma level of Troponin I and the clinical state of patients.
Conclusions: The plasma miRNA-208 might be considered as an early and specific biomarker of myocardial injury with a direct importance to the treatment.