

# Circulating miR-122-5p/miR-133b Ratio Is a Specific Early Prognostic Biomarker in Acute Myocardial Infarction

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## **Abstract**

### Background:

MicroRNAs (miRNAs) are key players in cardiovascular development and disease. However, not only miRNAs of a cardiac origin have a critical role in heart function. Recent studies have demonstrated that miR-122-5p, a hepatic miRNA, increases in the bloodstream during ischemic cardiogenic shock and it is upregulated in the infarcted myocardium. The aim of the present study was to determine the potential of circulating miR-122-5p as a biomarker for early prognostic stratification of ST-segment elevation acute myocardial infarction (STEMI) patients.

### Methods and Results:

One hundred and forty-two consecutive STEMI patients treated with primary angioplasty were included in the study. Serum levels of miR-1-3p, -122-5p, -133a-3p, -133b, -208b-3p and -499a-5p were measured at the time of cardiac catheterization by quantitative polymerase chain reaction and related to in-hospital and long-term outcome. During a follow up of 20.8 months, 9 patients died, 6 had recurrence of myocardial infarction, and 26 patients suffered an adverse cardiovascular event. Event-free survival was significantly worse in patients with a higher miR-122-5p/133b ratio (3rd tertile distribution, above 1.42 Log(10)), having almost a 9-fold higher risk of death or myocardial infarction and a 4-fold higher risk of adverse cardiovascular events.

### Conclusions:

This study showed that the miR-122-5p/133b ratio is a new prognostic biomarker for the early identification of STEMI patients at a higher risk of developing major adverse events after undergoing primary percutaneous coronary intervention. (Circ J 2016; 80: 2183–2191)

## **Keywords:**

Circulating miRNAs, miR-122-5p, miR-133b, Myocardial infarction, Risk stratification