SYSTEMATIC REVIEW ON ROLE OF miRNAs IN AMI OF YOUNG ADULTS

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Abstract

Acute myocardial infarction (AMI) is the leading cause of death worldwide. In Malaysia, people are getting AMI at younger age. The role of microRNA (miRNA) in pathogenesis of AMI and its involvement in young population has not been studied. Databases including PubMed, Science Direct and Medline were searched between January 2010 and December 2020 for this systematic review. A total of 97 articles found. Only 1 article showed that the research was done in young AMI population. 13 miRNAs were found to be upregulated and 16 downregulated in young acute coronary syndrome (ACS) patients, which included both ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI). miRNA 183-5p was significantly upregulated in ACS patients with NSTEMI whereas miRNA 134-5p, miRNA 15a-5p and let 7i-5p were significantly downregulated in patients with STEMI compared to healthy control. Plasma miRNA 183-5p, miRNA 134-5p, miRNA 15a-5p and let 7i-5p were dysregulated in STEMI and NSTEMI where they can potentially be used to discriminate the two ACS forms in future study.

Keywords: Acute myocardial infarction, microRNA, acute coronary syndrome, ST Elevation Myocardial Infarction and Non-ST Elevation Myocardial Infarction

Introduction

Acute myocardial infarction (AMI) is the leading cause of death worldwide. In Malaysia, people are getting AMI at younger age compared to well-developed countries. The role of microRNA (miRNA) in pathogenesis of AMI is not well elucidated and its involvement in young population has not been studied. A systematic review was conducted on the role of miRNAs in pathogenesis of AMI in young adults to find a better understanding and any research gap that can be pursued in future studies.

Methods

The systematic review performed using available electronic databases and also previous reviews. The databases were broad search and began with the generic terms to identify search terms that were relevant. Databases including PubMed, Science Direct and Medline were searched between January 2010 and December 2020 for this systematic review.

Results

A total of 97 articles found. Only 1 article showed that the research was done in young AMI population (mean age 38.5 ± 4.3 years). Thirteen miRNAs were found to be upregulated and 16 downregulated in young acute coronary syndrome (ACS) patient, which included both ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI). miRNA 183-5p was significantly upregulated (8-fold) in ACS patients with NSTEMI whereas miRNA 134-5p, miRNA 15a-5p and let 7i-5p were significantly downregulated (5-fold, 7-fold and 3.5-fold respectively) in patients with STEMI compared to healthy control.

Conclusions

Plasma miRNA 183-5p, miRNA 134-5p, miRNA 15a-5p and let 7i-5p were dysregulated in STEMI and NSTEMI where they can potentially be used to discriminate the two ACS forms in future study.

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Chairman
Kuantan Research Day 2020

SYSTEMATIC REVIEW ON ROLE OF miRNAs IN ACUTE MYOCARDIAL INFARCTION OF YOUNG ADULTS

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ABSTRACT

Acute myocardial infarction (AMI) is the leading cause of death worldwide. In Malaysia, people are getting AMI at younger age compared to well-developed countries. The role of microRNA (miRNA) in pathogenesis of AMI is not well elucidated and its involvement in young population has not been studied. The systematic review performed using available electronic databases and also previous reviews. The databases were broad search and began with the generic terms to identify search terms that were relevant. Databases including PubMed, Science Direct and Medline were searched between January 2010 and December 2020 for this systematic review. A total of 97 articles found. Only 1 article showed that the research was done in young AMI population. 13 miRNAs were found to be upregulated and 16 downregulated in young acute coronary syndrome (ACS) patient, which included both ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI). miRNA 183-5p was significantly upregulated in ACS patients with NSTEMI whereas miRNA 134-5p, miRNA 15a-5p and let 7i-5p were significantly downregulated in patients with STEMI compared to healthy control. Plasma miRNA 183-5p, miRNA 134-5p, miRNA 15a-5p and let 7i-5p were dysregulated in STEMI and NSTEMI where they can potentially be used to discriminate the two ACS forms in future study.

Keywords: Acute myocardial infarction, microRNA, acute coronary syndrome, STEMI and NSTEMI