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Research Article

Value of miR-30d and miR-146a as Prognostic Biomarkers for Heart Failure Development Post Myocardial Infarction

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ABSTRACT

Introduction: The development of heart failure (HF) following an acute myocardial infarction (AMI) is common and associated with poor clinical outcomes. In this context, the early identification of left ventricular remodelling that ultimately leads to HF remains challenging, with current biomarkers underperforming, and plasma microRNAs (miRs) have been proposed as functional biomarkers. Fibrotic and inflammatory processes are implicated in pathogenic remodelling, and miR-30d and miR-146a are reported to have regulatory function in these processes. This study aimed to determine if circulating levels of these miRs could be early predictors of HF development post myocardial infarction.

Method: We conducted a case-control study with 46 AMI patients who developed HF within 1 year (cases) matched with control AMI patients (1:2 ratio) who did not develop HF and measured plasma miRs via quantitative reverse transcription polymerase chain reaction.

Results: miR-30d was significantly upregulated in cases compared to controls ($p<0.05$), whereas miR-146a was not significantly different ($p=0.57$). ROC curve analysis for miR-30d demonstrated a modest sensitivity and specificity for this prediction (AUC=0.61, $p<0.05$). However, once adjusted for confounding factors such as atrial fibrillation and markers of inflammation, miR-30d was not found to be independently associated with HF development post myocardial infarction (OR 1.12 95% CI 0.99-1.27, $p=0.08$).

Conclusion: miR-30d and markers of inflammation were significantly elevated in patients who developed HF within 1 year of their AMI. Further research is needed to determine the regulatory role that miR-30d may play in HF and the utility it may have as a prognostic marker in this setting.

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