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**PLASMA MICRORNA-143 AND MICRORNA-145 AS A POTENTIAL NONINVASIVE BIOMARKER FOR IN-STENT RESTENOSIS**

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**Objective** In-stent restenosis (ISR) remains a major problem even in the drug-eluting stent (DES) era, and the mechanism of ISR was neointimal growth. MicroRNAs (miRNAs) regulate the formation of pathologic vascular neointimal lesion. Therefore we investigated the levels of plasma miRNAs that specifically implicated in vascular smooth muscle cell phenotypic switching in patients with ISR and determined the potential of the miRNAs to serve as biomarkers for ISR.

**Methods** Two hundred and nine patients, who received coronary angiography six months to one year after first PCI (for drug-eluting stent implantation), were divided into ISR (n=62) and Non-ISR (Control, Ctl) (n=147) group according to the chromatography results. Plasma miR-21, miR-143, miR-145, miR-221 and miR-222 levels were determined by quantitative real-time PCR. Receiver operating characteristic curves analysis was used to evaluate the diagnostic ability of miR-21, miR-143 and miR-145.

**Results** The relative quantity expression of miR-21 was significantly higher in plasma from ISR patients than that from Ctl patients (p=0.001), while the levels of miR-143 (p=0.0001) and miR-145 were significantly decreased in plasma from ISR

patients compared with Ctl patients ( $p < 0.0001$ ). The plasma levels of miR-221 ( $p > 0.05$ ) and miR-222 ( $p > 0.05$ ) had no significance between two groups. The area under curve of miR-21, miR-143 and miR-145 was 0.564 ( $p < 0.01$ ), 0.839 ( $p < 0.001$ ) and 0.871 ( $p < 0.001$ ). The specificity of them was 85%, 93.5%, and 95.1%. The sensitivity of them was 42.1%, 73.7% and 75.7%.

**Conclusions** Plasma miR-143 and miR-145 can be used as potential molecular markers of ISR. The levels of miR-21, miR-143 and miR-145 in plasma may be a new therapeutic target for ISR.