**CLINICAL IMPLICATIONS OF microRNA SCORE IN DISCRIMINATING VASOSPASTIC ANGINA FROM ATHEROTHROMBOTIC ANGINA OR NON-CORONARY CHEST PAIN**

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**Objective:** Vasospastic angina (VA) is difficult to diagnose by noninvasive test. Although coronary angiography (CAG) with pharmacologic provocation is considered as gold standard test, its application has limitation due to invasiveness. Herein, we investigated the diagnostic implication of circulating microRNA (miR) profile in discriminating VA patients from atherothrombotic angina with obstructive coronary lesion (AA) as well as no/insignificant coronary artery lesion (NCL) as non-invasive screening assay.

**Method:** Patients who underwent CAG for chest pain were enrolled. Blood samples were obtained during CAG and serum miR-17-5p, miR-92a-3p, miR-126-3p, miR-145-5p, miR-221-3p, and miR-222-3p expressions were assessed.

**Results:** Among 121 patients, 46 patients were diagnosed as VA, 49 as AA, and 26 as NCL by CAG with ergonovine provocation. VA patients showed higher expression of miR-17-5p, miR-92a-3p, and miR-126-3p compared with NCL patients, and lower expression of miR-145-5p and miR-222-3p compared with AA patients. Concentration of miR profiles were independent to conventional cardiovascular risk factors. A score, based on the levels of six miRs was able to efficiently discriminate VA patients from AA or NCL patients. Then, we evaluated the pathophysiologic role of miRs in regulating endothelial nitric oxide synthase (eNOS) expression using human coronary artery endothelial cells (hCAECs). Transfecting the mimics (Pre-miR) of miR-17-5p, miR-92a-3p, and miR-126-3p suppressed eNOS expression. Conversely, transfecting the inhibitors of miR-17-5p and miR-92a-3p significantly replenished eNOS suppression induced by the treatment of the known vasculotoxic stimulus, lipopolysaccharide.

**Conclusion:**In summary, circulating miR profiles can be an efficient screening tool to identify VA patients among patients presenting chest pain. miR-17-5p, miR-92a-3p, and miR-126-3p might play a role in endothelial dysfunction which is important pathophysiologic mechanism of VA patients.