NEW INDEX OF MICROVASCULAR RESISTANCE RESERVE FOR EVALUATING MICROVASCULAR DYSFUNCTION IN PATIENTS WITH DIABETES MELLITUS

i2 Poster Contributions
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Background: Fractional flow reserve (FFR) and coronary blood flow velocity reserve (CFR) represent physiological quantities used to evaluate coronary lesion severity and to make clinical decisions. However, resistive vessel dysfunction may blunt the maximal hyperemic response in patients with diabetes mellitus (DM). The aim of this study was to compare the outcomes of intracoronary physiological assessments between coronary artery disease (CAD) in patients with and without DM.

Methods: FFR and CFR were assessed in 69 consecutive patients with 69 epicardial coronary lesions (>50% diameter stenosis by visual assessment). Patients with prior myocardial infarction and left ventricular hypertrophy assessed by echocardiography were excluded from this study. Flow-derived microvascular resistance (MVR) was calculated as the ratio of mean distal pressure to average peak blood flow velocity. MVR reserve (MVRR) was obtained from the ratio of baseline/hyperemic MVR. Patients were divided into two groups; 46 non DM patients and 23 DM patients. Lesions with FFR<0.75 and CFR<2.0 were categorized as discordant outcomes.

Results: There were no significant differences in the lesion severity assessed by quantitative coronary angiography between the groups. Intracoronary physiological assessments showed significantly lower CFR (1.64±2.35 vs 2.35±1.10; p=0.0047), and lower MVRR (2.0±1.0 vs 3.0±1.3; p=0.0027) in DM group compared with non-DM group, but the result of FFR was similar between 2 groups. Discordant outcomes were more frequently observed in DM group compared with non-DM group (35% vs 11%, p<0.05).

Conclusions: Microvascular resistance reserve is significantly restricted in patients with DM. In diabetic patients with possible microvascular dysfunction, the combined pressure and flow velocity measurements are required for an accurate evaluation of myocardial circulation.