Negative coronary artery remodeling in young properly controlled diabetic patients is associated with diabetes duration

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Introduction: Coronary artery remodeling is a focal compensatory change in the vessel wall in response to atherosclerotic plaque. Computed tomography coronary angiography (CTCA) is very useful in assessing remodeling pattern of atherosclerotic lesions. Patients with type 2 diabetes mellitus (T2DM) have extensive atherosclerotic burden with inadequate compensatory remodeling. Diabetes duration is independently associated with macro-and microvascular events. The goal of this study was to characterize the pattern of coronary artery remodeling and its relation with diabetes duration in a group of properly controlled diabetic patients.

Methods: We prospectively studied 263 patients below age of 60 years (mean age 54 ± 6 years) who were scheduled for CTCA. CTCA was performed using 256-MDCT scanner with dedicated software for calcium measurement. Positive coronary remodeling (PR) was defined as remodeling index (RI) >1.05, and negative coronary remodeling (NR) as RI <0.95. Atherosclerotic burden was assessed using Gensini score and coronary calcium score (CCS).

Results: Patients with NR had longer diabetes duration (8.8 ± 5.7 vs. 5.5 ± 4.4 years, p<0.001) higher prevalence of insulin (31% vs. 20%, p= 0.041) and statin therapy (70.8% vs. 58.7%, p= 0.043) higher Gensini (24.9 ±26.9 vs.18.2 ± 21.9, p= 0.039) and calcium scores (295.8 ± 301.8 vs. 170.2 ± 201.2, p<0.001). NR was correlated with CACS (r= -0.138, p= 0.025) and diabetes duration (r= -0.313, p<0.001).

Conclusion: Longer diabetes mellitus duration was associated with higher prevalence of NR in young patients with controlled T2DM.