Abstract: P1117

The impact of coronary sinus reducer on left ventricular function in patients with refractory angina; new horizons in ischemic cardiomyopathy?

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Background: Coronary sinus (CS) Reducer System is a balloon-expandable, stainless steel mesh, implanted percutaneously in the CS to create a controlled narrowing of the lumen and establish pressure gradient across it. CS Reducer implantation has been shown to improve angina and quality of life in patients with coronary artery disease having angina refractory to medical therapy and not amenable to any further revascularization.

Purpose: To evaluate the impact of CS Reducer implantation upon left ventricular (LV) function as assessed by cardiac magnetic resonance (CMR) in patients with refractory angina and coronary artery disease not amenable to further revascularization.

Methods: Prior to device implantation and at 4-months, all patients underwent clinical assessment with evaluation of: CCS class, six-minute walk test (6-MWT) and resting ventricular volumes and function, measured using CMR.

Results: Nineteen patients (18 males/1 female, 66±10 years), underwent successful Reducer implantation. Sixteen patients improved by = 1 CCS class. Eight patients experienced 1 CCS class reduction, 7 patients 2 CCS class reduction, 1 patient 3 CCS class reduction and 3 patients did not experience any benefit in angina class. The 6MWT was also improved 4 months after Reducer implantation (from 319±77 meters to 418±107 meters, p=0.002).

Four months after Reducer implantation, we noticed a significant improvement in LV ejection fraction (LVEF) (61 [IQR 47-71] to 66 [IQR 57-72] %; p=0.009), a reduction in LV end-diastolic volume (LVEDV)/Body surface area (BSA) (65.7 [IQR 57.4-89.6] to 64.7 [IQR 53.7-74.1] ml/m²; p=0.036, respectively) and a reduction in LV end-systolic volume (LVESV)/BSA (28.7 [IQR 18.6-38.8] to 20.0 [IQR 15.0-31.4] ml/m²; p=0.007, respectively). Patients with reduced EF (EF<50%, n=6) presented a greater increase of EF at follow up compared to patients with preserved EF (11.3 [IQR 6.5-54.5] vs 3.8 [IQR 0.6-9.1] %; p=0.029). The observed decrease in LVESV/BSA was greater in patients with reduced EF (23.6 [IQR 11.6-33.8] vs 4.2 [IQR -2.0-8.4] ml; p=0.005).

Conclusions: CS Reducer implantation improved angina symptoms, functional capacity and left ventricular function in patients with refractory angina. The improvement was pronounced in the subgroup of patients with reduced ejection fraction. The hypothesis generating results indicate a new approach to be tested in ischemic cardiomyopathy.