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IMPACT OF DIABETES MELLITUS IN IODINE-123 META-IODOBENZYLGUANIDINE (I123MIBG) CARDIAC UPTAKE IN PATIENTS WITH HEART FAILURE

Poster Contributions
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Background: Patients with heart failure (HF) and diabetes mellitus (DM) have worse prognosis compared to HF patients without DM. Impaired sympathetic nervous system activity has been demonstrated in DM patients without HF and correlated to worse prognosis but few data are available on the effect of DM on cardiac sympathetic nerve activity in patients with HF. The aim of the present study was to assess cardiac sympathetic nerve activity in HF patients with and without DM.

Methods: We evaluated 75 patients with severe HF (left ventricular (LV) ejection fraction 31.03±7.15) with and without DM. HF patients underwent Iodine-123 meta-iodobenzylguanidine (I123MIBG) scintigraphy from which early and late heart to mediastinum (H/M) I123MIBG ratio and washout rate were calculated. Clinical, echocardiographic and biochemical data, including serum NT-proBNP levels and HbA1c, were measured. Patients were assigned to two groups with (n=37) and without DM (n=38).

Results: The two groups were matched for cardiovascular risk factors and drug therapy, demography, HF etiology, LV systolic function, NYHA functional class, and serum NT-proBNP. I123MIBG early H/M ratio (1.65±0.21 in DM vs 1.75±0.21 in non DM patients; $p<0.05$) and late H/M ratio (1.46±0.22 in DM vs 1.58±0.24 in non DM patients; $p<0.03$) were significantly lower in DM compared to non DM patients. In all patients a significant inverse correlation between early H/M ratio and HbA1c levels (Pearson =-0.473, p=0.001) and between late H/M ratio and HbA1c levels (Pearson =-0.382, p=0.001) was observed. In diabetic patients, by multivariate analysis, HbA1c and LV ejection fraction remained the only significant predictors of early H/M ratio, whereas HbA1c remained the only significant predictor of late H/M ratio. No correlation between either early or late H/M ratio and HbA1c was found in non diabetic patients.

Conclusions: DM is associated to reduced cardiac sympathetic activity in HF patients, and the status of glycemic control over the last 1 to 2 months correlates to I123MIBG uptake. These findings may contribute to explain the adverse prognostic impact of DM in patients with HF.