EFFECTS OF EXENATIDE ON CARDIAC FUNCTION, PERFUSION, AND ENERGETICS IN TYPE 2 DIABETIC PATIENTS WITH CARDIOMYOPATHY: A RANDOMIZED CONTROLLED TRIAL AGAINST INSULIN GLARGINE

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Background: Multiple blood glucose lowering agents have been linked to cardiovascular events. Preliminary studies have shown improvement in left ventricular (LV) function during administration of glucagon like peptide-1 (GLP-1) receptor agonists. Underlying mechanisms, however, are unclear. The purpose of the present study was to investigate myocardial perfusion and oxidative metabolism in type 2 diabetic (T2DM) patients with LV dysfunction as compared to body mass index-matched controls. Furthermore, effects of 26 weeks of exenatide versus insulin glargine administration on cardiac function, perfusion and oxidative metabolism in T2DM patients with LV systolic dysfunction were explored.

Methods and Results: Twenty-six T2DM patients with LV dysfunction (cardiac magnetic resonance (CMR) derived LV ejection fraction of 47 ± 13 %) and 10 healthy controls (LV ejection fraction of 59 ± 4%, P<0.01 as compared to T2DM patients) were analyzed. Both myocardial blood flow during adenosine-induced hyperemia (P<0.01), and coronary flow reserve (P<0.01), measured by [15O]H2O positron emission tomography (PET), were impaired in T2DM patients as compared to healthy controls. Myocardial oxygen consumption and myocardial efficiency, measured using [11C]acetate PET and CMR derived stroke volume, were not different between the groups. Eleven patients in the exenatide group and 12 patients in the insulin glargine group completed the trial. Systemic metabolic control was improved after both treatments, although, no changes in cardiac function, perfusion and metabolism were seen after exenatide or insulin glargine.

Conclusions: T2DM patients with LV systolic dysfunction did not have altered myocardial efficiency as compared to healthy controls. Exenatide or insulin glargine had no effects on cardiac function, perfusion or oxidative metabolism.