Abstract: P1360

Type 1 diabetics with end-stage chronic kidney disease prior to transplantation: echocardiographic findings at rest and stress

Authors:
M J Andrade¹, RITA Calca², P Branco², E Horta¹, A Gaspar², RITA Birne², CARLA Reis¹, TIAGO Carvalho², MIGUEL Mendes¹, ¹Hospital Santa Cruz, Cardiology - Carnaxide - Portugal, ²Hospital Santa Cruz, Nephrology - Carnaxide - Portugal,

Topic(s):
Stress Echocardiography

Citation:
European Heart Journal - Cardiovascular Imaging (2019) 20 (Supplement 1), i936

Introduction: Diabetes mellitus and chronic kidney disease (CKD) are both known independent risk factors for the development of cardiovascular (CV) diseases. These conditions have been associated with changes of cardiac structure, function, and an excess risk of coronary artery disease (CAD). The aim of this study was to evaluate the echocardiographic findings (at rest and with stress) in patients with type 1 diabetes and end-stage CKD.

Methods: 48 consecutive patients undergoing dipyridamole (0.84 mg/kg in 10') plus atropine (1 mg) stress echocardiography prior to renal +/- pancreatic transplantation between Dec. 2008 and Dec. 2014 at a single center, were evaluated. At baseline, a complete 2D/Doppler exam was performed, including evaluation of global longitudinal strain (GLS) by speckle tracking. During and after stress, in addition to segmental motion analysis, the coronary flow reserve (CFR) was measured (PW Doppler in distal anterior descending artery).

Results: Mean diabetes duration was 24.4±6.0 years and mean HbA1c was 8.7±1.7%. The prevalence of other major CV risk factors was as follows: hypertension 69.4%, dyslipidemia 44.4% and smoking 36.1%. Four patients had known history of CAD with previous coronary angioplasty. At the time of test, 38.5% were on hemodialysis (HD) and 25.6% on peritoneal dialysis (PD); 7.7% had previous renal transplantation and 28.3% patients weren’t on RRT.

Left ventricular (LV) hypertrophy (LVMI>115g/m2 for men, >95g/m2 for women) was present in 63.6% of patients and 45.3% had left atrial enlargement (>34ml/m2). Although LV ejection fraction was preserved (=50%) in 72.9%, LV dysfunction was observed in 72.9%, as assessed by abnormal GLS (>-18%). Only 5 patients had neither LV dysfunction nor LV hypertrophy. Rest elevated LV filling pressure (ratio E/e’ >13) was present in 34.4% of patients. By wall motion analysis, an ischaemic response after stress was observed in 6 patients (12.5%), 5 of whom submitted to coronary interventions. CFR was 2.3 ± 0.7 for the entire population. During follow-up (5.6, 4.2-6.9 years), 14.3% had hospitalizations for any cause and 3 for CV causes (2 myocardial infarction). These 3 patients had both LV dysfunction and LV hypertrophy and 1 had ischaemic response. By the end of follow-up 50% of patients had kidney transplant (mostly double kidney and pancreatic); 32.1% were on HD, 14.3% on PD and 3.6% weren’t on RRT. No patient died.

Conclusion: Cardiac structural and functional abnormalities are quite frequent in relatively young patients with type 1 diabetes and end-stage CKD. Most of them have LV hypertrophy and LV dysfunction as assessed by deformation imaging, despite preserved ejection fraction. A significant proportion have LA dilation and elevated LV filling pressure at rest. Coronary artery disease is also frequently present and can be exposed by stress echocardiography, allowing for appropriate coronary intervention before renal transplantation.