CORONARY MICROVASCULAR DYSFUNCTION IS AN INDEPENDENT PREDICTOR OF THE NEW ONSET OF CORONARY EPICARDIAL STENOSIS IN HEART TRANSPLANT PATIENTS

Poster Contributions
Poster Sessions, Expo North
Monday, March 11, 2013, 9:45 a.m.-10:30 a.m.

Session Title: Challenges and Clinical Outcomes in Cardiac Transplantation
Abstract Category: 15. Heart Failure: Clinical
Presentation Number: 1309-303

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Background: Cardiac allograft vasculopathy (CAV) is the main limiting factor of long-term survival after heart transplantation (HT). We aimed to assess either the presence or the risk of CAV and severe microvascular dysfunction in relationship with time from HT and the validity of severe microvascular dysfunction, defined as reduced coronary flow reserve (CFR), as a predictor of CAV onset.

Methods: We studied 153 patients (pts) at 7.6 ± 4.8 years post-HT. CAV was assessed by coronary angiography (CA). CFR was assessed in the left anterior descending coronary artery by transthoracic Doppler echocardiography (TDE) and calculated as the ratio of hyperemic to basal blood flow velocity. CFR ≤ 2.5 was considered abnormal. Coronary angiography was repeated after 3.5 ± 1.9 years in the 107 pts with normal CA to evaluate CAV new onset.

Results: CAV was initially diagnosed in 46 pts (30%). At 5, 10 and 15 years from HT the probability of CFR ≤ 2.5 resulted higher than CAV probability (p<0.0001). CAV new onset was diagnosed in 31 pts (29%) (Group A), CA was normal in 76 pts (71%) (Group B). Group A had lower CFR than group B (2.6 ± 0.6 vs 3.2 ± 0.8, p<0.0001). A CFR ≤ 2.5 was 88% specific and 48% sensitive for predicting CAV onset, (PPV=62%, NPV=80%, Accuracy 76%) (OR 4, p< 0.0001). Pts with CFR ≤ 2.5 had a lower survival free from CAV onset (33% vs 78% at 5 years, p< 0.0001). By multivariable Cox regression analysis a CFR ≤ 2.5 was an independent predictor of CAV onset (RR 4.8, 95% CI 2.1 - 11.0, p<0.0001).

Conclusions: In HT patients the risk of epicardial and microvascular CAV increases over time. The risk of severe microvascular dysfunction is constantly higher than epicardial CAV. Microvascular dysfunction, defined as a CFR≤ 2.5, is an independent predictor of epicardial allograft vasculopathy onset.