Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

MILD RHEUMATIC VALVULAR HEART DISEASE IS ASSOCIATED WITH INTERSTITIAL MYOCARDIAL FIBROSIS: A T1 MAPPING STUDY

Poster Contributions
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Background: Rheumatic heart disease (RHD) has classically been considered to primarily affect the valves in the chronic phase. Whether mild RHD also affects myocardium and creates interstitial myocardial fibrosis (IMF) in the chronic phase remains undetermined. We therefore analyzed patients with only mild valvular RHD to assess for possible IMF not secondary to moderate-severe valvular disease

Methods: We identified consecutive RHD patients with mild valvular disease, and age- and gender-matched healthy controls who underwent cardiac magnetic resonance (CMR). Patients with cardiac comorbidities (heart surgery, pulmonary hypertension, infarction, atrial fibrillation) were excluded. LVEF, RVEF, LV longitudinal strain and mitral area by planimetry were obtained from CMR. IMF was estimated with T1 mapping using a Look-Locker sequence 10 minutes after contrast administration. Echocardiography (Doppler valvular area and gradient) and invasive catheterization (valvular gradient and LV stiffness) were also reviewed

Results: We analyzed 21 RHD patients (66% women, 55±14 yo) and 21 age- and gender-matched controls. Patients showed mild RHD valvular abnormalities. Mild rheumatic valve stenosis was present in all patients: area 2.1±0.7cm^2 (Doppler) and 2.3±0.9 cm^2 (CMR), mean gradient 7.2±3.1mmHg (echo) and 7.6±2.2 mmHg (catheterization), Wilkins score 6.6±1.9. Mild mitral regurgitation was present in 60%, mild aortic regurgitation in 53% and mild aortic stenosis in 9%. Systolic function was preserved: LVEF 58±5% and RVEF 57±8%. Post-contrast myocardial T1 time was shorter (ie. more IMF) in RHD than in controls (333±36 vs 385±31 ms, p<0.01). IMF was directly proportional to LV stiffness (r=0.66), LV end-diastolic pressure (r=0.51), E/e´(r=0.45), PCWP (r=0.4), and left atrial volume (r=0.61), and inversely proportional to LV longitudinal strain (r=-0.63) and LVEF (r=-0.41, p<0.05 for all)

Conclusions: Mild valvular RHD is associated with IMF in the chronic phase. This suggests primary myocardial involvement in RHD and not only secondary to advanced valve disease. IMF is directly proportional to increased LV stiffness and filling pressure, and inversely related to LV systolic function