

Abstract 89817

Abstract Preview

ESC CONGRESS 2015	
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Title :	Differentiation of arrhythmogenic right ventricular cardiomyopathy and athlete's heart using cardiac magnetic resonance imaging
Topic :	05.02 - Sports cardiology
Category :	Bedside
Option :	No Options
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The diagnosis of arrhythmogenic right ventricular cardiomyopathy (ARVC) is based on the revised Task Force Criteria defined in 2010, which includes right ventricular end-diastolic volume index (RVEDVi), right ventricular ejection fraction and wall motion abnormalities evaluated using cardiac magnetic resonance (CMR) imaging. However, the elevated RVEDVi can be a result of sport adaptation as well, the revised Task Force guideline contains no criteria for professional athletes. Our goal was to determine the CMR parameters which can help to distinguish ARVC and athlete's heart. Between 2010 and 2014 CMR examination was performed on 436 patients because of the suspicion of ARVC. In 34 patients (41±11y,22 male) the CMR showed major criteria, and fulfilled revised Task Force Criteria. Additionally 54 professional athletes free of complaint (25±5y,35 male) and 58 healthy volunteers (28±5y,38 male) were examined by CMR. Left (LV) and right ventricular (RV) end-diastolic (ED), end-systolic, stroke volume indices, ejection fractions (EF) were compared and derived parameters were calculated: LVEDV/RVEDV and LVEF/RVEF. Furthermore, in male patients two subgroups were established with single right ventricular involvement(SI)(n=10) and biventricular involvement(BI)(n=12). RVEDVi of ARVC patients and athlete's were higher than the control group's (male:130.5; 133.8 vs 98 ml/m², p<0.001; female:128.1; 111.1 vs 82 ml/m², p<0.05), there was no significant difference between the RVEDVi of ARVC patients and athletes. RVEF was significantly lower in both male and female ARVC patients compared to the athletes and healthy volunteers (male:45 vs 54.8 vs 57.2%; female:42.4 vs 58 vs 60.7%). LVEDV/RVEDV of female ARVC patients and LVEDV/RVEDV and LVEF/RVEF of male patients with SI showed significant difference compared to the athlete's group (ARVC vs athletes: female:0.81 vs 0.97; male:0.84 vs 0.95; 1.2 vs. 1.05), but none of the derived CMR parameters showed significant difference between male BV patients and athletes. In 5 athletes (28±4.1y,4 male) ARVC was diagnosed according to RV wall motion abnormality, late enhancement, RVEF and derived parameters. RVEF and LVEDV/RVEDV of athletes with ARVC were below the 5th percentile, whereas LVEF/RVEF was above the 95th percentile of healthy athletes. Consequently, RVEDVi shows no difference between ARVC patients and athletes, in healthy athletes RVEDVi is in the range of the proposed Task Force Criteria. RVEF was the most useful parameter in the differentiation of ARVC and athlete's heart. In SI patients LVEDV/RVEDV and LVEF/RVEF can support the diagnosis.	