Abstract: P5653

Atrial fibrillation in arrhythmogenic right ventricular cardiomyopathy and its association with left atrial volume index

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Topic(s):
Atrial Fibrillation - Clinical

Citation:
Background: Recent studies in arrhythmogenic right ventricular cardiomyopathy (ARVC) support atrial involvement in the disease progression and consider atrial fibrillation (AF) as one of the primary manifestations of ARVC. We aimed to assess clinical factors, components of 2010 Task Force criteria (TFC2010) and echocardiographic characteristics of atria associated with AF in the Scandinavian cohort of ARVC patients.

Methods: Study sample comprised of 106 definite ARVC patients by TFC2010 from three tertiary care centers participating in the Nordic ARVC Registry (33% females, median age at ARVC diagnosis 41 years [IQR 30-54 years]). No concomitant diseases were observed in 90 patients (85%) while 16 patients had one or more comorbidities: hypertension (n=6), diabetes mellitus (n=5), coronary artery disease (n=5) or congestive heart failure (n=9). AF was included in the registry protocol as a pre-specified clinical event and verified by processing of the electronic ECG databases which contains all ECG recordings from the involved hospitals catchment areas (earliest ECG from 1988). Left (LA) and right atrial (RA) dimensions were obtained by revisiting cardiac ultrasound examinations performed at the time of ARVC diagnosis. Association between AF and clinical characteristics was assessed using multivariable logistic regression analysis adjusted for age and gender.

Results: AF was diagnosed in 29 patients (27%) at a median age of 53 (IQR 38-63) years, 7 females (24%). Median time from ARVC diagnosis to AF onset was 8 (IQR 2-12) years. AF was univariately associated with right ventricular structural abnormalities meeting the definition of major imaging criterion by 2010TFC, ventricular tachycardia (VT) with superior axis (major criterion) and LA volume index. Significantly associated variables were included in a multivariate model, in which LA volume index (OR=1.07, 95%CI 1.01-1.14, p=0.021) and superior axis VT (OR=7.45, 95%CI 1.82-30.55, p=0.005) remained independently associated with AF. In receiver operating characteristic (ROC) curve analysis, LA volume index was significantly associated with AF (AUC=0.703, p=0.005) and with superior axis VT (AUC=0.703, p=0.021). AF was not associated with either RA volume index (univariate OR=1.03, 95%CI 0.99-1.06, p=0.203) or left ventricular ejection fraction (OR=0.97, 95%CI 0.92-1.03, p=0.299).

Conclusion: In patients with ARVC, AF is primarily associated with LA structural abnormalities without indication of RA involvement and is strongly associated with ventricular arrhythmias thus indicating parallel development of atrial and ventricular arrhythmic substrate.
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