ORALS

OP-152

Investigation of Arrhythmia Markers and KCNJ8-S422L Gene Mutation in a Population with Early Repolarization Pattern on ECG

Emrah Ermiş[1], Selami Demirelli[2], Emrah İpek[2], Çavlan Çiftçi[1], Veysel Sabri Hançer[3], Esra Poyraz[2]

[1]*Department of Cardiology, İstanbul Bilim University Faculty of Medicine, İstanbul,*
[2]*Department of Cardiology, Erzurum Training and Research Hospital, Erzurum Department of Cardiology, Erzurum,* [3]*Department of Medical Biology and Genetics, İstanbul Bilim University Faculty of Medicine, İstanbul*

Early repolarization (ER) is defined as elevation of J point at least 1mm (0.1mV) in two consequent derivations on ECG. Early Repolarization Syndrome (ERS) which is usually seen in people without structural heart disease is considered under the title of 'J wave syndromes' because of its similarities with Brugada syndrome (BS). As a result of multi-center studies, the association of ERS with sudden cardiac death (SCD) established and it is now known that ERS is a cause of life threatening ventricular arrhythmias. The studies about genetic basis of ERS have been proceeding however firstly reported KCNJ8 gene mutation, as well as for BS, was also defined for ERS.

We conducted this study in order to determine the patients at risk with arrhythmia markers and search for KCNJ8 gene S422L mutation in patients who had ER.

Methods: Study included 100 patients with diagnosis of ERS and 100 subjects with normal ECG as control group. Subjects without coronary artery disease and with normal echocardiography results were included in study. Mean age was 33.1±9.7 in study group and 35.8±9.9 in control group. The existence of arrhythmia, heart rate variability and late potentials were examined in ER group. In both groups, S422L mutation in KCNJ8 gene was genotyped using allele specific PCR.

Results: In our study using 'ER ECG pattern typing', 64% of patients with ER were defined as type l, 32% as type 2 and 4% as type 3 ER pattern. It was found that corrected QT interval (QTc) was shorter in ER group than in control group without reaching statistical significance (In ER group mean QTc; 371±28.7 ms, in the control group mean QTc; 381±31.4 ms, p=0.08). No couplet/triplet ventricular premature contractions (VPC) or nonsustained ventricular tachycardia was detected in Holter recordings of ERS group. Heart rate variability was found to be decreased 26% in the patient group, using the time domain methods. By using signal averaged ECG, late potentials were detected in 14% of the patients. These findings were consistent with the results of contemporary studies. History of unexplained syncope was present in two patients with normal neurologic assessment and the association of syncope with ERS was not statistically significant (p=0.15).

The S422L- KCNJ8 gene mutation which was investigated in both groups, was detected only in one subject in the control group, but not in the study group, making the association of mutation with ERS statistically insignificant. Nevertheless, it must be emphasized that the number of ERS patients included in our study was small and neither the patients nor their families had history of sudden cardiac death and most of them were found to be in low risk group.

Conclusion: As a result, we observed that there was not any significant relationship between KCNJ8-S422L mutation and ERS in patients who were mostly in low risk group. Further studies are needed to clarify treatment options and management strategies in those patients.

OP-153

Assessment of Heart Rate Turbulence and T Wave Alternans in Ventricular Hypertrabeculation/Noncompaction Patients by Using 24-hour ECG Ambulatory Holter Electrocardiogram

Hatice Betül Erer[1], Nurten Sayar[1], Elif İclal Çekirdekçi[1], Tolga Sinan Güvenç[1], Servet Altay[1], Nazmiye Özbilgin[1], Dilaver Öz[1], Ahmet Ekmekçi[1], Aycan Zencirci[1], Gönül Zeren[2], Mehmet Eren[1]

[1]*Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Training and Research Center, Department of Cardiology, Istanbul,* [2]*Ordu State Hospital, Department of Cardiology, Ordu*

Purpose: Ventricular Hypertrabeculation/Noncompaction (HT/NC) is a rare form of congenital cardiomyopathy which may be associated with heart failure, arrhythmia and embolic events. Abnormal heart rate turbulence (HRT) and T wave alternans (TWA) is strong independent predictors of sudden cardiac death in patients with ischemic cardiomyopathy and nonischemic cardiomyopathy. There is no study about HRT and TWA in HT/NC patients. We aimed to HRT and TWA in HT/NC cardiomyopathy patients by using 24-hour ECG ambulatory Holter electrocardiogram.

Methods: We enrolled 39 (22 men and 17 women; mean age 34±14 years) HT/NC cardiomyopathy patients (mean LVEF 43±16%). Exclusion criteria were as follows: non-sinus rhythm (atrial fibrillation, paced rhythm), reversible causes of ventricular arrhythmic events. We evaluated HRT parameters by using 24-hour ambulatory Holter monitoring. TWA values were calculated automatically and continuously by the released version of GE Healthcare's modified moving average algorithm using all standard precordial leads (V1–V6). Maximum TWA values at heart rates 125 bpm were derived. We assessed HRT parameters named Turbulence onset (TO) and Turbulence slope (TS) in HT/NC patients and HRT was defined as positive when one or two of these parameters were found abnormal (TO ≥0% and TS ≤2.5 ms/RR interval). Severe heart failure was defined as EF ≤30. HT/NC patients were grouped according to the presence of severe heart failure, number of premature ventricular contraction (PVC) ≥3000/24 h and all parameters were compared between patient groups by using Mann Whitney-U test. Spearman correlation analysis were also assessed.

Results: Seventeen out of 39 patients were not utilized because very frequent PVCs unable to be computed. Ten patients (45%) were HRT positive. HRT was not related to gender and other risk factors including hypertension, diabetes mellitus, renal failure and coronary artery disease. Out of 22 patients, 6 were EF ≤30 and in this group of patients TS was significantly decreased (p=0.05). Four of the patients had PVC ≥3000 and in this patients were significantly correlated with supraventricular early beats (SVEB) (p<0.001; r=0.5) and TS (p=0.07; r=0.43). No correlation was found between TWA and HRT. When cut-off number of 60 was selected for TWA, it was correlated with severe heart failure (p=0.018; r=0.38).

Conclusions: In HT/NC patients with severe heart failure HRT positivity is increased and it might be associated with arrhythmias and sudden cardiac death. The correlation between PVC and SVEB reveals that, benign arrhythmias like SVEB may contribute to the prognosis and must be taken in to account while evaluating these patients.

OP-154

Prevalence of Brugada Type ECG Pattern and Early Repolarization Variant in Turkish Population: Results from the HAPPY Study

Burak Hünük[1], Özgür Çağaç[2], Okan Erdoğan[2], Alper Kepez[2], Bülent Mutlu[2], Muzaffer Değertekin[3], Çetin Erol[4]

[1]*Maltepe C.I.K. State Hospital, of Cardiology, Istanbul,* [2]*Marmara University, Faculty of Medicine, Department of Cardiology, Istanbul,* [3]*Yeditepe University, Faculty of Medicine, Department of Cardiology, Istanbul,* [4]*Ankara University, Faculty of Medicine, Department of Cardiology, Ankara*

Purpose: Brugada type ECG pattern (BTEP) is defined by a specific ST-segment elevation in leads V1-V3 without distinct clinical history. The clinical significance of BTEP is not well established. Early repolarization variant (ERV) on ECG has traditionally been considered benign, but has recently been associated with vulnerability to ventricular fibrillation. Our aim was to elucidate the frequencies of these two important J wave patterns in Turkish population.

Methods: We evaluated ECGs and clinical data obtained from the HAPPY (Heart Failure Prevalence and Predictors in Turkey) study involving randomly selected 4650 subjects ≥35 years from all regions of Turkey. After the exclusion of subjects with missing ECG or data, established coronary disease, anti arrhythmic use and bundle branch blocks, pre-excitations, atrial fibrillation, ventricular hypertrophies; 3422 subjects ([mean±SD] age, 51±11, [range] 35-100 years) were enrolled in the study(female n [%overall]:1966 [57,5%]). All ECGs were interpreted manually by two experienced cardiologists for the presence of BTEP (according to the EHRA/HRS 2005 consensus report) and ERV (J-point elevation (≥0.1 mV) in the inferior, lateral or both leads with QRS notching).

Results: Frequencies in each decade are shown in table-1. No type-1 pattern was found. BTEP and ERV were significantly prevalent in males < 0,001) in all age groups except for the lateral ERV (p=0,6). Inter-gender differences in BTEP (p=0,160) and ERV (p=0,334) disappeared ≥65 years.

Conclusions: ERV and BTEP prevalence in otherwise healthy Turkish population revealed similar results with other Caucasian populations. Diminished gender difference in elderly might be attributed to hormonal changes.