HEART RATE VARIABILITY TRENDS IN 90-MINUTE PERIOD PRIOR TO ONSET OF VENTRICULAR ARRHYTHMIAS IN ICD PATIENTS

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Evaluation of trends of heart rate variability (HRV) indices before onset of ventricular tachyarrhythmias (VTA) could serve in predicting risk of these life-threatening arrhythmic events. The aim of the work was to find HRV parameters most reliably and strongly correlating with occurrence of VTA in patients with ICD.

Methods: 90 sinus rhythm (SR) tachograms preceding episodes of spontaneous VTA retrieved from 37 patients with ICD (Philips: XMR, Myocrylograph, Bento VR, Biotronik) were analyzed. Time-domain and frequency domain indices were studied in 2-minute intervals over 90-minute period of SR before VTA. Least-squares curve fit regression test was performed for each index in 40-min window (20 intervals) shifted every 2 min over whole 90-minute period. Regression confidence level was used as statistical measure of systematic trend of HRV parameters.

Results: over 30-min period preceding initiation of VTA constant increase in frequency-domain markers of low-frequency (LF) heart rate variability (HRV) was observed. The mean power of LF indices was increased significantly only 2 minutes prior to VTA. However, while LF power increased, decrease in LF/TP was observed already 8 min before onset of VTA followed by increase in VLF/TP demonstrated 4 minutes before VTA.

Conclusions: 1) In 90-min period of sinus rhythm preceding VTA, trends of most spectral and time-domain HRV parameters can be observed. 2) We suggest the combined analysis of several HRV parameters may increase the predictive power of the observed trends and possibly could serve as a basis for developing new ICD algorithms to predict occurrence of ventricular arrhythmias.

HEART RATE VARIABILITY TRENDS IN 90-MINUTE PERIOD PRIOR TO ONSET OF VENTRICULAR ARRHYTHMIAS IN JAPANESE PREVALENCE, PROGNOSTIC AND PROGNOSTIC SIGNIFICANCE OF OLD MI (p=0.05), ANTERIOR AMI (0.00), QRS SCORE (0.00) AND KILLIP CLASS

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Methods: we studied prevalence of the Brugada-type ECG in 20387 children (10434 male and 9953 female, 9.7±3.2 [SD] years old) during a school health examination in Kanagawa prefecture, Japan, in 2002. An ECG was considered to be a Brugada-type ECG when it showed right bundle-branch block and ST-segment elevation of the J point ≥0.1 mV in leads V1 through V3. An rSR' pattern in the V1 lead with the ST-segment elevation ≥0.1 mV of a covered-type ECG was defined as "typical" Brugada-type ECG.

Results: the Brugada-type ECG was found in 11 (10male) of 20387 children (0.054%, 95%CI: 0.022% to 0.086%). There was no child with typical Brugada-type ECG. The prevalence of Brugada-type ECG in male was significantly higher than that of female even in children (0.096% versus 0.010%, P=0.012), and was increased according to aging (first grade: 0.01%, fourth grade: 0.05%, seventh grade: 0.08%, tenth grade: 0.23%, p<0.008. ANOVA).

Conclusions: the prevalence of Brugada-type ECG in Japanese children was much lower than that reported previously in adult population (0.7%) and was increased according to aging.

PROGNOSTIC SIGNIFICANCE OF CONSECUTIVE ABNORMAL SIGNAL-AVERAGED ELECTROCARDIOGRAMS IN PATIENTS AFTER ACUTE MYOCARDIAL INFARCTION

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Objectives: to assess the prognostic ability of consecutive abnormal signal-averaged electrocardiograms (SAECGs) during hospitalization after an acute myocardial infarction (AMI).

Methods: seven hundred and five pts (525 men), aged 63±10.4 (SE) years in sinus rhythm were studied prospectively post AMI. All pts underwent 1) measurement of ejection fraction (EF) by 2D-echo on 1st day. 4) 24-hour Holter ECG recording with arrhythmias analysis.

Results: of 700 pts, 680 pts had SAECG and 80 pts did not have SAECG. 114 ms plus either LAS>38 ms or RMS>20 ms for a standard QRS duration <120 msec or QRS>155ms or RMS<17 IV for a standard QRS<120msec. 3) Measurement of ejection fraction (EF) by 2D-echo in 1st day. 4) 24-hour Holter ECG recording with arrhythmias analysis based on Lown's classification. 5) 12-lead ECG estimation of infarct size by QRS score based on Q and R wave duration and R/S and R/Q ratio before hospital discharge. Thrombolysis was given in 58% of pts. A cohort of 680 pts had consecutive normal SAECG.

Results: during a follow-up period of 39±0.9 months 178 (25%) pts died of cardiac causes (including sudden cardiac death). The presence of the 3 consecutive normal SAECGs was correlated with age (p<0.00), EF (p<0.00), old MI (p=0.05), anterior AMI (0.00), QRS score (0.00) and Killip class-II (p<0.00). In multivariate analysis (logistic regression) only age (p=0.001), EF (p<0.002) and abnormal consecutive SAECGs (p<0.00) were independent predictors of cardiac mortality. The presence of 3 consecutive normal SAECGs had higher specificity and higher positive predictive value (96% and 65%) than the separate abnormal SAECG (89% and 52% for the 1st, 90% and 42% for the 3rd or 87% and 32% for the 7th day respectively).

Conclusion: the presence of consecutive normal SAECGs improved the independent prognostic value of the SAECG for cardiac mortality.

11. BRUGADA SYNDROME: EPIDEMIOLOGICAL AND CLINICAL ISSUES

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Conclusions: the prevalence of Brugada-type ECG in Japanese children was much lower than that reported previously in adult population (0.7%) and was increased according to aging.

11.1 PREVALENCE OF THE BRUGADA-TYPE ECG IN JAPANESE CHILDREN

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Numerous countries have reported Brugada syndrome (BS) with variable incidence. The prevalence of BS in the French Canadian (FC) population is unknown since no report has been published.

Methods and Results: Since 2000, clinical sessions to the local referring cardiologists and internists about BS were given with special attention to the ECG manifestations of BS. Since, BS diagnosis was made in 17 native FC (13 males). In this population (mean age of 52±14 y), RBBB with more than 2 mm ST-segment elevation in V1-V3 leads was recorded spontaneously in 9 pts or was induced by procainamid (P) in 8 pts, all in the absence of structural heart disease. The abnormal ECG was recognized after a syncopal episode in 4 pts, during family screening in 2 pts. All the others were asymptomatic. Acute coronary syndrome was initially suspected in 8 pts (47% of all referred pts). Of these, 3 had atypical chest pain and received thrombolytic therapy, 3 were identified after a non-cardiac surgery during routine ECG monitoring and 2 pts had pneumonia. Eleven pts (65%) agreed to an EP study and only 2 pts (18%) had inducible VF (both had syncope history). P test was performed in 12 pts and was positive in 8 (67%). Only one pt received an ICD (3 pts refused). An loop-recorder was implanted in 3 pts. After a mean follow-up of 11±7 months, one pt who declined ICD had SCD and one pt with an ICD had one episode of non-sustained VF.

Conclusions: BS is prevalent in the FC population and is probably under-diagnosed. Direct education to internists and general cardiologists allows BS to be recognized. More education needs to be done to family and emergency doctors to discriminate between BS and acute coronary syndrome.

11.2 UTILITY AND ROLE OF A TEACHING PROGRAM FOR PHYSICIANS TO IDENTIFY BRUGADA SYNDROME: EXPERIENCE OF THE QUEBEC HEART INSTITUTE WITH A FRENCH CANADIAN POPULATION

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11.3 PREVALENCE, PROGNOSTIC AND ELECTROCARDIOGRAPHIC PATTERNS OF THE BRUGADA SYNDROME IN THE QUEBEC CARDIOVASCULAR STUDY

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The Brugada syndrome (BS) is characterized by evidence of right bundle branch block and ST-segment elevation (SE) in lead V1-V3 and has been associated with sudden cardiac death (SCD). The prevalence and the prognostic value of this ECG pattern in the asymptomatic native French Canadian population are unknown.

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