Prevalence and prognosis role of various conduction disturbances in patients with Brugada syndrome

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Background: Even if right bundle branch block pattern or increased PR interval duration has been earlier noted in Brugada syndrome (BS) patients, prevalence and prognostic value of various conduction disturbances in BS remains poorly known.

Methods: ECGs from 238 BS patients with spontaneous (n=126) or drug induced type 1 ECG (n=112) 45±12 years old, 188 males) were reviewed. ECG with the highest ST elevation were selected in each patient. Presence of complete or incomplete right bundle branch block (RBBB) and of left anterior (LAFB) or posterior (LPFB) fascicular block were evaluated according to current guidelines for ECG interpretation. RBBB was defined by QRS > 110 or 120 ms width and S wave >40 ms in lead I. 99 patients were implanted with an ICD. 72 patients (30%) presented an arrhythmic event defined by unexplained syncope (54 pts), SD (8 pts) or ICD appropriated therapies (14 pts).

Results: PR interval was 180±40 ms. 64 pts (27%) had 1° degree AV block. AV block was not correlated to arrhythmic events but was correlated to SCNSA mutations (66% vs 19%, p=0.001).

62 pts (26%) had complete (56) or incomplete (6) RBBB. SCNSA mutation was more often present in case of RBBB (42% vs 26%, p=0.05). ECG with RBBB were more often recorded during pharmacological challenge (69% vs 55%, p=0.01). Pts with RBBB had longer PR intervals (189±37 vs 174±33 ms, p<0.01). There was no correlation with HV interval, the presence of fascicular blocks or degree of ST elevation.

33 pts (14%) had LAFB and 11 pts (5%) had LPFB. Fascicular blocks were not related to PR or HV interval or RBBB. SCNSA mutation was more often present in case of fascicular blocks (54% vs 27%, p=0.05).

There was no correlation with any arrhythmic event for the presence of RBBB or fascicular blocks.

Conclusion: RBBB can be seen in a quarter of patients with BS, while left anterior or posterior fascicular blocks are present in 14 and 5% respectively. They were related to SCNSA mutations but not to arrhythmic events and could not be used for further risk stratification.

Diagnostic value of isoproterenol test in arrhythmicogenic right ventricular cardiomyopathy

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Background: Initially proposed in 1994, the diagnosis criteria of arrhythmicogenic right ventricular cardiomyopathy (ARVC) have been recently updated. However, diagnosis sensitivity remains poor at early stage of the disease.

Methods: All patients referred to our institution for premature ventricular contraction (PVC) evaluation had isoproterenol test (continuous infusion of isoproterenol (45 to 65 μg/min) over 3 minutes, regardless of the heart rate). Continuous 12 leads ECG, signal average ECG, holter ECG, exercise test, echocardiogram and MRI were analysed. Isoproterenol test was considered positive if (1) polymorphic PVC with at least one couplet (2) sustained or non sustained ventricular tachycardia with left bundle branch morphology (but RVOT) occurred during the test or within 10 minutes after the end of infusion. All patients were contacted between may and july 2010. A new evaluation was performed two years after the first one for those having a suspicion of ARVC but didn't fulfil Task Force Criteria (TFC).

Results: 261 consecutive patients (137 men, aged 43±17 years) were included in this study. Mean follow-up was 4.7±10.4 years (median 5 years). The diagnosis of ARVC based on current TFC was present in 19 patients at the initial work up and in 24 patients (17 men, aged 39±14 years) at the end of the follow-up. Initial isoproterenol test was positive in 96% of the ARVC patients and in 9% of the patient without ARVC (p=0.01). Isoproterenol test was positive for all patients (n=5) that did not initially meet diagnosis criteria for ARVC but subsequently developed patent form of ARVC. The sensitivity of the isoproterenol test was 96% and the predictive positive value was 99.5%.

Conclusion: Isoproterenol test is highly sensitive (sensitivity 96%) for the diagnosis of ARVC. This test may be used in addition to current TFC to improve their sensitivity.

Ventricular tachycardia recorded by pacemakers: a retrospective survey for 700 patients

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Background and aim: The new pacemaker (PM) generations featuring extended memory functions (MF) document the occurrence of arrhythmias over periods of several months. However, ventricular arrhythmia (VA) characteristics and occurrences are less well-known in this pacemaker population. The goal of this analysis was to evaluate the pertinence of MF at the ventricular level and to describe the MF-documented VA.

Methods & Results: This analysis involved 700 pts (M 60%, F 40%, aged 76±10 yrs) implanted with single or dual chamber PM for AVB 55% or SD 45% who were seen in PM follow-up. 1438 visits were analyzed (follow-up average at 13 months) over a period from 2 to 87 months after implantation. Occurrences of VA are validated by EGMs, defined by at least 5 QRS complexes >175ms. The number of episodes and the duration and heart rate during the longest arrhythmia episodes were recorded. 110 pts (16%) average ages 75±8 yrs of whom 62% males, showed VA in 299 visits (21%). The average number of episodes was 11 per follow-up (1-140), average duration was 5±9 seconds (1-62 sec), and average rate was 210±28 bpm (175-295 bpm). 97% of episodes were classified as non-sustained ventricular tachycardia (NSVT) and 3% like SVT (33-62 sec). The ejection fraction was 51±11% (p<0.05) in the VA group compared to 57±11% in the non VA group. 64% of VA pts showed cardiopathy compared to 45% in the non VA group (p<0.001). Statistical analysis showed that age, pacing indication, pacing mode and cumulated percentage of pacing are not relevant factors in NSVT and VT.

Conclusion: Ventricular arrhythmias are observed in 16% of pts implanted for standard pacing indications. A major determining factor in the occurrence of NSVT and VT is the presence of an associated cardiopathy. FMs featuring EGM recordings are a tool for reliable diagnostic and monitoring of these events. Further studies are required to evaluate the prognostic significance of these arrhythmias.

Conscious sedation instead of general anesthesia for epicardial VT ablation

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Because catheter manipulation and ablation in the pericardial space is extremely painful, most of the EP centers perform epicardial VT procedure under general anesthesia (GA). However, GA lowers blood pressure, may interfere with arrhythmia mapping, and use of muscle relaxants precludes identification of the phrenic nerve. Moreover, the presence in the EP lab of an anesthesiologist is mandatory during the whole GA. We report our experience of epicardial VT ablation performed under conscious sedation using midazolam and sufentanil.

Methods: All patients referred between 2006 and 2010 for epicardial VT ablation, were scheduled to have their procedure under conscious sedation in the absence of contraindications. Analgesia protocol included first the perfusion of 1 gram of paracetamol (acetaminophen) IV and 20 mg of Nefopam IV. Then midazolam IV was injected (bolus of 0.05 mg/kg) followed by 5 micro-
grams of sufentanyl just before epicardial access and that was repeated up to 4 times (20 μg) in case of persistent pain and absence of respiratory depression. Blood pressure and O2 saturation were continuously monitored.

Results: 74 epicardial VT ablations have been performed in 65 patients (58 M, 58±13yos), 58 (89%) had a structural heart disease with a mean LV EF of 40±15%. 69 were performed under conscious sedation using the above protocol. 5 procedures were performed under GA; 4 because patients had to be sedated for arhythmic storm before ablation and because of respiratory contraindications. Mean midazolam and sufentanyl dosages were 4±1.5 mg and 10±5 μg respectively. RF ablation was performed in 57 procedures with mean epicardial RF duration of 9±11 min for a total procedure time of 243 ±90 min. Because of pericardial bleeding 2 patients were transferred to the operating room and one patient had developed metabolic acidosis but no patient had respiratory failure during the procedure.

Conclusion: Epicardial VT ablation can be performed safely under conscious sedation using powerful painkiller such as sufentanyl.

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Acute pericardial effusion following atrial fibrillation ablation: characteristics and relationship with arrhythmia recurrences

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Background: Pericardial effusion can occur during or after atrial fibrillation ablation and may induce atrial arrhythmia.

Aims: We aimed to characterize the impact of pericardial effusion on arrhythmia recurrences following atrial fibrillation ablation.

Methods: We studied prospectively patients referred for a first atrial fibrillation ablation. We performed transesophageal echocardiography before and 24 hours after the procedure. If pericardial effusion was present, transesophageal echocardiography was repeated at one month to evaluate pericardial effusion evolution. Early arrhythmia recurrences were defined as any arrhythmia documented within 1 month following the procedure. Eighty-one patients were included in our study.

Results: Pericardial effusion was diagnosed in 22% of cases and was present in 35% of patients with persistent atrial fibrillation vs. 10% for paroxysmal atrial fibrillation (p=0.008). Pericardial effusions were mild (≤5 mm), asymptomatic (89%) and none of them required pericardiocentesis. Early and late arrhythmia recurrences were present in 31% and 36% respectively in our population. The incidence of pericardial effusion was significantly higher in patients with early arrhythmia recurrences compared to patients without early arrhythmia recurrences (48% vs. 11%, p<0.0004). On multivariate analysis pericardial effusion and duration in atrial fibrillation were the two independent predictors of early arrhythmia recurrences. Pericardial effusion incidence was similar in patients with and without late arrhythmia recurrences. At one month none of our patients had PE on TTE.

Conclusion: Pericardial effusion following atrial fibrillation ablation is frequent, particularly following persistent atrial fibrillation ablation. This effusion is mild, mainly asymptomatic and independently associated with early arrhythmia recurrences.

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Long-term follow-up of 163 ICD patients using the latitude remote monitoring system

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Aims: We analysed outcomes of 163 patients (pts) with ICD using remote monitoring follow-up (RFU)

Methods: 163 pts were implanted with an ICD with a Remote Patient Management (RPM) system. 82 patients (51%) were implanted with biventricular ICDs (CRT-D), 63 (39%) with single chamber ICDs (D-ICD), and 15 (9%) with single chamber ICDs (S-ICD). 31 CRT-D pts had also weight and blood pressure monitoring. RFU was performed every 3 months.

Results: Mean FU with RPM system was 15±10 months. 379 episodes of sustained atrial arrhythmias occurred in 13 pts. 287 episodes of ventricular arrhythmias required therapies: 265 (90.6%) were appropriately treated by Anti-Tachycardia Pacing (ATP), 22 with ICD discharge, only 3 inappropriate shocks. In the last 7 months of FU, 25 patients were examined at hospital after non-vital alerts: oral anticoagulation(4 pts) and amiodarone(2 pts) were started, diuretics dosage increased (5 pts), device reprogrammed in 14 patients. During FU, 5 patients had VT recurrences requiring VT ablation (2 pts), 1 pt required a short heart failure hospitalisation. Pts with S-ICD had less clincal FU in hospital. D-ICD pts had a higher rate of RFU. In 13 CRT-D pts, alarms indicated biventricular pacing <85% we reprogrammed the device (2 pts), changed medical therapeutics (5 pts), performed AV junction(5 pts) and cavo-tricuspid ablation (1 pt).

Conclusion: RPM is an effective tool for the FU of ICD pts. D-ICDs and CRT-ICDs had more RFU alerts, and could early detect atrial arrhythmias comparing to S-ICD. RPM helps both physicians and pts for HF management and for reducing inappropriate ICD shocks.

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Delay between initial electrophysiological study and ablation of the tachycardia in patients with paroxysmal supraventricular tachycardia.

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Paroxysmal supraventricular tachycardia (SVT) requires a treatment in patients with recurrent SVT’s. Some of them refuse the radical treatment of SVT. The purpose of the study was to know the number of patients who accept SVT ablation, the reasons and the delay between initial electrophysiological study (EPS) and the time of ablation.

Methods: 1268 patients with a normal ECG in sinus rhythm were consecutively recruited for SVT’s, confirmed by EPS. Patients with anterograde conduction through an accessory pathway (AP) were excluded. Ablation indications and the time between EPS and ablation were studied.

Results: 652 patients were directly seen for EPS and ablation, because SVT’s were documented and recurrent (group I). SVT was induced at EPS in 481 patients, but ablation was not performed (group II). Ablation was performed in a second time after EPS in 135 patients (group III). The mean time between EPS and ablation was 4±5 years. Group I differs from group II and III by an older age (53±18 vs 47±19 and 43±18.5 years, p<0.0000), the female gender more frequent than in group II (64.5% vs 55%, p<0.0001), but similar in group III (61%). Syncope associated with SVT was less frequent in group I (7.5%) than in group II (18.5%) and III (19%) (p<0.0000). The rate in tachycardia was slower in group I (177±34 bpm) than in group II (189±38) (p<0.0005) and III (193±33) (p<0.0001). The electrophysiological mechanism was similar in 3 groups. Reentry in a concealed AP was noted in 17.5% of group I patients, 21% of group II patients and 19% of group II patients. Typical and atypical atrioventricular nodal reentrant tachycardias represent the other causes.

Conclusions: Among patients with proved SVT at EPS, ablation of the substrate will never be achieved in 38% of patients and will be made at least 4 years after the evaluation in 11% of patients. Only age and gender influence the decision. Symptoms, rate and mechanism of SVT do not change the indications of ablation.

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Clopidogrel increases bleeding complications in patients undergoing heart rhythm device procedures


Clopidogrel increases bleeding complications in patients undergoing heart rhythm device procedures

Purpose: Increasing numbers of patients requiring arrhythmia device implantation are treated with clopidogrel. This study aimed to assess the risk

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