Topic 17 – Electrophysiology: clinics – B

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Flecainide and ajmaline challenge in Brugada syndrome patients under the age of 15 years

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Introduction: Brugada syndrome (BrS) is an inherited arrhythmia syndrome with increased risk of syncope and sudden death. The typical ECG pattern of ST-segment elevation in the right precordial leads can fluctuate. Sodium channel blockers, such as ajmaline or flecainide, are used to unmask the diagnostic ECG pattern of BrS in case of non-diagnostic basal ECG. There is no direct comparison of the electrocardiographic modification induced by these drugs in patients under the age of 15 years. The aim of this study is to relate our experience in our reference centre.

Methods: Injections are performed by continuous infusion over a period of 10 minutes at 1mg/kg dose for ajmaline and 2 mg/kg for flecainide. Tests were performed in case of absence of type 1 aspect on the resting ECG and in absence of major conduction defects.

Results: The flecainide test (group F) was performed in 36 patients and ajmaline test (group A) in 11 patients. Mean age was 12±4 years in group F and 14±2 years in A (p=0.04). There was 14 girls in group F (39%) vs 4 in group A (36%), NS. All patients were in sinus rhythm in both groups. There was no difference between the two groups for heart rate 78±21 vs 72±15 bpm (p=0.35), PR 148±28 ms vs 138±22 ms (p=0.32), QRS 87±11 ms vs 91+/-10 ms (p=0.29) and QTc 412±40 vs 425±30 ms (p =0.31). During the test, HR increase in both groups 9±12 vs 6±7 bpm (p=0.52). There was no difference for PR 31±27 ms vs 32±22 ms (p=0.89). The QRS and QTc were slightly higher in F group (QRS 25±23 ms vs 13±12 ms, p=0.11 and QTc 32±40 vs 18±15 ms, p=0.25) even if the difference was not significant. The number of positive tests F 11/36 (31%) vs 3/11 (27%) were similar in both groups. During pharmacological test no arrhythmic complications has been observed.

Conclusion: In patients under the age of 15 years and suspected of BrS, the results of Flecainide and Ajmaline challenge are similar for conduction parameters and positive results. The risk of ventricular arrhythmias appears very low.

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Brugada syndrome in elderly patients

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Introduction: Brugada syndrome (BrS) is an inherited arrhythmia syndrome with an increased risk of syncope and sudden death. There is no report of BrS in people aged 65 years old or more. The aim of this study is to describe the clinical characteristics of BrS in elderly people.

Methods: BrS patients older than 65 years were recruited from 8 french tertiary centers. Clinical data investigation of family history, 12-lead ECG and results of pharmacological challenge were collected. Average follow-up was 78±48 months.

Results: 54 patients were recruited (mean age 69±4 years), 33/54 patients (61%) were male. The circumstances of diagnoses were: systematic ECG (n=23, 43%), symptoms (n=19, 35%) and familial screening (n=11, 20%). 25 patients (46%) were symptomatic: resuscitated sudden cardiac death (SCD) in 1 patient (1.8%), 12 syncope (22%), 3 supraventricular tachycardia (6%), 6 palpitation (11%) and 9 lipothymia (17%). 15 patients have history of familial SCD (28%). Implantable cardiac defibrillator (ICD) was implanted in 15/54 patients (28%) and 1 patient (1.8%) was implanted with pacemaker. At baseline, mean HR was 68±14 bpm, PR 190±50 mm, QRS 105±16 mm and QTc 422±43 mm. 29 patients (54%) have spontaneous type-1 ECG. Mean ST elevation were 3.4±1.5 mm. During follow-up only 1/54 patients (1.8%) has an arrhythmic event. This patient was symptomatic (syncope). 2 patients died but their death was not due to a cardiac cause. We compared our results to the patients aged under 65 years old of the FINGER BrS Registry (n=945 patients). The number of ICD implanted patients was higher in FINGER cohort (28 vs 42%). Patients of the FINGER cohort presented more arrhythmic events than patients aged 65 years or more in this study (5.2 vs 1.8%).

Conclusion: Patients aged more than 65 years old seem to represent a lower-risk group than patients aged under 65 years old. Further studies are needed in this population in order to identify risk factors in BrS patients aged more than 65 years old.

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Brugada syndrome in women

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Introduction: Brugada syndrome (BrS) is an inherited arrhythmia syndrome with increased risk of syncope and sudden death. Disease manifestation is clearly predominant in males and the studied population mainly consisted in men. The aim of this study is to describe the clinical characteristics of BrS in women.

Methods: BrS women were recruited from 12 french tertiary centers. Clinical data, investigation of family history, 12-lead ECG and results for pharmacological challenge were collected. Average follow-up was 79±52 months.

Results: 202 women were recruited (mean age 46±16 years). Circumstances of diagnoses were: familial screening (n=94, 47%), systematic ECG (n= 61, 30%) and symptoms (n=47, 23%). 69 patients (34%) were symptomatic: resuscitated sudden cardiac death (SCD) in 11 women (5%), 42 syncope (21%), 8 supraventricular tachycardia (4%), 21 palpitations (10%), 24 lipothymia (12%) and 7 pain (3%). 20 women (10%) have a history of familial SCD. Implantable cardiac defibrillator (ICD) was implanted in 44/202 patients (22%). At baseline, mean HR was 71±12 bpm, PR 174±32 mm, QRS 99±17 mm and QTc 419±29 mm. 59 women (29%) have a spontaneous type-1 ECG. Mean ST elevation were 3.3±1.1 mm. During follow-up, 7/202 patients (3.5%) have an arrhythmic event: resuscitated SCD (n=1), syncope (n=3), ventricular arrhythmia (n=1) and appropriate ICD shock (n=2). Among them, 5 women were symptomatic (syncope) and 2 were asymptomatic. Asymptomatic women don't have a spontaneous type-1 ECG at baseline whereas 3/5 symptomatic women have a type-1 ECG at baseline. We compared our results to the men of the FINGER BrS Registry (n=745). The number of ICD implanted patients was higher in FINGER cohort (22 vs 47%). Men of the FINGER cohort presented more arrhythmic events than women of this study (5.7 vs 3.5%).

Conclusion: Women seem to represent a lower-risk group than men. A spontaneous type-1 ECG at baseline doesn't seem to be a risk factor for arrhythmic event in women.

0376

Arrhythmic storm in patients with Heart Mate® II. Incidence, risk factors and management

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Background: Rhythmic complications seem common after left ventricular (LV) assist device (LVAD), especially in the early phase of implantation (<30 days). We sought to identify the incidence and risk factors of arrhythmic storm occuring after Heart Mate® 2 (HM2) implantation.

Methods: All patients with HM2 implanted in our institution have been studied. Clinical data, occurrence of arrythmia, implantable cardioverter-defibrillator (ICD), ultrasound parameters as well as follow-up have been analyzed.

Results*:* From January 2008 to April 2013, 33 patients (*30* men*, 58±10* years, LVEF *20 ±5%,* ischaemic cardiomyopathy 82%, 70% bridge to transplant), were included. Before implantation, 15 had ICD (12 for primary prévention) and 11 had a history of sustained ventricular tachycardia (VT). The overall mortality rate was 48% with a mean follow-up of *11±11* months. Post-LVAD arrhythmic storm (10 patients, including 9 in the first 30 days) were more frequent in patients with prior VT (*70% vs 17%, p<0.01*), prior ICD (*80% vs 30%, p=0.01*), larger LV end diastolic diameter (*77±9 vs 67±6 mm, p=0.02*) and non ischaemic cardiomyopathy (*40 vs 8%, p=0.053*). Arrhythmic storm occuring just prior LVAD implantation (8 patients) was not associated with arrhythmic storm recurrence after. Endocardial VT ablation was performed in 6. The substrate was not related to HM2 cannula.

Conclusion: Arrhythmic storm are frequent *(33%)* after HM2 implantation, often occurring within one month in patients with prior VT episode.

0022

Incidence and predictors of new-onset atrial fibrillation in septic shock patients in a medical ICU: data from 7-day Holter ECG monitoring

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Objectives: New-onset atrial fibrillation (NAF) is a common complication of septic shock and incidence is underestimated. We sought to investigate the real incidence, associated risk factors for NAF, and its prognostic impact during septic shock in patients hospitalized in a medical Intensive Care Unit (ICU).

Design: Prospective, single-center, observational study.

Setting: Medical ICU in a large university teaching hospital.

Patients: All consecutive patients presenting between March 2011 and May 2013 with septic shock were eligible for inclusion, with the following exclusion criteria: patients aged <18 years, prior history of AF (paroxysmal or sustained), and patients transferred from another ICU with prior septic shock.

Intervention: After inclusion, all patients were equipped with long-duration Holter ECG monitoring for 7 days.

Measurements and Main Results: NAF was defined as an AF episode lasting more than 30 seconds. Patient characteristics, infection criteria, cardiovascular parameters, severity of illness, medical and technical support therapies were recorded. Among 66 patients, 29 (44%) developed NAF; 10 of which (34%) would not have been diagnosed without Holter ECG monitoring. NAF patients were older, and more often presented markers of heart failure, i.e. higher troponin and NT-pro-BNP levels associated with lower left ventricular ejection fraction (LVEF), as compared to patients who remained in sinus rhythm. NAF patients also had longer QRS duration and more often presented nonsustained supra ventricular arrhythmias (<30s) on the first day. In a multivariate model, only age (OR: 1.06; p=0.01) and LVEF<45% (OR: 13.01, p=0.03) remained associated with the occurrence of NAF. However, NAF was not an independent predictor of 28 or 90 day mortality.

Conclusion: This is the first study to examine the exact incidence and risk factors of NAF in septic shock patients. NAF is common, especially in older patients, and is associated with low ejection fraction. We did not find NAF to be independently associated with higher mortality in this study.

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Silent AF impairs patient's outcome after acute myocardial infarction

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Objectives: The aims of our study were to assess silent AF incidence after acute myocardial infarction (AMI) and determine its impact on patient's outcome.

Background: Silent AF has been suggested to be common in AMI. But its true incidence and patient's clinical outcome remain unknown.

Methods: 849 consecutive AMI were prospectively analyzed by continuous ECG monitoring (CEM) during the first 48 hours after admission. Silent AF was defined as asymptomatic episodes lasting at least 30 sec. The population was studied into three groups: No AF, Silent AF, and symptomatic AF after AMI.

Results: One hundred and thirty five patients (15.9%) developed silent AF. Compared with the no AF group, patients with silent AF were markedly older 80 (67-85) vs. 62 (53-75) years; with p<0.001), more frequently women (58 (43%) vs. 198 (30%); with p=0.006), and less smoker (26 (20%) vs. 242 (36%); with p<0.001). They had a significant left atrial (LA) enlargement with LA surface indexed 10.79 (8.61-12.58) vs. 9.30 (7.54-11.04)cm²/m²; with p<0.001 and LA volume indexed 29.50 (21.30-44.05) vs. 24.45 (18.25-33.15)cm3/m²; with p<0.001. Comparing these three groups, heart failure episodes after AMI were more frequent in silent AF group (36 (41.5%)) and in symptomatic AF group (27 (60.0%)) than in no AF group (139 (20.8%)) with p<0.001, and in-hospital mortality was higher in silent AF group (14 (10.4%)) and in symptomatic AF group (8 (17.8%)) than in no AF group (9 (1.3%)) with p<0.001. By multivariate analysis, silent and symptomatic AF, LVEF and GRACE risk score were identified as independent explanatory variables for occurrence of in-hospital death after AMI.

Conclusion: Silent AF is very common after AMI and impacts patient's outcome with more frequent episodes of heart failure (41.5%) and higher in-hospital mortality (10.4%). Our large prospective study suggests that silent AF screening should be improved after AMI in order to predict the prognosis of patients.