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Silent atrial fibrillation after ischemic stroke: interest of continuous ECG monitoring

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Background: Atrial fibrillation (AF) is a major etiological factor of of ischemic strokes. Recent data suggested that subclinical, i.e. silent AF, assessed at the acute phase of stroke by Continuous ECG Monitoring (CEM) is frequent, and associated with a worse prognosis. The aim of our study was to investigate the incidence and determinants of silent AF in patients with acute ischemic stroke (IS).

Methods: All the consecutive patients admitted on the stroke unit of CHU DIJON for IS or TIA were prospectively enrolled from March to December 2012. Patients with a history of AF or who experienced symptomatic AF during their hospital stay were excluded. Silent AF was assessed by CEM for 24h after admission and defined as at least 1 episode > 30 sec without p waves, and with irregular RR intervals. An echocardiography was performed at 2±1 d to measure left ventricular ejection fraction (LVEF) and left auricular (LA) dimensions.

Results: Among the 187 patients included, 19 (10%) developed silent AF. Patients with silent AF were markedly older (76 vs. 66 years, p<0.002), with lower creatinine levels (90 vs. 80 µmol/L, p=0.030) and were less often smokers (5 vs. 41% p=0.058) than patients without silent AF. They also showed a trend towards more frequent hypertension (79 vs. 58%, p=0.057) and a recent history of infection (16 vs. 5%, p=0.082). There was no difference for chronic treatments, NIHSS score on admission, maximal heart rate (HR) or diabetes. By backward multivariate analysis, only age remained an independent estimate of silent AF. For echocardiographic measurements, patients with silent AF showed a trend towards a larger indexed LA volume (37.4 vs. 30.8 ml/ m^3), p=0.057) and LA diameter (23.2 vs. 20.8 mm/m^2, p=0.059); LVEF was similar for the two groups (59 vs. 59%, p=0.582).

Conclusion: This study demonstrated that silent AF detected by CEM is common and associated with older age. Further studies are needed to investigate the interest of systematical screening for silent AF for secondary prevention after ischemic stroke.

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Spectrum and prevalence of rare variants in 168 genes in 189 patients affected with J Wave syndromes using next generation sequencing

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Introduction: Several gene defects have been associated with J wave syndromes. However, the genetic basis of Early Repolarization <syndrome (ERS) and Brugada Syndrome (BrS) and the prevalence of mutations in genes involved in cardiac electrophysiology remains largely unknown. The recent development of NGS-based mutation screening gives us a unique opportunity to estimate extensively the spectrum and prevalence of rare variants in genes already involved in cardiac arrhythmias.

Methods: Ninety-five and ninety-four index patients respectively affected with spontaneous type 1 or symptomatic BrS and with ERS were enrolled. Diagnosis was established after a double blind review, only if morphological cardiac abnormalities or other diseases were excluded. We designed a custom kit (CARDIOPLEX) using HaloPlex™ Target Enrichment System (Agilent) prior to HiSeq sequencing. This kit covers 168 genes including every gene previously reported as involved in cardiac arrhythmias, conduction defect and cardiomyopathy and every gene identified as a candidate, based on our recent NGS-based investigations performed on familial cases.

Results: The mean age of the patients was respectively 46±14 and 36±16 years old for BrS and ERS. Twenty-seven (28%) and ninety-four (100%) patients were respectively symptomatic.

In Brs patients, the PR interval was 167±29 ms, QRS duration was 106±14 ms and QTc interval 415±34 ms.

In ERS patients, the PR interval was 163±38 ms, QRS duration was 90±17 ms and QTc interval 398±34 ms. The ER was present in inferior leads in 32 (38%), in lateral leads in 15 (18%) and in both lateral and inferior leads in 36 (43%) with a mean J point elevation amplitude of 1.98±1.08 mm.

The sequencing results are now under analysis, with more than 95% of targeted sequence positions covered at least 10 times.

Conclusion: This NGS-based assay will enable to get a comprehensive picture of the spectrum and prevalence of mutations altering J wave syndrome susceptibility genes. Moreover, this study will allow deep characterization of genotype-phenotype relationships, thus leading to a better comprehension of BrS and ERS physiopathology.

January 17th, Friday 2014

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Efficiency of heparin infusion may take more than 20 minutes during ablation of atrial fibrillation

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Background: Catheter ablation of atrial fibrillation (CA-AF) is associated with peri-procedural ischemic stroke (IS) in 0.5% and with asymptomatic IS in 10-30% of patients (pts). The two major IS risk factors during CA-AF are electrical cardioversion and poor iv anticoagulation (activated coagulation time, ACT <250 sec). The Aim of our study is to analyze the temporal kinetics of iv Heparin as measured by ACT during CA-AF.

Methods: 93 consecutive pts (60±10 y) suffering from drug-refractory AF underwent CA-AF two days after interruption of Warfarin. After transseptal puncture, a bolus of 100 U/kg of Heparin (8'484±1'659 U) followed by 100 ml of saline were infused using a forearm venous access to reach an ACT value ≥300sec. ACT values were measured before (T0), at 10 (T10) and 20 (T20) min following the infusion.

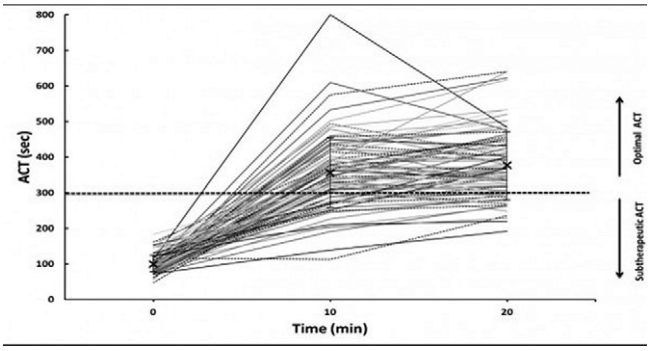

Figure – Temporal kinetics of ACT values for the 93 pts

Results: The figure shows the temporal kinetics of ACT values for the 93 pts. A significant increase was noticed from a mean value of 99±27sec at T0 to 355±98sec at T10 and to 377±92sec at T20 (p<0.003, T0 vs T10/T20 and T10 vs T20). Importantly, ACT values were <300sec in 25% (23/93) of the pts at T10 and in 15% (14/95) at T20.

Conclusion: Heparin infusion displays unexpected slow anticoagulation kinetics following forearm infusion in a significant proportion of CA-AF pro-

cedures. To ensure timely efficiency of Heparin infusion, an additional bolus may be considered at 10 min for pts with low ACT values as most (2/3) will remain subtherapeutic later on. Whether the slow kinetics of iv Heparin contributes to IS during CA-AF needs further investigation. Our findings support the use of oral anticoagulation or early infusion of Heparin (i.e. before transseptal puncture) during CA-AF.

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New oral anticoagulants for periprocedural anticoagulation in patients undergoing atrial flutter radiofrequency ablation: a pilot survey

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Purpose: Atrial flutter (AFL) ablation requires optimal periprocedural anticoagulation to minimize thromboembolic events and risk of bleeding. The safety and efficacy of the new oral anticoagulants (dabigatran and rivaroxaban) in this situation needs to be assessed.

Methods: We performed a multicentre (n=8), retrospective study from November 2012 to January 2013. The survey included all patients (pts) treated with a new oral anticoagulant before undergoing AFL ablation. We report ischaemic and haemorrhagic 24-h post-procedural complications.

Results: The mean age of the 40 pts was 69±9 yrs (47-81 yrs) and 82% were male. Mean CHA2DS2-VASc score was 2.3±1.5. Mean HAS-BLED score was 1.0±0.7. Twenty pts (50%) received dabigatran 150 mg bid, 14 pts (35%) received dabigatran 110 mg bid and 6 pts (15%) received rivaroxaban 20 mg od. All pts received the treatment ≥30 days before AFL ablation. The last dabigatran dose was taken 15±11 h before ablation (2-24 h according to the centre protocol). Dabigatran was interrupted ≥24 h before ablation in 16/34 pts (47%), ≥12 h and <24 h in 5/34 pts (15%) and uninterrupted in 13/34 (38%). The last rivaroxaban dose was taken 20±2 h before ablation (15-24 h). All patients restarted anticoagulation therapy 12 h after the end of the procedure.

Four cases of postprocedural minor bleeding (bleeding at the puncture site without haematoma) were reported (3 on dabigatran 150 bid and 1 on rivaroxaban 20 mg od). One patient experienced an ischaemic stroke 24 h after ablation and cardioversion while he was in sinus rhythm and taking dabigatran 110 mg bid. Preprocedural TEE ruled out a left atrial thrombus in this patient. He was treated by thromboaspiration and recovered without neurological deficit.

Conclusion: The rates of ischaemic and minor haemorrhagic events of AFL ablation under new oral anticoagulants in this study were significant, advocating further investigation in a larger observational study.

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General anesthesia is not superior to local anesthesia for remote magnetic ablation of atrial fibrillation

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Introduction: Remote magnetic navigation is an emerging technology for atrial fibrillation (AF) ablation. General anesthesia (GA) has shown to be superior to local anesthesia (LA) for manual AF ablation in terms of catheter stability and lesion formation. We aimed at comparing GA with LA for remote magnetic AF ablation procedures.

Methods: From 2011 to 2012, all patients (pts) eligible for a remote magnetic ablation (Niobe, Stereotaxis) of AF were included in this study. Clinical and procedural data were systematically analyzed for each pt, as well as procedure-related complications and outcome. 114 pts were included (male 70%; 60±10 years; CHADS2VASc 1.6±1.2; left atrial surface 26±6 cm²; paroxysmal AF 50,9%, persistent AF 35,1%, atrial tachycardia 14%; repeat procedures 38,6%), including 57 pts with GA, and 57 pts with LA.

Results: There was no significant difference in total procedure time between the 2 groups (227±49 min in the GA group versus 236±60 min in the LA group; p=0,27). Fluoroscopy time was significantly increased in the GA group (932±414 s versus 695±355 s, p=0,001), mainly due to the more frequent use of a new magnetic sheath device (27 in the GA group versus 7 in the LA group, p<0.0001). Ablation time was not different between the 2 groups 1902±889 s in the GA group versus 1811±966 s in the LA group (p=0,65). One procedure under LA had to be stopped because of the pt's agitation, and was scheduled later under GA. There were 6 minor complications (groin hematoma) in each group (10.5%). After 242±158 days of follow-up, 11 pts experienced recurrences in the GA group (19%) versus 12 (21%) in the LA group (p=0,81).

Conclusion: For remote magnetic AF ablation, GA does not seem to be superior to LA in terms of efficacy and safety after short-term follow-up.

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Atrial fibrillation ablation target sites are reached with magnetic navigation as fast as with manual technique

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Introduction: Data have suggested increased safety of magnetic navigation (MN) compared to manual (Man) procedures, increased operator comfort and equivalent efficacy, but longer procedure times for which factors are poorly understood. We aimed to evaluate the time required to reach atrial fibrillation (AF) target sites during MN compared to Man procedures.

Methods: Ninety consecutive ablations (48 paroxysmal (P) AF, 25 persistent (Pers) AF and 17 left (L) A flutter) in 81 patients (pts; 63 males, 61±8 y) were included. Pts were assigned to either undergo MN (51%) or Man procedure (49%) according to the operator's choice. Strategy was circumferential pulmonary vein isolation in PAF (CPVI). Additional lesions were performed for Pers AF. Critical isthmus was targeted for LA flutters. An electroanatomic mapping system was used for all (Carto 3). Ablation step duration was defined as the time from the beginning of the first RF delivery to the end of the last RF delivery. It is assumed that the moments without RF delivery during the ablation step are mainly used for target site approach and ablation catheter positioning. The navigability index is then defined as the ratio between RF delivery duration and ablation step duration.

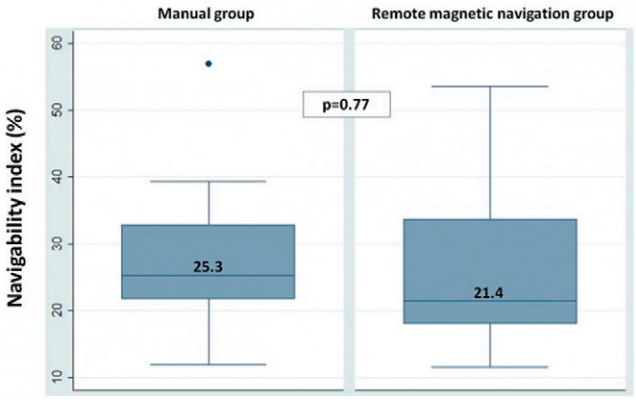

Figure – Navigability index in the two groups

Results: PAF was more frequently ablated with Man (62 vs 38%, p=0.01) and Pers AF was more frequently ablated with MN (77% vs 23%, p=0.01). Mapping time was longer with RMN (28.7±11.7 vs 17.6±5.9 min, p=0.0001). Procedure time tended to be slightly longer with MN (194±49 vs 173±55 min, p=0.07). Fluoroscopy time was shorter in the RMN group (642±311 vs 830±377 s, p=0.01). LA ablation step durations were 85.8±43.3 in MN vs 80.2±28.4 in Man group (p=0.53) whereas LA RF delivery time were 1473±829 s in MN vs 1349±601 s in Man group (p=0.5). Navigability index