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Lack of correlations between electrical and anatomical-mechanical left atrial remodeling in patients with atrial fibrillation

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Introduction: Atrial fibrillation (AFib) progressively leads to electrical remodeling (ER) and anatomical-mechanical remodeling (AMR) whose relationships remain poorly known.

Methods: ER and AMR were compared in patients undergoing percutaneous RF ablation for AFib. ER was defined by right and left appendage acti-
vation rate (RAAAR and LAAAR) as a surrogate for atrial refractory periods. AMR was approached by left atrium (LA) diameters and area and left atrial appendage (LAA) area and contractile function (mean emptying flow velocity (LAAVF)) as determined during transoesophageal and transthoracic echocardio-
graphy performed during AFib the day before or immediately before RF ablation. Mean duration between successive LAA contractions was considered as LAA mechanical rate.

Results: 40 pts with paroxysmal AFib (n=10), persistent AFib (n=25) or long-persistent AFib (n=5) were included (30 men, 64±9 yo, EF 39±14%). 63% were on amiodarone.

Parameters exploring AMR were highly correlated to each other: LA area 27±7 cm²; LAA area 5.5±2 cm²; LA transv 48±14 mm; LA ant-post 38±13 mm; LAA velocity 28±13 m/sec (p<0,05 for each comparison).

Parameters exploring ER were also highly correlated: RAAAR 180±39 msec; LAAAR 175±34 msec (p<0,0001). There was no significant correla-
tion between any ER and AR parameter.

Only LAA mechanical rate (172±36 msec) was highly correlated the LAAAR (p<0,01).

Conclusion: ER and AMR are not mutually related, atrial activation rate being not correlated to LA or LAA size and mechanical function. Thus, the mechanisms leading to AFib induced atrial remodeling may differ for anatom-
ical-mechanical and electrophysiological aspects.

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Isoproterenol infusion is more frequently required for the induction of atrioventricular node reentrant tachycardia than for the induction of atrioventricular reentrant tachycardia

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Isoproterenol (Isopro) infusion is more frequently required for the induction of AVNRT than for the induction of atrioventricular reentrant tachycardia (AVRT) or atrioventricular reentrant tachycardia (AVNRT) in a concealed or an overt accessory pathway (AP) in patients with a Wolff-Parkinson-White syndrome (WPW). The purpose of the study was to look for the mode of SVT induction and to correlate the mode of induction with the mechanism of the tachycardia.

Methods: 1818 patients were consecutively referred for a SVT. 438 had a WPW (group I). Remaining patients had a normal ECG. At electrophysiologi-

cal study (EPS), SVT was related to AVRT in 251 patients (group II), to typical AVNRT in 969 patients (group III) and to atypical AVNRT in 160 patients (group IV). Atrial pacing and programmed atrial stimulation with one and 2 extrastimuli were performed in control state (CS). If SVT was not induced, the protocol was repeated after isoproterenol (0.02 to 1 µg. min⁻¹) infused to increase sinus rate to at least 130 bpm.

Results: Groups differed by age and gender: group I was younger than group II (36±17 vs 42±17 years) (p< 0.001). Group II was younger than group III (49±19) (p<0.001) and group III was younger than group IV (55±19) (p<0.001). Gender in group I and II was more frequently male (55%, 57%) than in group III (36%) and IV (36%) (p=0.000). SVT induction required more frequently isoproterenol infusion among patients of group III with a typical AVNRT (32%) and IV with atypical AVNRT (33%) than in patients of group I (26%) (p=0.05) or group II (24%) (p=0.02). Men required more frequently isoproterenol than women only in group I (p<0.0001). The youngest patients required more frequently isoproterenol than other but the differences were only significant in group III (47±19 vs 51±9 years, p<0.005).

Conclusions: Isoproterenol infusion is more frequently required in patients with typical or atypical AVNRT than in patients with AVRT using an overt or a concealed AP. The youngest patients with AVNRT required isoproterenol infusion for the SVT induction more frequently than adults. Isoproterenol is required more frequently in men than in women only in patients with a WPW syndrome.

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Characteristics of atrial fibrillation ablation in routine practice: In-hospital results of a French registry of more than 1500 procedures

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Purpose: This atrial fibrillation (AF) ablation registry was conducted in order to describe the current epidemiology of patients undergoing AF ablation, the techniques used and the results obtained in routine practice in France. We report here the in-hospital data.

Methods: Data were prospectively collected in 6 medium-high volume French centers. All consecutive patients who underwent an atrial fibrillation or a left atrial macro-reentry ablation procedure were included in the registry within a period of 12 to 24 months according to centers.

Results: From January 2010 to April 2012, 1646 consecutive complex left atrial ablation procedures were collected. Patients were predominantly males (75%) with a mean age of 59.6±10 years old. The targeted arrhythmia was paroxysmal AF in 58%, persistent AF in 32%, long standing AF in 4% or left atrial macro-reentry secondary to a previous AF ablation in 6%. Of interest, redo procedures represented 28% of the overall procedures. Pulmonary vein isolation (PVI) was attempted in 96% of the cases, the roof line in 40% and the left isthmus line in 16%. Complex fractionated atrial electrograms were targeted in 20% of procedures. The procedures were most often performed with an irrigated tip RF ablation catheter (75%) and a 3D navigation system was used in 68% of the procedures. PVI was performed with a cryoballoon in 21% or with phased RF technology tools in 3% of the cases.

The mean procedure time was 136±55 min.

The overall complication rate was 6.2%. Tamponnade occurred in 23 patients (pts, 1.4%, requiring surgical drainage in 2 pts and responsible of death in 1); stroke was documented in 4 pts (0.3%); phrenic nerve palsy was observed in 8 pts during cryoballoon procedures only (3.7%). Gastro hema-
toma and femoral veno-arterial fistula occurred in 52 pts (3.2%). Atrial-esophageal fistula documented in 1 pt.

Conclusion: This prospective registry allows to get a real vision of how and to whom are performed complex left atrial ablation procedures in routine practice. Detailed data analysis might raise potential issues on which preven-
tive action might further reduce procedures complication rate.