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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 activation 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 echocardiography 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 correlation 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 anatomical-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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Methods: Exclusion (ER) and AMR were compared in patients undergoing percutaneous RF ablation for AFib. The inclusion criteria for AFib were: persistent (n=25), long-standing paroxysmal (n=10) or paroxysmal AFib (n=5). RF ablation was attempted in 99% of the cases. Atrial fibrillation ablation procedures were collected. Patients were predominantly males (57%). Atrial fibrillation ablation procedures were performed in 7% of the cases. The techniques used and the results obtained in routine practice in France. We report here the in-hospital data.

Results: Patients with paroxysmal AFib (n=10) had a higher percentage of AFib with a concealed AP 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 more frequently administered in men and women in patients with a WPW syndrome.

Conclusion: 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 more frequently administered in men and women 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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Methods: Data were prospectively collected in 6 medium-high volume French centers. All consecutive patients who underwent an atrial fibrillation ablation 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 (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%). Gastrointestinal and femoral veno-arterial fistula occurred in 52 pts (3.2%). Atrial-oesophageal 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 preventive action might further reduce procedures complication rate.