Abstract: P1037

Relationship between left atrium low voltage areas and atrial fibrillation radiofrequency ablation success-rate: preliminary results of the SMOP study.

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Background: radio frequency catheter ablation (CA) is an effective therapy for atrial fibrillation (AF). Some authors have described a potential relationship between the presence of areas of fibrosis in the left atrium (LA) and the success of CA, nevertheless there is a lack of multicenter studies in this field.

Objective: the aim of our study was to assess the relationship between the of presence of low voltage areas of the LA detected during substrate mapping at the time of the procedure and recurrences of AF after CA.

Methods: we analyzed 214 patients of the SMOP-AF (Substrate Mapping as Outcome Predictor in Atrial Fibrillation Ablation), a prospective multi-centric study enrolling patients with both paroxysmal and persistent AF undergoing a first radio-frequency CA procedure. High-density mapping was performed in sinus rhythm using the CARTO system before performing pulmonary vein isolation. Areas with less than 0.5 mV on mapping were defined as low voltage zone (LVZ), while between 0.5 mV and 1.5 mV intermediate voltage zone (IVZ). IVZ and LVZ were expressed as a percentage of the LA surface. Comparisons were made by Pearson correlation, cross-tables and Chi-square test or Student T test.

Results: the mean age of the enrolled population was 59 ± 9 years, left ventricular ejection fraction was 59 ± 9%, 86.4% of the pts had tested at least one anti-arrhythmic drug. Persistent atrial fibrillation was present in 10.3% of patients. The rate of documented AF recurrence at 3 months was 15.3% (n = 29). There was a statistical significant correlation between the presence of IVZ and the rate of recurrences at 3 months (r= 0.16, p value 0.03). Patients with IVZ greater than 4% of the left atrium surface showed a higher risk of recurrences (19.5% vs. 8.7%, p value 0.04). No statistical difference was observed in other procedural variables (number of lesions, contact force, force-time integral) among patients with or without recurrences.

Conclusion: Our study showed a relationship between CA short-term success rate and the presence of areas of intermediate voltage zone detected with high-density substrate mapping at the time of the procedure. The presence of areas of intermediate voltage zone greater than 4% of the LA determines a 2.5 folds increased risk of short-term recurrence. Our data needs to be confirmed in a longer follow-up.