

## Dynamics of left-atrial sizes after pulmonary vein isolation predicts late recurrences in patients with paroxysmal atrial fibrillation

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**Background:** Effect of pulmonary vein isolation on left atrial size (LAS) has not been fully investigated. Aim of this study was to analyze the dynamics of LAS one year after pulmonary vein isolation and its association with late recurrences in patients with paroxysmal atrial fibrillation (PAF).

**Methods:** A total of 223 consecutive patients with PAF (146 men, age 59 y, hypertension =129, CAD =18) were enrolled in the study. Left atrial short and long axis (SA (parasternal measurement); LA-apical measurement) were assessed in the apical four-chamber projection. The LAS value at baseline was: (SA: 38 IQR (34-41); LA: 51 IQR (47-56) mm). The values of 42 and 60 mm were considered as cut-offs. A total of 47 (21%) pts had at least one axis > cut off at baseline. The antral isolation of PVI was performed in 132 patients using radiofrequency and in 91 patients using cryoballoon catheter. First three months were considered as blanking period, the median follow up was 16 IQR: (10-30) months. The endpoint of study was first documented AF recurrence.

**Results:** Out of 223 study patients 56 (25.1 %) reached endpoint within 1 year after PVI and 14 (6.3 %) thereafter. A total of 138 patients were followed up within one year without recurrence. The LAS measured one year after PVI was (SA: 37 IQR (35-39); LA: 50 IQR (48-55) mm), 17 (12.3 %) pts had LAS > cut off (p=.029; McNemar-Test). Out of 121 patients with not increased or decreased left atrium only 4 (3.31%) had recurrence in late follow up. In contrast, in 10 (58.8%) out of 17 pts with LAS > cut-offs AF recurrence was observed in late follow up. Increased LAS (SA>42 mm and/or LA>60 mm) measured 1 year after PVI was revealed in the multivariate Cox regression model as the only predictor for late recurrences (p<.001).

**Conclusion:** In majority of patients with PAF initially enlarged LAS decreased 1 year after PVI. However the patients in whom LAS was not decreased or increased within one year are likely to have AF recurrence in late follow up and should be frequently controlled, even they were in sinus rhythm within first year after PVI. Continuation of remodelling of the left atrium after the PVI seems to be an important factor for late recurrence.