

The effect of posterior left atrial adipose tissue attenuation on the success of catheter ablation for atrial fibrillation

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Introduction: Recurrence of atrial fibrillation (AF) after catheter ablation remains high. Recent studies have shown a relation between epicardial adipose tissue (EAT) and AF. EAT secretes several pro- and anti-inflammatory adipokines that directly interact with the adjacent myocardium.

Objectives: The aim of the current study was to evaluate whether posterior left atrial (LA) adipose tissue attenuation, as marker of inflammation, might be related to higher AF recurrence rate after catheter ablation.

Methods: Consecutive patients with symptomatic AF referred for first AF catheter ablation who underwent cardiac computed tomography angiography (CTA) for the assessment of left atrial anatomy in our Institution were included. The total EAT and posterior LA adipose tissue were manually traced and adipose tissue was automatically recognized as tissue with Hounsfield Units (HU) between -195 and -45. The mean attenuation value of the posterior LA adipose tissue was calculated and the population divided according to the optimal cut-off value (-96.6 HU) derived using the Youden index.

Results: In total, 460 patients (66% male, age 61 ± 10 years) were included in the analysis. After a median follow-up of 18 months (IQR 6-32), 168 (37%) patients had AF recurrence. Patients with higher attenuation (≥ -96.6 HU) of the posterior LA adipose tissue showed higher AF recurrence rates compared to patients with lower attenuation (< -96.6 HU) (log-rank $p=0.016$). Univariate analysis showed an association between AF recurrence and persistent AF, LA volume and higher posterior LA adipose tissue attenuation (<0.05 for all). In the multivariate analysis, posterior LA adipose tissue attenuation remained an independent predictor of AF recurrence following catheter ablation (HR=1.68; 95%CI=1.08-2.62; $p=0.021$).

Conclusions: Higher posterior LA adipose tissue attenuation is an independent predictor of AF recurrence after catheter ablation. The higher adipose tissue attenuation might indicate an increased local inflammation and serve as an imaging biomarker of increased risk of AF recurrence.

Former publications: no

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Prof. Dr. Langer Róbert

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