Abstract: P234

Impact of obesity and age on left atrial function in patients with paroxysmal atrial fibrillation undergoing catheter ablation

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Topic(s):
Atrial Fibrillation - Pathophysiology and Mechanisms

Citation:
Background: Obesity and older age are associated with increased risk of atrial fibrillation (AF) and heart failure. Previous studies assessing the efficacy of catheter ablation in obese and elderly patients have shown conflicting data.

Purpose: We thought to assess the impact of obesity and age on left atrial (LA) phasic function in patients with paroxysmal AF undergoing the first catheter ablation.

Methods: We prospectively enrolled 112 consecutive patients (age:±21 years; 32% female) with symptomatic paroxysmal AF and preserved left ventricular ejection fraction (=50%) undergoing the first catheter ablation during sinus rhythm, and 23 healthy controls. Patients with valvular AF or in AF at the time of ablation were excluded. All patients underwent comprehensive echocardiography at one day pre and at one day post ablation, and after three months. The LA reservoir, conduit and contractile strain and strain rate (SR) were assessed using the two-dimensional speckle tracking echocardiography as average of segmental values in apical views.

Results: A total of 36 (32%) patients had normal weight (BMI <25 kg/m²), while 50 (45%) overweight (25<BMI<30kg/m²), and 26 (23%) obesity (BMI=30kg/m²). A total of 42 (38%) individuals were elderly (=65 years old). Pre-ablation, all groups of patients with paroxysmal AF had significantly lower magnitude of all three components of LA strain and SR compared with controls (all p<0.01). Obese patients showed significantly lower magnitude of reservoir strain, contractile strain and SR compared with normal-weight patients (all p<0.05). Reservoir but not contractile strain was also significantly lower in over-weight versus normal-weight individuals. Middle-age compared with elderly patients had significantly higher magnitude of reservoir strain, reservoir and contractile SR (all p < 0.05). Post ablation, LA strain and SR significantly decreased in all groups of patients regardless of BMI or age (all p<0.05) (Figure 1AB,2AB). At three-month follow-up, LA strain and SR showed almost complete recovery to pre-ablation values in all groups of patients. Yet, LA function remained significantly lower compared with controls (all p<0.01). Moreover, individuals with obesity remained to have significantly lower LA function than patients with normal weight. Elderly patients with overweight tended to have lower follow-up LA function compared with middle-age patients with normal weight (p 0.06). Out of the all indices of phasic LA function, reservoir strain showed to be the most clinically useful to monitor LA function throughout the study.

Conclusion: Obese patients with paroxysmal AF had significantly lower LA function both pre and post catheter ablation. This may imply a higher AF recurrent rate and risk for development of heart failure. Reservoir LA strain appears to be the most useful parameter to monitor LA function.
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Figure 1: figures (1A,1B) showing the value and time course of LA reservoir strain (pre-ca, post-ca and at 3 month follow up) for 3 groups of patients

Figure 2: figures (2A,2B) showing the value and time course of LA contractile strain and strain rate (SR) (pre-ca, post-ca and at 3m FU) for 3 groups of patients