

Indexed left atrial volume, C-reactive protein and erythrocyte sedimentation rate as predictors of recurrence of non-valvular atrial fibrillation after successful cardioversion

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Background: The data regarding the relationships between left atrial volume (LAV), inflammation, and atrial fibrillation (AFib) are sparse. Additionally, although LAV prognostic role in predicting AFib is wellknown, it has not been prospectively evaluated as predictor of recurrence of non-valvular AFib after cardioversion.

Methods: We prospectively evaluated 76 consecutive patients (mean age 66,1±13.6 years, 65.8% men) who underwent successful cardioversion and with no history of other atrial arrhythmia, stroke, congenital heart disease, valvular dysfunction, surgery, thyroid dysfunction, acute or chronic inflammatory disease, and pacemaker. Baseline clinical and echocardiographic characteristics were obtained before cardioversion. The LAV was measured using Simpson's method and indexed to BSA. Baseline routine blood samples were obtained in order to evaluate also the inflammatory state. Patients were followed by an ECG after 1st, 6th and 12th month and by a Holter ECG performed 3 months after cardioversion.

Results: 39 patients (51.3%) had recurrence of AFib after a median (25th-75th percentile) follow-up of 165.0 (30.0-270.0) days. Patients with recurrence compared to those with no recurrence had larger LAV (36.3±9.9 vs 27.5±8.9 ml/m², p<0.001), higher level of C-reactive protein (CRP, 0.45±0.49 vs 0.17±0.09 mg/dl, p=0.04) and erythrocyte sedimentation rate (ESR, 16.2±11.2 vs 10.3±8.8 mm/hr, p=0.04). LA diameter was not associated with recurrence of AFib (RR 1.00, 95% CI 0.98-1.23, p=0.09). Each unit increase in indexed LAV was associated with a 1.12 fold increased risk of AFib recurrence (RR 1.12, 95% CI 1.04-1.20, p=0.002). When median values were used as cut-off, the association of iLAV >32 ml/m² with CRP >0.18 mg/dl and/or ESR > 11.0 mm/hr was associated with a 16.2 fold increased risk of AFib recurrence (RR 16.2, 95% CI 1.8-42.4, p=0.003).

Conclusion: This is the first prospective study to evaluate the relationships between LAV, inflammation, and AFib recurrence after cardioversion. Present work shows, for the first time, that larger indexed LAV before cardioversion, as a more accurate measure of LA remodeling than LA diameter, is strongly associated with a higher risk of AFib recurrence. It also shows that inflammation, evaluated by a simple routine blood sample, may provide an adjunctive, easy, and low-cost prognostic tool to predict AFib recurrence.