

Does Chronic Atrial Fibrillation Induce Cardiac Remodeling?

Fuchs, Therese¹; Baron, Elvera L.²; Burgsdorf, Oleg¹; Torjman, Amram³; Leitman, Marina¹; Vered, Zvi¹

¹Assaf Harofeh Medical Center, Cardiology, Beer Yaacov, Israel; ²Mount Sinai School of Medicine, NY, USA; ³College of Management, Rishon Lezion, Israel

The aim of this study was to compare cardiac structure and function in patients with chronic atrial fibrillation (CAF), as opposed to patients with paroxysmal atrial fibrillation (PAF), and normal control subjects.

There is a strong correlation between heart failure and atrial fibrillation (AF). On one hand, patients who develop AF have an increased risk of developing heart failure; on the other hand, patients with heart failure are more likely to develop AF.

Methods: The study cohort included 83 patients, divided into 3 groups: Group A: 31 patients with CAF for at least 6 months, group B: 30 patients in sinus rhythm with a documented history of PAF, and group C: 22 patients without any history of AF. Patients with CAF were older (71 vs 64 & 64 respectively). Apart from age, groups were clinically similar. After careful clinical evaluation, comprehensive echocardiography studies were performed including cardiac chambers' size, systolic and diastolic LV function.

Results: LA diameter and area were significantly larger in CAF than PAF and control patients: 46.9±5.9 vs. 41.8±8 vs. 36.5±4.8 mm and 29.0±5.8 vs. 23.9±5.2 vs. 18.6±3.8 mm² respectively (p<0.001). LVEF (Simpson) was lower in CAF: 53.6±7.1 vs. 61.0±7.1 vs. 58.2±4.6 %, (p<0.001). Isovolumic relaxation time was shorter in CAF, 65.6±16.3 vs. 88.5±20.7 vs. 80.4±12.9 ms (p<0.001), E/e' septal was larger in CAF 12.2±4.5 vs. 10.2±3.5 vs. 9.9±3.4 (p<0.033). E/Vp was also significantly different in CAF 2.7±0.8 vs. 1.6±0.4 vs. 1.7±0.5 (p<0.001).

Additional diastolic parameters were also significantly different.

Conclusions: These findings correlate with the symptoms experienced by patients in AF and demonstrate that in patients with CAF both structural and functional cardiac changes occur. Patients with CAF as opposed to both normal subjects and patients with PAF have larger LA and reduced systolic and diastolic LV function.