Atrial fibrillation in systemic sclerosis: a time-dependent factor?

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Funding Acknowledgement: Type of funding sources: None.

Background: Systemic sclerosis (SSc) is an autoimmune disease associated with widespread vasculopathy and progressive fibrosis of the skin and internal organs. Cardiac involvement is frequent, usually subclinical and may involve all wall layers. Myocardial remodelling leads to electromechanical imparity, increasing the vulnerability to atrial fibrillation (AF). Unfortunately, little is known about how long it takes for AF to occur. New unicentric data are available.

Purpose: The aim of our trial was to map the temporal component of the occurrence of AF in SSc in- and outpatients on standard care.

Methods: In a longitudinal retrospective data analysis, we scoped all SSc in- and outpatients aged 18 to 85 years with an ACR/EULAR score ≥ for the presence of AF. Next, we excluded those with known AF or antiarrhythmic therapy prior to SSc diagnosis. To investigate the impact of SSc on the occurrence of AF, we created Kaplan Meier curves and Cox regression models using the time from SSc diagnosis to first recorded AF as main outcome measurement. Also, a comparison of subgroups based on AF status (no/yes) was conducted. All data were collected from 12-lead ECGs, cardiac echoes or e-health records.

Results: We enrolled 114 patients, including 96 (84.2%) women, who had a median age at SSc diagnosis of 50.47 (95% CI 48.00–53.00) years. ENA-testing revealed 39 (34.8%) anti-CENP-B and 42 (37.5%) anti-Scl-70 positive samples. AF was found in 19 (16.7%) patients after a median follow-up of 8.67 (95% CI 6.86–12.53) years, equalling 1.45 cases (95% CI 0.88–2.26) per 100 patient-years. While body mass index (BMI) was slightly elevated in our subjects, both left (LAVI) and right atrial volume index (RAVI) showed normal median values. Exposure to pulmonary arterial hypertension (PAH) and/or arterial hypertension (AH) was present in 32 (28.1%) and 40 (35.1%) patients, respectively.

After 25 years, the overall proportion event-free was 51.6% (95% CI 32.8–81.3), remaining 5 numbers at risk. We observed that the age at SSc diagnosis contributed to the occurrence of AF (HR 1.154; 95% CI 1.079–1.233; p < 0.001). In contrast, BMI, gender, LAVI, RAVI, PAH or AH had no significant effect on AF. Notable differences from non-AF subgroup were elevated atrial dimensions (LAVI: 26.44ml/m²; 95% CI 22.51–33.01; p=0.001; RAVI: 30.47ml/m²; 95% CI 21.92–34.98; p=0.006) and increased age (63.00 yr; 95% CI 53.57–66.62; p < 0.001) at SSc diagnosis in AF subgroup. In terms of ENAs, follow-up time, gender, BMI and PAH or AH burden, they shared similar features.

Conclusions: AF is common in long-lasting SSc. To reduce the hazard for AF, early diagnosis of SSc is essential because of its chronically fibrotic nature. We hypothesize that dilated atria may indicate AF, with altered morphology being a possible sign of SSc-related microvascular ischemic disorders. Due to the limitations of retrospective trials, further studies are needed to prove our concept and to quantify the real AF burden in SSc.