BACKGROUND: Cardiac involvement and in particular conduction abnormalities represent a significant cause of morbidity and mortality in patients with systemic sclerosis (SSc). The aim of this study was to assess the prevalence of conduction abnormalities over a three-year period using an implantable loop recorder (REVEAL-ILR) and their association with cardiac magnetic resonance (CMR) and cardiac biomarkers in patients with SSc and no overt cardiac history.

METHODS: 20 patients fulfilling the 2013 ACR/EULAR criteria for SSc, with no history of pulmonary hypertension, cardiovascular (CV) disease and no more than one CV risk factor had an ILR inserted and were followed up for three years. ILR data were downloaded every three months or at patient request. CMR was performed at baseline and year three on a 3T scanner and included late gadolinium enhancement (LGE) and T1 mapping for ECV quantification. We report three-year ILR data, baseline CMR and baseline and year one high-sensitivity troponin I (hsTnI).

RESULTS: 19 patients had available ILR data: 12(63%) were females, with a median (IQR) age at baseline of 53(12), six (32%) had diffuse SSc (dcSSc), six (32%) positive anticentromere antibodies (ACA), 421% positive Scl70, 8(42%) history of interstitial lung disease (ILD), 7(36%) history of digital ulcers (DU), 14/19 had ILR abnormalities over the three-year period, 8/14 had significant arrhythmias: one high-grade AV block (complete heart block); three non-sustained ventricular tachycardia (NSVT) of which one also had atrial arrhythmias (atrial fibrillation (AF), atrial flutter and supraventricular tachycardia (SVT)); four had atrial arrhythmia: one atrial flutter, one AF and SVT, one SVT and one AF. Of these eight patients, four had dcSSc, two were Scl70 positive, four ACA positive, three had a history of ILD and three had history of DU. Management comprised one permanent pacemaker implantation, three antiarrhythmic medical treatment, and one anticoagulation. 15 patients had baseline CMR. In the eight patients with ILR arrhythmias there was higher CMR-ECV [mean diff. (95%CI) -2.51(-5.98, 1.72) p = 0.2], higher LV mass (g/m2) [-2.2 (-14.6, 10.17) %, p = 0.06] and lower left ventricular end diastolic volume (ml) [4.9 (-33, 42.9) %, p = 0.7]. Five patients had LGE, one of which had NSVT. hsTnI at year one was higher for those with significant arrhythmias [-0.03 (-0.12, 0.06) %, p = 0.06].

CONCLUSION: This pilot study of ILR in SSc demonstrated incidental significant ventricular and atrial arrhythmia. Larger studies are necessary to explore the clinical significance of these findings.
warranted to determine the clinical utility of hsTnl and CMR-ECV in providing risk stratification for arrhythmias and thus refine patient selection for pre-emptive ILR insertion.

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