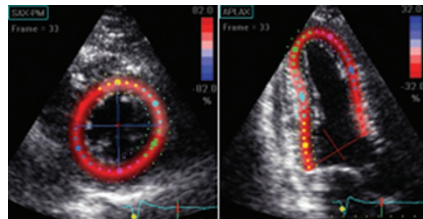


CONNECTIVE TISSUE DISEASES

SSc-associated cardiac dysfunction—feeling the strain

Cardiovascular complications are a leading cause of mortality in patients with systemic sclerosis (SSc); however, conventional assessments of systolic function have limited sensitivity in these patients. Now, research led by Annemie Schuerwegh of the Leiden University Medical Centre, has demonstrated that a technological advance in echocardiography presents the opportunity to detect preclinical cardiac dysfunction in patients with SSc.

Schuerwegh's team assessed left ventricular deformation in 104 patients with SSc and 37 matched controls using speckle tracking strain analysis, a novel analytical method that utilizes acoustic features inherent in echocardiograms. Longitudinal and circumferential, but not radial, strains were found to be modestly impaired in patients with SSc compared with controls. The impairments were greater in patients with diffuse disease, which is associated with more frequent and severe cardiac manifestations.



Echocardiograms annotated for speckle tracking analysis. Provided courtesy of N. A. Marsan.

In patients with cardiac dysfunction confirmed by 24 h electrocardiography, the SSc-associated strain defects were identified as the only independent predictors of ventricular arrhythmias after multivariate analysis. This finding is important, as arrhythmias are common in patients with SSc, and are responsible for considerable morbidity and mortality. By contrast, conventional echocardiographic Doppler analysis of systolic velocity was not able to detect ventricular dysfunction.

Another frequent manifestation of SSc is reduced exercise capacity; although previously predicted to be a consequence

of lung pathology, Schuerwegh *et al.* found this impairment to be related to the SSc-associated strain defects, independent of age, SSc subtype and lung function.

These discoveries suggest that subtle systolic dysfunction is a key factor in the cardiopulmonary manifestations of SSc. Furthermore, they demonstrate that speckle tracking strain analysis might improve risk stratification and allow for more effective therapeutic intervention. However, the authors acknowledge that studies in a large cohort of patients with SSc are required to investigate the impact of severe cardiopulmonary involvement and vascular ischemia on the predictive value of this technique.

David Killock

Original article Yiu, K. H. *et al.* Left ventricular dysfunction assessed by speckle tracking strain analysis in systemic sclerosis patients: relationship with functional capacity and ventricular arrhythmias. *Arthritis Rheum.* doi:10.1002/art.30614