Can speckle tracking echocardiography detect subclinical left ventricular dysfunction in patients with primary Sjögren's syndrome?

Sirs,

In Sjögren's syndrome (SS) distinct heart disease is rare (1-4), but pulmonary effusion, pulmonary hypertension and left ventricular diastolic dysfunction are frequent.

It has been found that two-dimensional speckle tracking echocardiography (2-D STE) is more sensitive than conventional echocardiography in detecting sub-clinical ventricular dysfunction in various clinical disorders (5-7).

The aim of this study was to use STE to evaluate left ventricular myocardial function in a cohort of patients with pSS and a normal ejection fraction.

Forty-nine outpatients (7 males and 42 females; mean age 57±6.9 years), who fulfilled the American European Consensus (AECG) for pSS (8) and 49 healthy volunteers matched in terms of the anthropometric characteristics was included in the study. None of the them had smoked cigarettes during the previous ten years.

The study was approved by local Ethics Committee and conducted in accordance with the ethical guidelines of the 1975 Helsinki Declaration, and informed consent was obtained.

The clinical data were determined by means of a standardised clinical interview, and the pSS-related laboratory variables of erythrocyte sedimentation rate, WBC and platelet counts, and C-reactive protein levels were measured using routine methods.

IgM rheumatoid factor (RF), anti-nuclear autoantibody (ANA) levels and antibodies against extractable nuclear antigens (ENAs) including SSA, SSB were also detected. The CV risk profile was assessed by means of standard electrocardiography (ECG), conventional and stress trans-thoracic echocardography with coronary flow reserve (CFR) measurement, carotid ultrasonography and pulse wave velocity (PWV). Speckle tracking analysis was performed off-line using commercially available QLAB 9 software (Philips Medical System, USA). Two-dimensional images were obtained from the apical 4-chamber view at a high frame rate (70–80 frames/sec), and three cardiac cycles were stored in cine-loop format for off-line analysis in order to assess end-systolic LV longitudinal.

Table I shows the characteristics of the study population. All of the pSS patients showed extra-glandular systemic involvement (30% articular, 22% haematological, 7% cutaneous, 8% constitutional and 4.5% peripheral nerve system involvement) 30 were being treated with hydroxychloroquine (HCQ) 400 mg/day, 11 with azathioprine (AZA) at a mean dose of 150 mg/day (range 50–200 mg), and eight with methotrexate (MTX) at a mean dose of 7.5 mg/weekly. None of the patients showed any signs or symptoms of CV disease, pulmonary involvement such as interstitial lung disease, or any other complication.

Table I. Characteristics of the study population.

	Primary SS patients (n=49)	Healthy controls (n=49)	*p*-value
No. of females (%)	42 (85.7%)	40 (81.6%)	0.06
Age (years)	57.5 ± 6.90	59.6 ± 2.08	0.07
BMI (kg/m^{-2})	25.6 ± 3.77	23.69 ± 1.12	0.07
Systolic blood pressure (mmHg)	126 ± 17	125 ± 12	0.08
Diastolic blood pressure (mmHg)	82 ± 6	80 ± 8	0.08
Heart rate (bpm)	65 ± 10	68 ± 12	0.07
CRP (mg/dL^{-1})	7.36 ± 2.08	0.41 ± 0.09	<0.0001
ESR (mm/h^{-1})	23.33 ± 12.86	4.84 ± 0.24	<0.0001
Disease duration (months)	77.16 ± 34.68		

Mean values ± standard deviation (SD).
BMI: body mass index; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate.

Four patients were receiving corticosteroids 2.5 mg/day, and three were receiving 5 mg/day due to joint involvement relapse for 3–5 months; three were receiving nifedipine 30 mg/day because of Raynaud's phenomenon. All of the patients were positive for ANA and/or RF and/or SSA or SSB, and had significantly higher CRP and ESR values than the healthy controls (p<0.001 for both); however, there were no significant differences in heart rate, arterial blood pressure, age or BMI (Table I).

The patients' mean LVEF and E/A ratios were respectively 59.11±6.35% and 0.94±.0.24, which were not significantly different from those of the controls; however, although within the normal range, their CFR was lower (median 2.7, IQR 2.40–2.90 *vs*. 3.20, IQR 3.06–3.33; p<0.0001).

The results of the STE were significantly different between the two groups, with global longitudinal strain deformation in the apical 4-chamber view (Long. ε 4c) being significantly lower in the pSS patients (median 15.28, IQR 12.3–16.2 *vs*. 19.8, IQR 19.3–20.40; p<0.0001).

Right and left pulse wave velocity (PWV) (median 8.8 m/sec, IQR 7.26-10.32 *vs*. 6.86 m/sec, IQR 6.66-7.10; p<0.0001), and right and left coronary IMT (cIMT: median 0.6 mm, IQR 0.5–0.7 *vs*. 0.53 mm, IQR 0.50–0.60; p=0.08) values were all higher in the pSS patients, but the differences in cIMT were not statistically significant.

This study show that LV myocardial longitudinal ε, as measured by means of STE, was impaired in our pSS patients in the absence of any clinical evidence of CV disease and when the traditional echocardiographic parameters were still negative, thus suggesting a myocardial alteration (9). We do not have a clear explanation for this finding (10), but these alterations are so small that cannot be clinally detected.

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