

Early detection of cardiac involvement in systemic sclerosis assessed by tissue-Doppler echocardiography

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Background: To assess cardiac involvement in SSc patients and to explore the relationship between interleukin (IL)-6 levels and echocardiographic abnormalities, and NT-proBNP levels in SSc patients and to correlate tested parameters with disease activity (EUSTAR) score.

Methods: This case-control study included 31 SSc patients with preserved left ventricular ejection fraction (LVEF) and no concomitant disease, and 32 matched healthy controls. Serum IL-6 and NT-proBNP levels were measured and subjects were evaluated by conventional and pulsed-wave tissue Doppler echocardiography.

Results: SSc patients had significantly lower values of LV systolic (7.7 vs 9.25 cm/s, $P<0.001$) and early diastolic (8.7 vs 10.3 cm/s, $P=0.014$) myocardial velocities and higher E/e' ratio (9.04 vs 7.37, $P=0.001$), although there was no between-group difference according to LVEF (68 vs 65%, $P=0.248$) and E/A ratio (1 vs 1.11, $P=0.312$). 18 SSc patients had LV systolic dysfunction (septal $s' < 7.5$ cm/s) versus 5 control subjects ($P=0.010$). According to the ASE recommendations, 18 SSc patients and 9 controls had LV diastolic dysfunction ($P=0.032$). IL-6 level showed correlation with LV mean e' ($r=-0.57$, $P=0.001$) and E/e' ratio ($r=0.55$, $P=0.001$). Also, IL-6 level significantly correlated with the presence ($r=0.46$, $P=0.010$) and severity ($r=0.54$, $P=0.002$)

of LVDD and NT-proBNP level ($r=0.52$, $P=0.003$) in the SSc group, whereas no correlation was observed in control group. EUSTAR score correlated with LV E/e' ($r=0.48$, $P=0.006$), mean e' ($r=-0.67$, $P<0.001$), mean s' ($r=-0.51$, $P=0.004$), NT-proBNP ($r=0.60$, $P<0.001$) and IL-6 ($r=0.79$, $P<0.001$), and with LVSD presence ($r=0.363$, $P=0.044$), and LVDD presence ($r=0.58$, $P=0.001$) and severity ($r=0.621$, $P<0.001$). Correlation was also found between IL-6 level and EUSTAR-score ($r=0.79$, $P<0.001$)

Conclusions: We showed that subclinical LV impairment is common in patients with SSc who have not already demonstrated cardiac involvement. Positive correlation between IL-6 and EUSTAR score and their association with the echocardiographic abnormalities and NT-proBNP may open up new possibilities for the treatment of SSc cardiomyopathy.

KEYWORDS: systemic sclerosis, cardiac involvement, tissue Doppler echocardiography, interleukin-6.

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