

Association of disease activity and echocardiographic parameters in systemic lupus erythematosus patients

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BACKGROUND

Patients with systemic lupus erythematosus (SLE) have an increased risk of developing a cardiovascular event than the general population, due to immunological factors and a systemic inflammatory state.

OBJECTIVE

To evaluate the association of the Systemic Lupus Erythematosus Disease Activity Index (SLEDAI) and echocardiographic parameters in SLE patients.

METHODS

This was a cross-sectional study. We recruited a total of 67 SLE patients aged ≥ 18 years. Patients with a previous cardiovascular event, another connective tissue disease, or pregnancy were excluded. A transthoracic echocardiogram was performed by two certified echocardiographers blinded to clinical information. Disease activity was assessed with SLEDAI. Distribution was evaluated with the Kolmogorov-Smirnov test. Correlation between SLEDAI and echocardiographic parameters was assessed with Spearman's correlation coefficient (r_s). A p -value < 0.05 was considered statistically significant.

RESULTS

Demographic and clinical characteristics are shown in Table 1. We found a moderate positive correlation between SLEDAI and left ventricular mass index ($r_s = 0.313$, $p = 0.010$), and SLEDAI and the ratio between early mitral inflow velocity and mitral annular early diastolic velocity (E/e') ($r_s = 0.347$, $p = 0.005$) (Figure 1).

Figure 1. Scatter plots of correlations between SLEDAI and echocardiographic parameters.

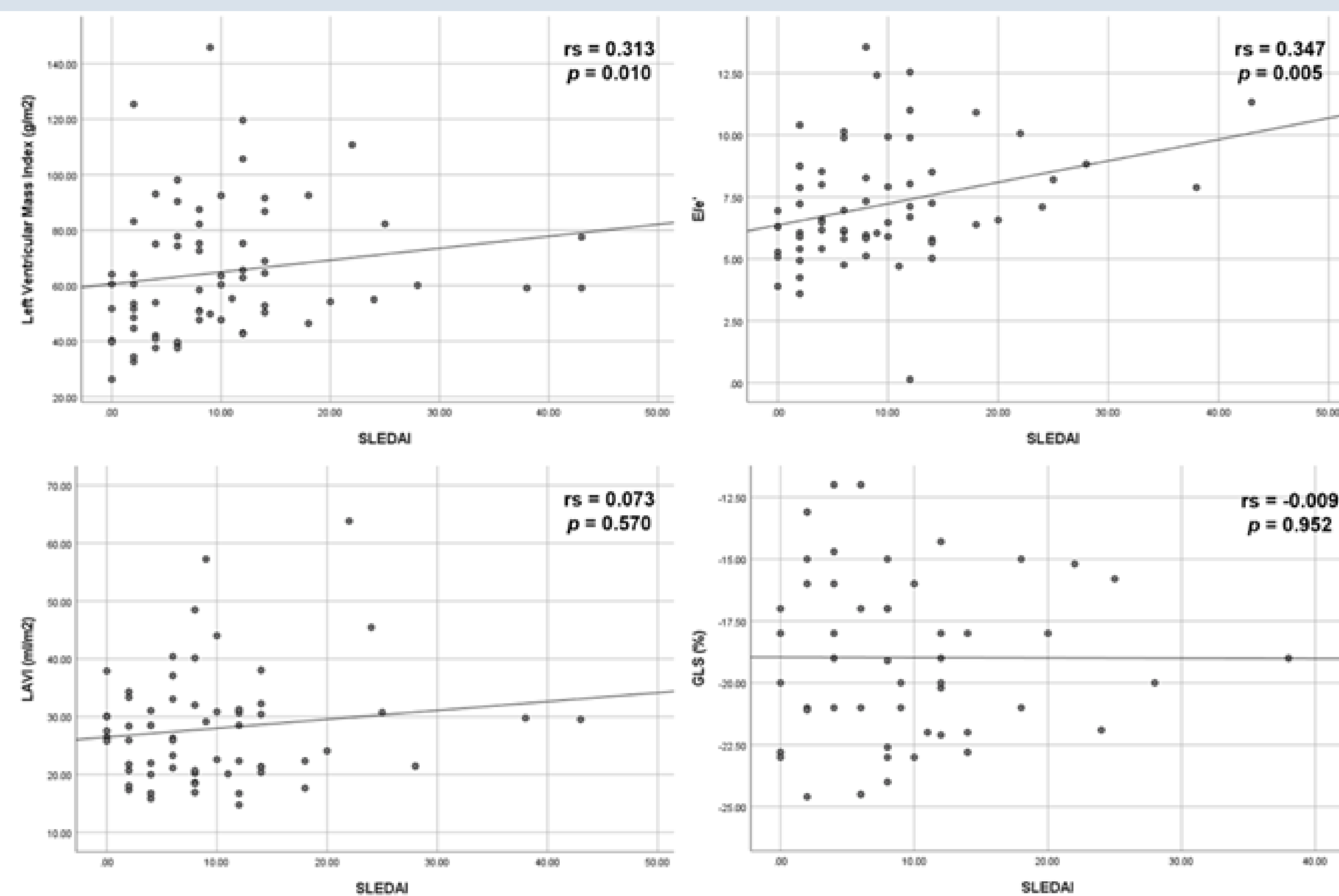
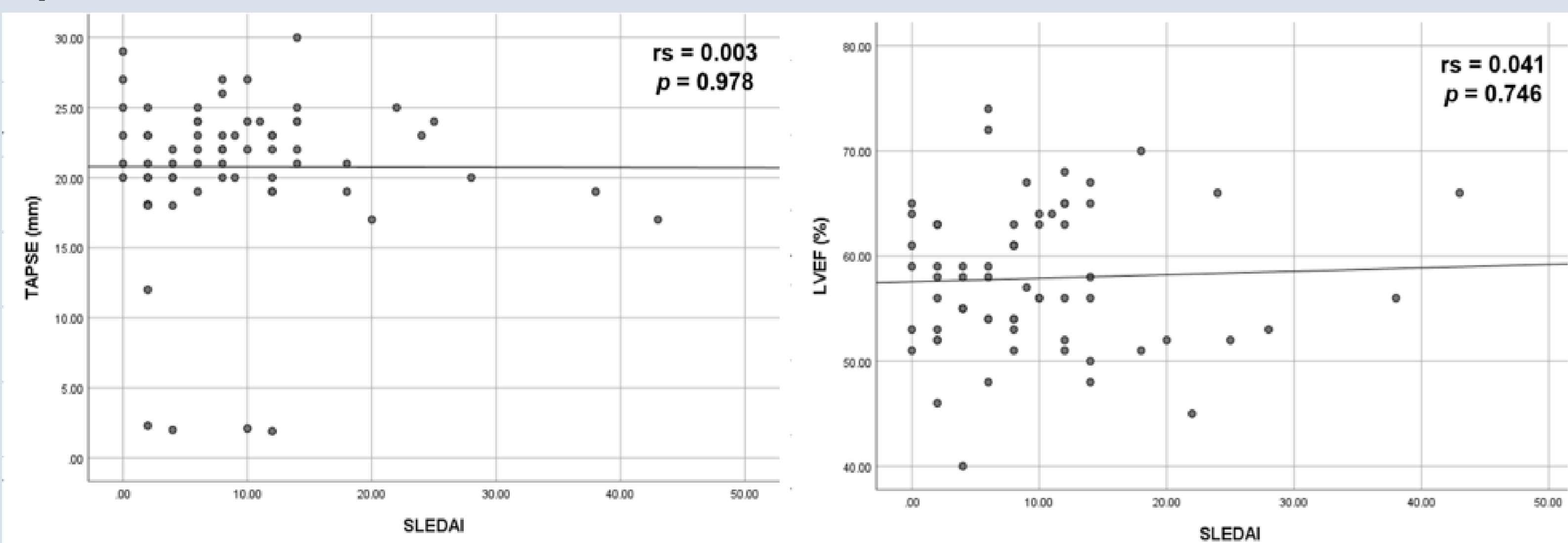


Table 1. Demographic and clinical characteristics.

Characteristics	SLE patients (n=67)
Age, years, median (IQR)	37.0 (24.0-42.0)
Women, n (%)	60 (89.6)
T2DM, n (%)	3 (4.5)
HTN, n (%)	14 (20.9)
Dyslipidemia, n (%)	4 (6.0)
Obesity, n (%)	9 (13.4)
Active smoking, n (%)	8 (11.9)
Disease duration, months, median (IQR)	72.0 (28.0-120.0)
SLEDAI, median (IQR)	8.0 (4.0-12.0)
Hydroxychloroquine, n (%)	59 (88.1)
Glucocorticoids, n (%)	54 (80.6)
LV mass index, g/m ² , median (IQR)	60.14 (47.69-77.77)
E/e', median (IQR)	6.58 (5.80-8.45)
LAVI, ml/m ² , median (IQR)	26.46 (20.71-31.26)
LVEF, %, mean \pm SD	57.86 \pm 6.76
GLS, %, mean \pm SD	-18.97 \pm 3.30
TAPSE, mm, mean \pm SD	22.0 (20.0-24.0)

SLE, systemic lupus erythematosus; T2DM, type 2 diabetes mellitus; SLEDAI, Systemic Lupus Erythematosus Disease Activity Index; LV, left ventricular; E/e', the ratio between early mitral inflow velocity and mitral annular early diastolic velocity; LAVI, left atrial volume index; left ventricular ejection fraction; GLS, global longitudinal strain; TAPSE, tricuspid annular plane systolic excursion.

CONCLUSION

Higher SLEDAI scores are associated with higher left ventricular mass index and E/e'. An increased left ventricular mass index could lead to the development of left ventricular hypertrophy, and an increased E/e' could lead to the development of diastolic dysfunction, which are associated with higher risk of cardiovascular mortality. A transthoracic echocardiogram may be helpful to detect early cardiovascular abnormalities, especially in patients with high disease activity, and therefore, should be considered as part of the cardiovascular evaluation in this population.