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Assessment of vascular stiffness and relation to cardiovascular risk factors in patients with SLE

Moataz Taha
Cairo university, Egypt

Statement of the Problem: Cardiovascular disease is a major cause of morbidity and mortality in SLE patients. Accurate risk stratification would require a simple, non-invasive index integrating all traditional and emerging risk factors. Vascular stiffness fulfills these requirements and has better predictive value for cardiovascular events than traditional risk factors in hypertensives and patients with coronary artery disease. Our aim was to determine whether arterial stiffness is increased in SLE patients compared to healthy controls.

Clinical Practice: Patients were recruited from Rheumatology department of Cairo University while the study done in Cardiology department. This study included 100 subjects divided into 50 SLE patients and 50 age- and gender-matched healthy individuals. All individuals underwent standard clinical evaluation. Assessment of aortic stiffness was performed by calculation of aortic elastic indices using M-mode transthoracic echocardiography (TTE). Endothelial function was assessed using brachial flow mediated dilation (FMD). Carotid duplex ultrasound was performed to measure quality arterial stiffness (QAS) parameters using Esaote MyLab 60. We calculated carotid-femoral pulse wave velocity (cf-PWV) as the carotid-femoral travel distance divided by the transit time (ΔL/Δt).

Results : SLE patients had higher median aortic stiffness index (SI) and lower strain and distensibility, compared to controls. SLE patients had significantly impaired FMD compared to controls. Regarding QAS parameters, SLE patients had significantly lower median carotid distension, distensibility coefficient, and compliance coefficient, with higher median carotid SI, carotid pulse wave velocity (PWV), and augmentation index (AI). SLE patients had a higher median cf-PWV 6.5 m/sec (4.8 – 11.8), compared to a median of 4.6 m/sec (3.8 – 6.9) in controls.

Conclusion & Significance: SLE patients have significantly impaired FMD and increased arterial stiffness compared to healthy controls. SLE is an independent cardiovascular risk factor. SLE duration is an important predictor of arterial stiffness. These findings emphasize the need for early diagnosis of SLE and aggressive risk factors modification.

e: mo3tzsalam@gmail.com