Early detection of myocardial impairment in the setting of systemic lupus erythematosus

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Video Abstract

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Abstract

A new report published in *Arthritis & Rheumatology* suggests that cardiovascular disease affects patients with systemic lupus erythematosus much earlier than previously thought – in some cases even before active lupus sets in. The finding was reported by a team of researchers based in China who have been working on validating the use of magnetic resonance imaging to detect the early manifestations of cardiac impairment. With heart disease being the leading cause of death in patients with SLE, the ability to detect very early signs of cardiac dysfunction in this group could one day lay a foundation for enhanced preventive strategies. Traditional cardiac MRI approaches like late gadolinium enhancement don't perform well in detecting early indications of heart disease, such as disturbances in myocardial extracellular volume. Missing these early warning signs could hide the fact that heart disease has set in and potentially complicate treatment efforts. This deficiency prompted the researchers to look at whether emerging cardiac sequences such as T1 and extracellular volume mapping could provide more timely detection of cardiac impairment in the setting of SLE. To answer this question, the team compared findings from late gadolinium enhancement against T1 mapping and extracellular volume quantification in drug-naïve patients with new-onset SLE, patients with long-standing SLE, and healthy controls. The results showed that native myocardial T1 values and extracellular volume were consistently elevated in patients with new-onset SLE, whereas late gadolinium enhancement in this group did not significantly differ from that in the control group. In contrast, the patients with long-standing SLE showed high T1 values and extracellular volume along with prominent late gadolinium enhancement. Importantly, these changes were detected even before those with new-onset SLE showed clinical evidence of cardiac symptoms. Unlike the group with long-standing disease, these patients had normal cardiac enzymes, BNP levels, and NYHA class. Although late gadolinium enhancement did not sensitively detect global fibrotic changes in new-onset SLE, the method did remain important for disease appraisal. Enhancement was seen in patients with new-onset SLE, and there was a greater incidence and extent of fibrosis in the later stages of the disease. Overall, the findings suggest that myocardial impairment is related to SLE disease stage and that patients with new-onset SLE are likely to have silent cardiac impairment. Screening for subclinical disease using native T1 values and extracellular volume could help alert clinicians to early warning signs of heart disease.