

Structural and Functional Left Atrial Remodelling in Rheumatic Mitral Stenosis; Combined Three-Dimensional and Speckle Tracking Echocardiography Study

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Abstract

Aims LA functions assessment using 2D speckle tracking echocardiography and 3D transthoracic echocardiography in moderate-severe mitral valve stenosis in comparison to normal subjects. **Methods and results** Fifty patients and 50 controls were studied. Patients' mean age was 40.2 ± 8.8 years, the majority were female 45(81.8%), the mean body surface area was 1.81 ± 0.16 m². 3D LA maximum (LAVmaxI) and minimum (LAVminI) volumes indexed to BSA were both significantly higher in MS than in control group, whereas 3D LA EF was significantly lower in MS than in control group, both with $p < 0.001$. LA strain reservoir, conduit, and contraction parameters were significantly lower in the MS group than in control group ($p = 0.001$). All LA assessment parameters (3D LAVmaxI, 3D LAVminI, 3D LAEF, 2D LASr, 2D LAScd, 2D LASct, 2D LAD, 2D LAVI) correlated with each other ($p < 0.01$). However, only 3D LAEF, 2D LASr, 2D LAScd, and 2D LASct showed correlation with the mitral valve area with $p < 0.05$, but 3D LAVmaxI and 3D LAVminI did not. Additionally, in comparison of moderate and severe MS subgroups, 3D LAVmaxI and 3D LAVminI did not show any statistically significant differences between the two groups, although 3D LAEF, 2D LASr, 2D LAScd, and 3D LASct showed significant difference between the two group ($p < 0.05$). **Conclusions** Comprehensive LA assessment is of clinical significance for its predictive and prognostic value in mitral stenosis. In addition, LA function assessment by 3D echocardiography and 2D speckle tracking echocardiography correlate better with MS severity than conventional LA size parameters.

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