

# **Role of Two Dimensional Strain and Strain Rate Imaging in Assessment of Left Ventricular Systolic Function in Patients with Rheumatic Mitral Stenosis and Normal Ejection Fraction**

## **Abstract**

**Introduction:** Conventional echocardiographic parameters are not able to detect subclinical left ventricular (LV) systolic dysfunction in patients with mitral stenosis (MS). Two-dimensional (2D) longitudinal strain (S) and strain rate (Sr) imaging is a new technique which evaluates global LV systolic function with high reproducibility. The aim of the study was to assess LV systolic function, in patients with moderate–severe MS and normal ejection fraction (EF%), by 2D longitudinal systolic S and Sr imaging.

**Patients and method:** The study included 50 patients with an established diagnosis of MS (mean age: 32 ± 8 years) and 30 age-matched healthy individuals (mean age 34 ± 7 years). The mitral valve area (MVA) was measured by planimetry and pressure half time (PHT) methods. 2D longitudinal systolic S and Sr imaging was performed for each participant from the apical long axis (LAX), 4 chamber (4C) and 2 chamber (2C) views. Global longitudinal systolic S and Sr were calculated by averaging the three apical views.

**Results:** There were no significant differences in LV EF%, LV end-systolic and end-diastolic dimensions between the two groups. Patients with MS had significantly lower 2D longitudinal LV systolic S and Sr compared to the control group (<0.001 and <0.05 respectively).

**Conclusion:** Patients with MS and preserved EF% had lower 2D longitudinal LV systolic S and Sr compared to the control group. 2D longitudinal LV systolic S and Sr imaging appears to be useful in the detection of subclinical LV systolic dysfunction in patients with MS and preserved EF%.

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