P4374

Biventricular systolic function analysis in patients with Marfan Syndrome using speckle-tracking 2D ecocardiography

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Background: Left Ventricular systolic disfunction has already been described in Marfan Syndrome (MS) in patients without valvular dysfunction using 2D and 3D speckle tracking echocardiography (STE). This dysfunction has been related to a more severe causal genetic mutation, which suggest the presence of a primary cardiomiopathy in these patients. Right ventricular function has been less studied so far. We sought to evaluate biventricular function in our cohort of MS patients with 2D-STE.

Methods: 95 unoperated adult patients with MS and 32 healthy controls were prospectively enrolled. Patients with more than mild mitral or aortic regurgitation were excluded. Using STE we obtanied left ventricular global longitudinal strain (LVGLS) from the average of 16 segments from 4,2 and 3-chamber views and RVGLS values were obtained from the average of 6 segments from the apical 4-chamber view. We also measured classic parameters of systolic biventricular function (LVEF and TAPSE).

Results: Compared to controls, patients with MFS had significantly lower LVGLS and RVGLS (table 1). Values obtanied for LVGLS in MS patients were at the lower limit of normality stablished in the latest cuantification guidelines, while RVGLS and RV free wall LS were slightly above the limit of normality. LVEF and TAPSE were also slightly diminished in MS patients, though the differences found were clinically not relevant.

Conclusions: Our study suggests that patients with MFS show lower biventricular strain compared with healthy controls. 2D-STE imaging may be useful to detect subclinical changes in cardiac function in patients with MFS and should be added to routine ecocardiographic evaluation in order to improve the follow-up and treatment of these patients.

Results of statistical analysis

	MS (n=93)	Controls (n=32)	p
Age (years)	32.84±12.4	32.41±7.98	0.85
Aortic Root Diameter Valsalva Sinuses (mm)	38.82±5.35	30.91±5.3	<0.001
LVGLS (%)	−18.93±2.62	−21.52±2.26	<0.001
RVGLS (%)	−21.25±3.54	−24.68±3.08	<0.001
RV free wall LS (%)	−22.09±3.92	−25.56±3.63	<0.001
LVEF (%)	59.5±5.34	63.27±4.19	0.001
TAPSE (mm)	23.97±4.57	25.82±3.32	0.03

MS = Marfan Syndrome; LVGLS = Left ventricular global longitudinal strain; RVGLS = right ventricular global longitudinal strain.