



SYSTEMIC RIGHT VENTRICLE:

THE USEFULNESS OF ECHOCARDIOGRAPHY

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PURPOSE

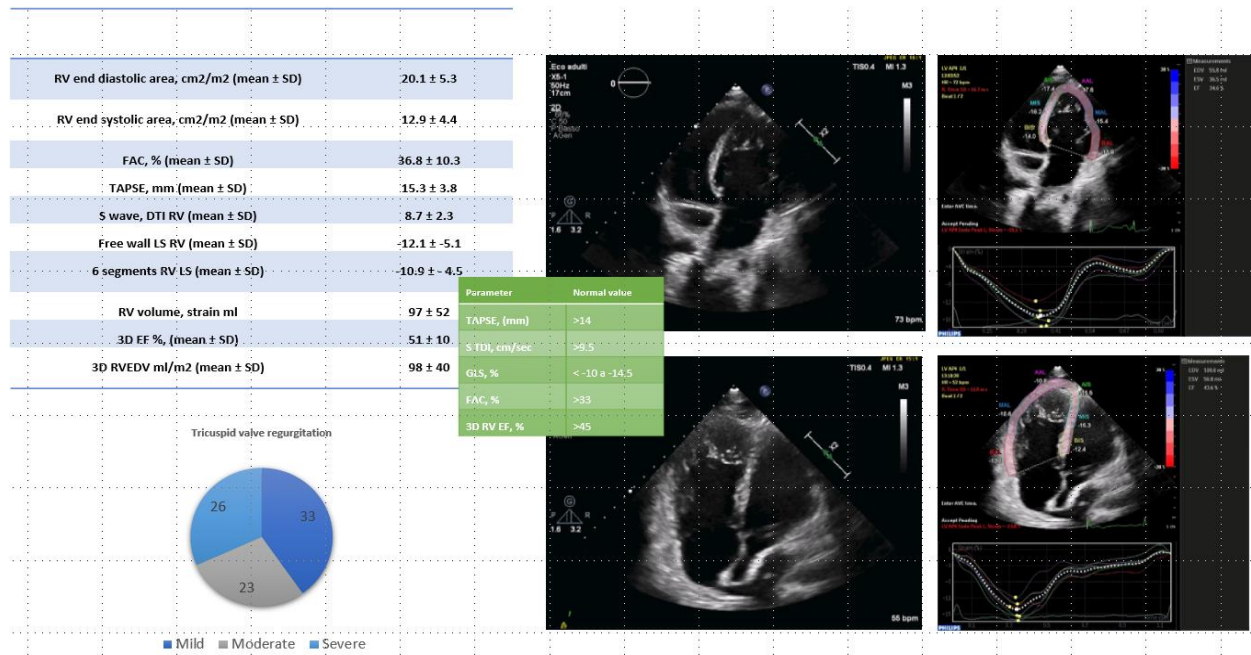
to assess the echocardiographic changes in patients with systemic right ventricle and to identify reproducible parameters that predict a poorer outcome.

METHODS

Seventy-three patients with systemic right ventricle (SRV) evaluated in the outpatient clinic between January 2014 and September 2020 were enrolled in this study. Thirty-four patients had a transposition of the great arteries treated with atrial switch operations (ASO), 39 patients had a congenitally corrected transposition of the great arteries (ccTGA).

RESULTS

Mean age at the first evaluation was 29.6 ± 14.2 years.
FIRST EVALUATION: Patients presented dilated right ventricle (RV): overall, end diastolic/systolic area 20.1 ± 5.3 cm²/m² respectively 12.9 ± 4.4 cm²/m² significantly more dilated was the SRV of ASO patients. Basal and mid RV diameters were also increased while the longitudinal diameter was normal. Overall, systolic function was normal or slightly impaired: FAC $36.8 \pm 10.3\%$, TAPSE 15.3 ± 3.8 mm, S wave DTI 8.7 ± 2.3 cm/sec. Systemic tricuspid regurgitation (sTR) was common: 23.3% of patients had moderate sTR, 17.8% moderate-to-severe sTR and 8.2% of patients had severe sTR. 10 patients had already a mechanical tricuspid prosthesis (8 patients with ccTGA). Left atrium was often dilated: volume 39 ± 25 ml/m², area 12.3 ± 4.7 cm²/m² with no difference between groups. Stenosis at the pulmonary outflow was present in 4 patients. Baffle stenosis was present in 6 patients.



SECOND EVALUATION: There was no statistically significant variation between the first and the second echography evaluation except for an increasing in left atrial volume. End diastolic/systolic RV area 19.6 ± 5.6 cm²/m² respectively 12.6 ± 5.6 cm²/m²; FAC $37.7 \pm 10\%$, TAPSE 15 ± 4 mm, S wave DTI 8.6 ± 2.1 cm/sec. Free wall/ 6 segments GLS was $-12.9 \pm -5.2\%$ and respectively $-11.9 \pm -4.7\%$. 27.1% of patients had moderate-to-severe or severe sTR. The pressure in the sub-pulmonary LV was 33 ± 18 mmHg. An increasing left atrium volume was noticed: volume 43 ± 27 ml/m², area 12.8 ± 9.5 cm²/m².
Survival free from adverse events was 98.6% at one year and 95.8% at 5-year follow-up without difference between the two groups.
At the univariate analysis SRV dilatation and systolic dysfunction evaluated either with TAPSE, TDI or FAC was associated with a poorer outcome with similar predictive value as CMR.
Moreover, the global longitudinal strain was a sensitive parameter either easy to calculate and reproducible during follow-up strongly correlated with a poorer outcome.

CONCLUSIONS

Though, CMR is the gold standard for the evaluation of the SRV standard echocardiographic parameters are reproducible and can predict outcome. Moreover, the routinely SRV longitudinal strain can be useful in detecting small changes in SRV function.