

Conference Abstract

P.49 Aortic Root Longitudinal Strain by Speckle-Tracking Echocardiography: Comparison with Cardiac Magnetic Resonance and Predictive Value in Marfan Syndrome Patients

Andrea Guala*, Maria Isabel Pons, Aroa Ruiz-Muñoz, Lydia Dux-Santoy, Laura Madrenas, Minerva Gandara, Filipa Valente, Angela Lopez-Sainz, Laura Galian, Laura Gutierrez, Augusto Sao-Aviles, Teresa Gonzalez-Alujas, Ignacio Ferreira, Arturo Evangelista, Jose Rodriguez-Palomares, Gisela Teixido-Tura

Department of Cardiology, Vall d'Hebron Hospital

Keywords

Echocardiography
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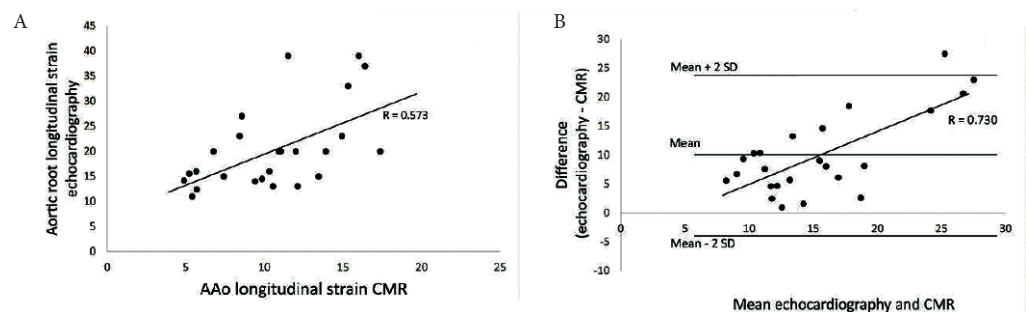
ABSTRACT

Background: Low longitudinal strain of the ascending aorta (AAo) by cardiac magnetic resonance (CMR) predicts dilation and aortic events in Marfan syndrome (MFS) [1], possibly reflecting aortic stiffness [2]. Speckle-tracking is established for cardiac deformation, but proximal aorta applications are challenging due to wall thickness and substantial motion. We aimed to validate a purpose-specific speckle-tracking tool for root longitudinal strain analysis by comparison with CMR-derived AAo longitudinal strain and as predictor of dilation in MFS patients.

Methods: CMR feature-tracking [1] and echocardiography speckle-tracking were applied to 25 MFS patients free from previous aortic surgery by a single observer blind to clinical data. For echocardiography, two regions of interests were manually created covering both walls in a parasternal long-axis view and tracked along the cardiac cycle. Longitudinal strain was computed as the average of maximum increase in relative distance of several sub-regions covering both walls. Aortic diameter was measured on CMR images.

Results: Both techniques were successfully applied to all patients. Aortic root longitudinal strain by echocardiography was linearly related to CMR-derived AAo longitudinal strain ($R = 0.573$, $p = 0.003$, Figure A) and was higher (20.4 ± 8.4 vs 10.5 ± 3.8), especially at higher absolute values (Figure B). After a mean follow up of 45 ± 13 months, aortic root diameter growth rate was 0.27 ± 0.3 mm/year. In multivariable analysis corrected for root diameter and heart rate ($p = 0.083$ and 0.005 , respectively), baseline longitudinal strain by echocardiography was independently related to progressive dilation ($B = -0.017$, $p = 0.005$).

Conclusion: Aortic root longitudinal strain by echocardiography is related to CMR-derived AAo longitudinal strain and is an independent predictor of progressive dilation in MFS patients.



Figure

REFERENCES

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- [2] Guala A, Rodriguez-Palomares JF, Dux-Santoy L, Teixido-Tura G, Maldonado G, Galian L, et al. Influence of aortic dilation on the regional aortic stiffness of bicuspid aortic valve assessed by 4-dimensional flow cardiac magnetic resonance: comparison with Marfan syndrome and degenerative aortic aneurysm. *JACC Cardiovasc Imaging* 2019;12:1020-9.

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