

Meeting abstract

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1062 Echocardiographic assessment of semilunar valve incompetence useful as screening tool but unreliable in quantification: correlation with cardiac MR velocity mapping

Shelby Kutty*¹, Kevin K Whitehead², Matthew A Harris², Gil Wernovsky² and Mark A Fogel²

Address: ¹Herma Heart Center, Children's Hospital of Wisconsin, Medical College of Wisconsin, Milwaukee, WI, USA and ²Division of Cardiology, The Children's Hospital of Philadelphia, Philadelphia, PA, USA

* Corresponding author

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Introduction

Correlation of Echocardiography (ECHO) and Cardiac Magnetic Resonance (CMR) in the assessment of semilunar valve incompetence (SVI) have not been examined in children and young adults with congenital heart disease.

Purpose

We hypothesized that ECHO assessment has minimal predictive validity compared to quantitative CMR data and sought to compare qualitative ECHO grades with CMR regurgitant fractions (RF).

Methods

A single center review was performed of all patients with both ECHO and CMR assessment of SVI (1/04-1/07) within 60 days of each other. The qualitative assessment (mild, moderate, severe) of SVI and RV dilation (RVd) were recorded for all patients with pulmonary incompetence (PI). SVI and LV dimension at end diastole (LVEDd) were obtained in patients with aortic incompetence (AI). RF was quantified by CMR using phase-contrast velocity mapping of the respective outflow tracts. ANOVA was used for statistical analysis.

Results

One hundred and twenty one patients with at least mild SVI on ECHO were identified: 78 with PI and 43 with AI. There was a statistically significant difference between the

CMR-RF of each ECHO grade of PI and AI ($p < 0.05$). However, there was significant overlap between grades (Figure 1). Mild ECHO PI corresponded to a RF(%) of 1–39, moderate 10–50, and severe 20–60. For AI, mild corresponded to an RF (%) of 0–29, moderate 1–40, and severe 5–58. Overlap was more significant at moderate and severe grades. RV dilation showed a similar relationship with PI-RF.

Conclusion

In general, ECHO grading of mild SVI corresponds to CMR-RF of less than 39% for PI and less than 30% for AI. However, ECHO is unreliable in precisely categorizing SVI, with a wide range of regurgitant fractions for a given ECHO grade. ECHO should be used as a screening tool to identify patients with significant SVI, and supplemented with quantitative tools such as CMR for management decisions.

Boxplots of RF by ECHO grades of SVI

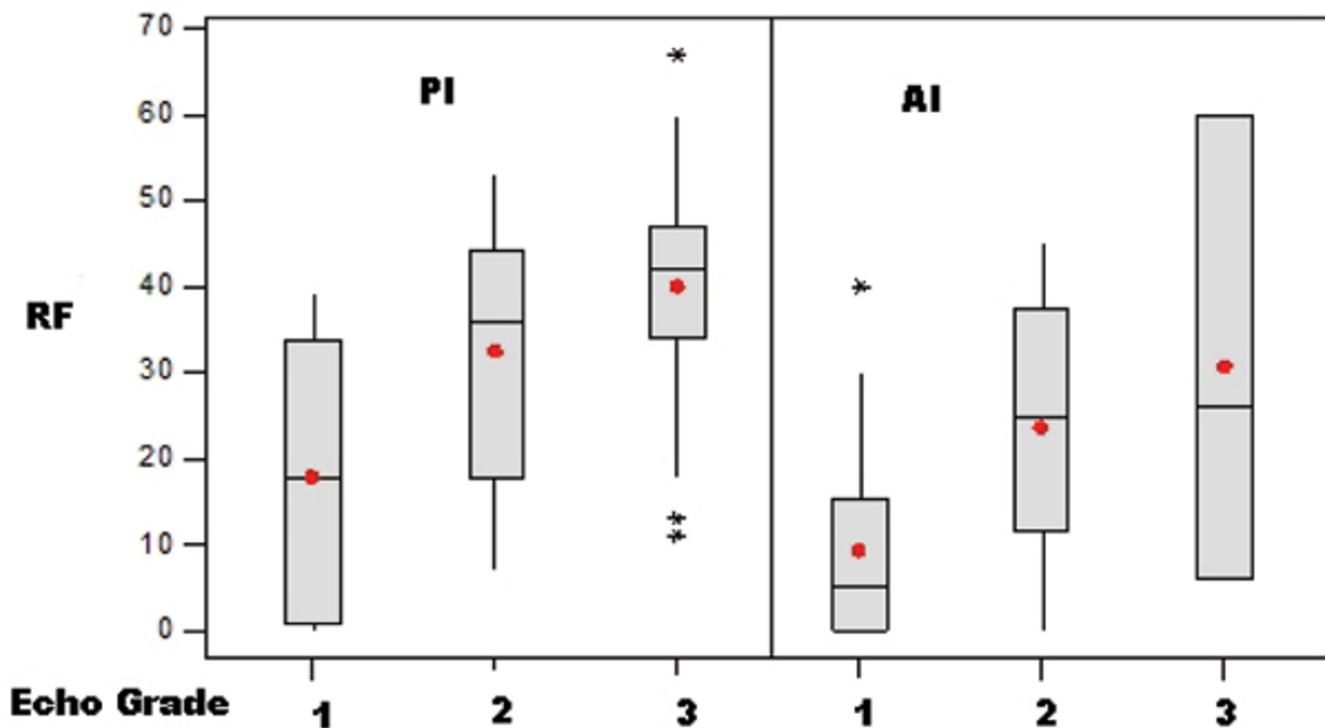


Figure 1
Boxploes of RF by ECHO grades of SVI. Box plots representing the inter-quartiles ranges (first to third quartile, Q1 to Q3), and a line ("whiskers") extending out a distance of 1.5 times the inter-quartile range below Q1 and above Q3. Values marked * represent the most extreme values within each group. The dot and horizontal line in each box represent the mean and median respectively. 1-Mild, 2 = Moderate, 3 = Severe.

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