

Poster presentation

Prediction of response to cardiac resynchronization therapy by cine- and velocity encoded cardiac magnetic resonance imaging

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Introduction

Quantification of mechanical dyssynchrony can help to identify responders to cardiac resynchronization therapy (CRT).

Purpose

The purpose of the present study was to evaluate the ability of cine- and velocity encoded (VENC) magnetic resonance imaging (MRI) to predict response to CRT.

Methods

The study included twenty patients with heart failure NYHA class III and reduced ejection fraction (24 (18-28) %), scheduled for CRT device implantation. All patients underwent cine- and VENC-MRI before device implantation. Intra-ventricular dyssynchrony was measured by cine-MRI as the septal-to-lateral mechanical delay (SLMD). The inter-ventricular mechanical delay (IVMD) was assessed by VENC-MRI as the difference between onset of aortic and pulmonary flow. Clinical response to CRT was assessed at 6-month follow-up after device implantation.

Results

Fourteen (70%) patients were classified as clinical responders to CRT. The SLMD and IVMD were longer in responders (336 (165-389) ms and 78 (25-105) ms) than in non-responders (49 (-25-335) ms and 9 (0-31) ms) to CRT ($P = 0.05$ and 0.02 , respectively). Cine-MRI yielded

an area under the curve of 0.79 ($P = 0.05$) to predict response to CRT by measurements of SLMD. The area under the curve was 0.83 ($P = 0.02$) to predict response to CRT by VENC-MRI measurements of IVMD. Figure 1 demonstrates measurements of IVMD by VENC-MRI in a responder (IVMD = 92 ms, figure 1A) and a non-responder (IVMD = 25 ms, figure 1 B) to CRT.

Conclusion

Cine- and VENC-MRI have the ability to identify responders to CRT.

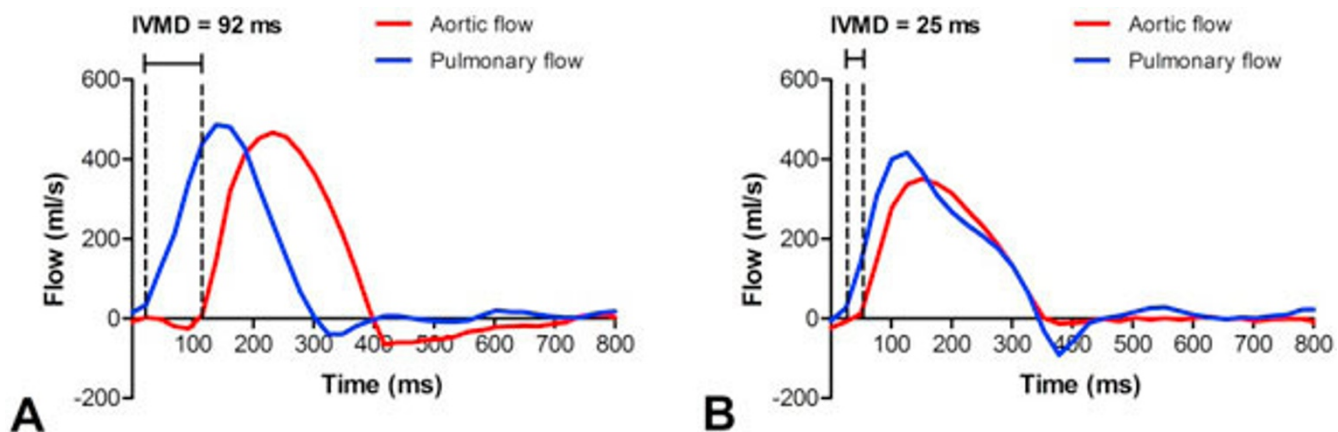


Figure 1

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