

POSTER PRESENTATION

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Diffuse myocardial fibrosis in children after heart transplantation

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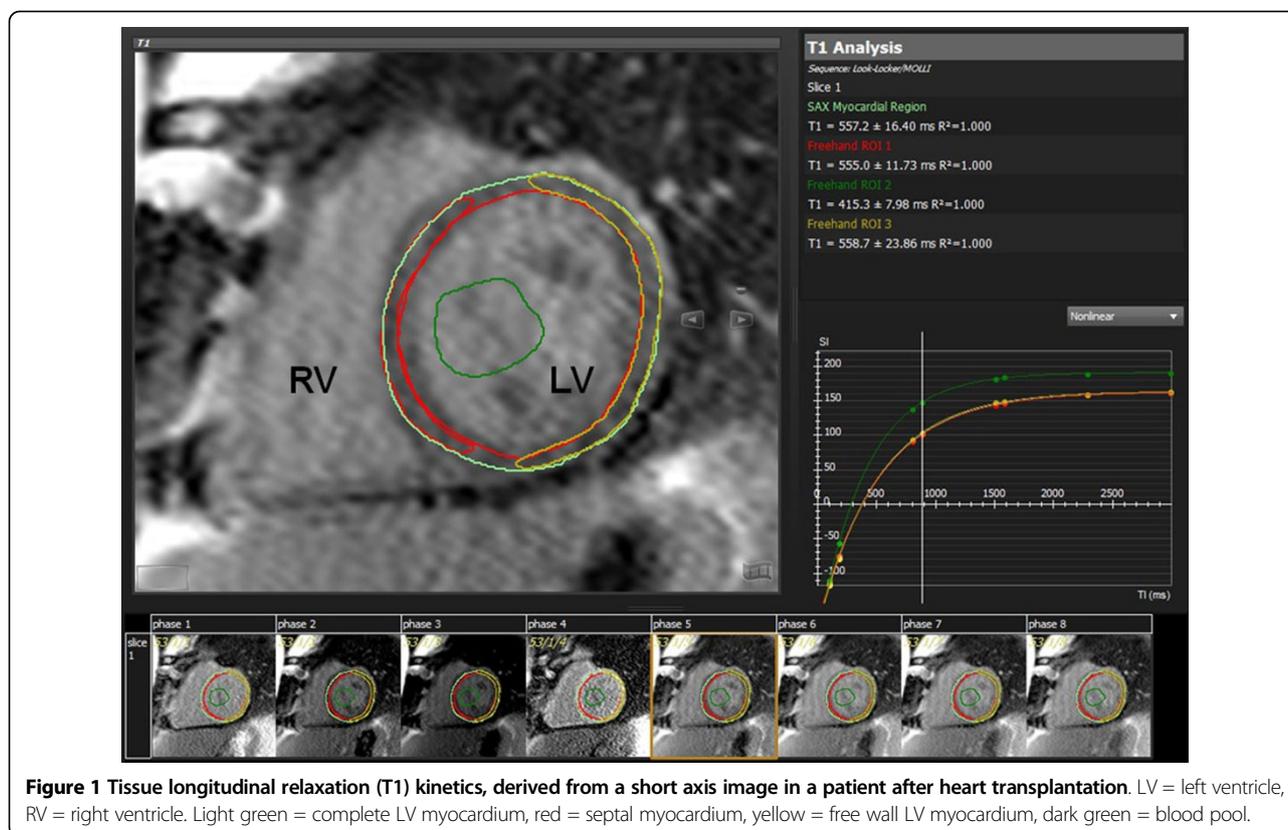
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Background

It is unclear if children after heart transplantation (HTX) are at risk for developing increased myocardial fibrosis. Diffuse myocardial fibrosis can be estimated by myocardial longitudinal relaxation (T1) times.

Methods

Twenty cardiovascular magnetic resonance (CMR) studies in 17 patients after HTX (mean age 13.2 years, range 1.2 - 17.4 years, 9 female) were analysed retrospectively and compared to CMR studies in nine healthy controls



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(mean age 12.1 years, range 9.2 - 16.7, 4 female). Patients with clinically significant rejection were excluded. T1 measurements were performed at a single mid-ventricular short axis slice orientation before and > 10 minutes after the application of 0.2 mmol/kg gadopentetate dimeglumine (Gd) in the interventricular septum (IVS), LV lateral wall and the complete LV myocardium (Image). The tissue-blood partition coefficient was calculated as a function of the ratio of T1 change of myocardium as compared to blood.

Results

Pre-contrast T1 times before the application of Gd were significantly higher in HTX patients compared to controls (LV lateral wall 977 ± 40 msec. versus 923 ± 12 msec., $p < 0.001$; IVS 1008 ± 32 msec. versus 974 ± 21 msec., $p < 0.005$; complete LV myocardium 992 ± 34 msec. versus 951 ± 16 msec., $p < 0.005$), whereas the reduced post-contrast T1 times in the HTX patients showed a trend towards being shorter than in controls but failed to reach statistical significance. Tissue-blood partition coefficients were elevated in patients after HTX in the LV lateral wall (0.45 ± 0.06 versus 0.40 ± 0.03 , $p < 0.01$) and the complete LV myocardium (0.47 ± 0.06 versus 0.43 ± 0.03 , $p < 0.05$). The difference in the IVS failed to reach statistical significance (0.48 ± 0.06 versus 0.45 ± 0.03 , $p = 0.122$).

Conclusions

Diffuse fibrosis is present in children after HTX as evidenced by pre- and post-contrast myocardial T1 mapping. The technique may be suitable for the detection of early signs of adverse remodeling after HTX.

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