Myocardial iron repletion and changes in left ventricular function

Authors:

Topic(s):
Chronic Heart Failure – Treatment

Citation:

Introduction: In patients with chronic heart failure and reduced ejection fraction, iron deficiency has emerged as a common co-morbidity that affects up to 50% of these patients. It is associated with an impaired quality of life, exercise capacity and higher risk of adverse events. Importantly, treatment with intravenous ferric carboxymaltose has shown beneficial effects in patients with heart failure and reduced ejection fraction. However, the mechanisms behind these effects are not well established. Searce evidence suggests myocardial iron repletion would improve myocardial energetic efficiency and left ventricular systolic function in heart failure and reduced ejection fraction.

Description of the case: We describe a case of a 63-year-old man with non-ischemic stable heart failure and reduced ejection fraction and iron deficiency in which cardiac magnetic resonance with evaluation of T1 mapping (as a surrogate of tissue iron) and 2D-echocardiography with global longitudinal strain were evaluated before, 7- and 30-days following administration of 1000 mg of ferric carboxymaltose. Myocardial iron repletion, ascertained by a reduction in T1-mapping cardiac magnetic resonance relaxation times at 7 and 30 days, was observed. Likewise, this change was in parallel with improvement in left ventricle ejection fraction, global longitudinal strain and surrogates of exercise capacity and quality of life.

Conclusions: This case suggests that myocardial iron repletion plays a role improving ventricular systolic function in heart failure and reduced ejection fraction. Therefore, treatment of iron deficiency might be considered a therapeutic target in patients with heart failure and reduced ejection fraction.
Abstract: Myocardial iron repletion and changes in left ventricular function

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Images from T1 mapping cardiac magnetic resonance at A) Baseline (1082ms), B) 7 days after iron repletion (1045ms) and C) 30 days after iron repletion (1037ms). Reduction in T1 mapping values over time suggest myocardial iron repletion.