CMR unravels the pathophysiology of heart block in a young woman

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Background:

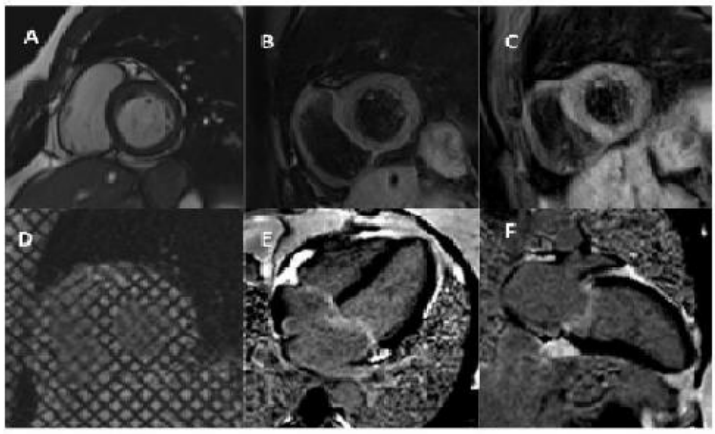
Rheumatic heart disease (RHD) remains an important cause of heart failure in sub-Saharan Africa, contributing to significant morbidity and mortality, often affecting young economically active members of society. Due to improved sanitation and public health measures, acute rheumatic fever (ARF) is uncommon in adults and may be associated with PR prolongation on electrocardiography (ECG). We report on an unusual case of ARF in a 34 year old woman, complicated by PR prolongation, an atypical Mobitz 1 atrioventricular block, and evidence of myocarditis and valvulitis on cardiovascular magnetic resonance (CMR).

Methods:

CMR was used to investigate the cause of conduction abnormality, including cine, cine tagging, T2-weighted (STIR), pre contrast T1 and T2 mapping and late gadolinium enhancement (LGE) imaging.

Results:

LV volumes, mass and global biventricular function were normal. However, peak circumferential systolic strain and diastolic strain rates were impaired. The myocardial signal intensity ratio on T2-weighted imaging was increased (2.1). On parametric mapping, evidence of myocardial oedema was supported by elevated T1 (1148 ms) and T2 (56 ms) values. On LGE imaging, there was striking enhancement of mitral and aortic valves suggestive of a valvulitis, but no myocardial enhancement. The diagnosis of acute rheumatic fever was further supported by elevated anti-streptolysin O titre levels (172 mmol/L) and elevated serum anti-DNAse B levels (370 mmol/L).



A. b-SSFP showing short axis cine; B. T1-weighted imaging showing increased myocardial signal intensity ratio; T2-weighted imaging showing increased myocardial signal intensity ratio; D. Cine tagging of the short-axis; E. HLA view of LGE showing no myocardial enhancement, but prominent enhancement of the valves; and F. VLA view of LGE showing no myocardial enhancement, but prominent enhancement of the valves

Conclusion:

A multiparametric CMR assessment in a patient with inflammatory heart disease reliably permits the diagnosis of acute rheumatic fever. CMR tissue characterisation is important for assessment of disease acuity in inflammatory heart disease.

Keywords:

Myocarditis, Late gadolinium enhancement, MOLLI