Atrio-Ventricular block in young and middle aged adults and the diagnostic role of Cardiac MRI in identifying the underlying aetiology

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Background

Atrio-ventricular (AV) block is a fairly common brady-arrhythmia seen in the elderly. High-grade AV conduction abnormalities are uncommon in young or middle-aged adults, but when identified pose a dilemma. Patients are often submitted to pacemaker (PPM) implantation without further investigation. Approximately 3-5% of all the patients undergoing pacemaker implantation for AV block are aged 18-55years. The underlying aetiology influences both the treatment strategies and the prognosis of AV block. Cardiovascular magnetic resonance (CMR) has the potential to identify an underlying aetiology for AV block.

Aims

To determine the diagnostic role of CMR in young and middle aged adults (18-55years) with AV block.

Methods

This retrospective observational study was performed at a tertiary centre in the South-West of England. Data were collected on consecutive AV block patients (18-55yrs) who were referred for CMR between Sep 2012 to Feb 2014. A comprehensive CMR protocol was used (including long and short axis cines, and late gadolinium enhancement). Each scan was reported by a consultant with >10yrs experience.

Results

We identified 19 patients with AV block (13 male, 6 female) with a mean age of 42.0±11.3years. CMR identified the underlying aetiology in 6/19 (32%) patients (1 dilated cardiomyopathy with septal fibrosis, 1 old myocardial infarction, 1 cardiac sarcoidosis, 1 aortic regurgitation, 1 constrictive pericarditis and 1 athlete's heart).

In 13/19 patients (68%) there were no abnormalities detected by CMR. The diagnosis led to a change in management in each of the 6 patients. In comparison the transthoracic echocardiogram was inconclusive in all the 19 patients.

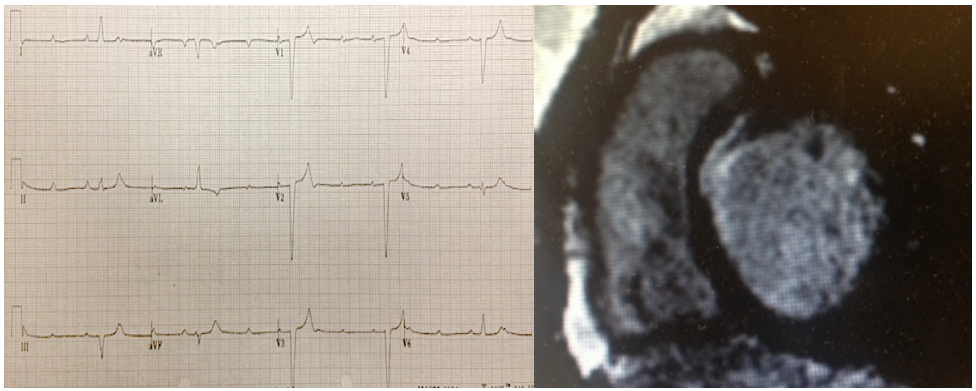

Fig 1. 30 yr old with ECG showing complete heart block and short axis LGE image showing septal mid-wall fibrosis

Conclusions

CMR has identified an underlying diagnosis in 1/3 of patients with AV block (secondary AV block), whilst in 2/3 of the patients CMR was normal suggesting idiopathic AV block. These findings have implications for appropriate and tailored treatment strategies.

Conflict of Interest: None

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