The utility of cardiovascular magnetic resonance imaging in the assessment of cardiac, pericardial and mediastinal masses: a 3 year experience

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Background: Primary cardiac tumours are rare however reliance on cardiac magnetic resonance imaging (CMR) for further assessment of all mass lesions affecting the heart, pericardium and mediastinum following initial identification by other imaging modalities is anecdotally increasing. We aim to review the diagnostic accuracy of CMR in this setting compared with the other imaging modalities.

Methods: We reviewed a series of 49 patients referred to the CMR service for further assessment of an identified mass lesion across a period of 3 consecutive years, 2011-2013 inclusive, at a single centre.

Results: 49 patients (24 male, aged 16-88 years, median 56±30 years) with suspected cardiac, pericardial or mediastinal masses underwent CMR. Prior imaging consisted of transthoracic echocardiography TTE (63%), computed tomography CT (18%), transoesophageal echocardiography TOE (17%) and magnetic resonance imaging of thorax (2%). In 34 of the referred cases the suspected mass lesion was identified and characterised by CMR. In the remaining 15 cases no mass lesion or other explanation was identified. In 4 of these cases clinical history and further analysis of the initial imaging raised the probability of thrombus with resolution in the interval between. CMR reports identified mass lesions as persisting thrombus (26%), left atrial myxoma (15%), pericardial cyst (12%), prominent anatomical feature such as crista terminalis (10%), metastatic neoplastic disease (8%), fibroelastoma (8%), lipoma (6%), pericardial fibroma (3%), endomyocardial fibrosis (3%), sarcoma (3%) and infiltrative primary chest tumour (3%). The positive predictive values of each imaging modality when diagnoses were confirmed by clinical follow up, response to treatment, imaging follow up or histopathology are as follows: CT (55.6%), TTE (45.2%), TOE (25%). CMR has a positive predictive value of 91% in this series. Left ventricular ejection fraction (range 15-80%) and right ventricular ejection fraction (range 11-77%) did not influence diagnostic accuracy. Cases incorrectly diagnosed by CMR included one case each of atrial myxoma and thrombus and failure to tissue characterise a sarcoma.

Conclusion: CMR has a high positive predictive value in the characterisation of cardiac, pericardial and mediastinal mass lesions. This is reassuring as to the utility of CMR both in the diagnosis and follow up of such lesions.