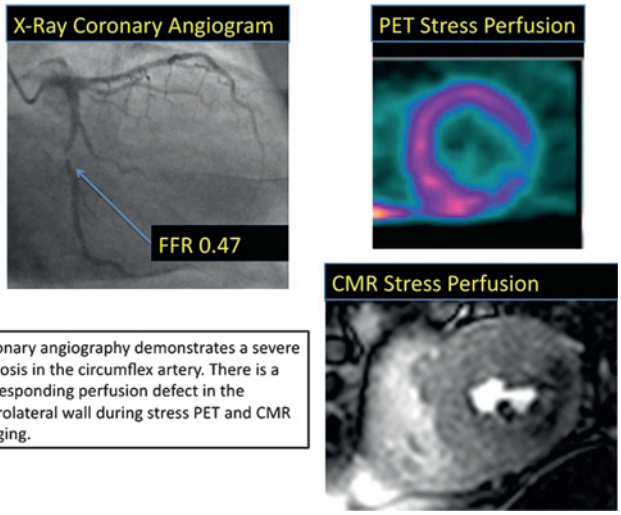
118 HIGH-RESOLUTION CARDIAC MAGNETIC RESONANCE PERFUSION IMAGING VS POSITRON EMISSION TOMOGRAPHY FOR THE DETECTION AND LOCALISATION OF CORONARY ARTERY DISEASE

doi:10.1136/heartjnl-2011-300198.118

G D J Morton, M Ishida, A Chiribiri, A Schuster, S Baker, S Hussain, D Perera, M O'Doherty, S Barrington, E Nagel. *King's College London, London, UK*

Background Non-invasive imaging has a key role in the detection of coronary artery disease (CAD). Its importance has been affirmed by recent National Institute of Clinical Excellence (NICE) guidelines. Localisation of ischaemia to a coronary territory is also important in patient management. Cardiac Magnetic Resonance (CMR) perfusion imaging is a well-established and radiation-free test for these purposes. However, there are few data comparing perfusion CMR with Positron Emission Tomography (PET), which is widely regarded as the non-invasive gold standard. Furthermore novel CMR methods, including those based on *k-t* acceleration techniques, allow myocardial perfusion imaging with unprecedented spatial resolution.

Methods 31 patients with known or suspected CAD referred for diagnostic x-ray coronary angiography (XCA) underwent both CMR and PET examinations. Both PET and CMR protocols included adenosine stress and rest perfusion imaging. CMR perfusion imaging was performed at 1.5T with a *k-t*-accelerated steady-state free-precession sequence. PET imaging was performed with ^{13}N-Ammonia. The Abstract 118 figure 1 shows an example. Experts blinded to the clinical data analysed the imaging data and experts blinded to the imaging results visually analysed the XCA data. A significant coronary artery stenosis was defined as ≥70% reduction in diameter or a fractional flow reserve <0.8 where available. Sensitivity and specificity for PET and CMR vs invasive angiography were calculated. Localisation of ischaemia was assessed in patients with CAD by classifying myocardial territories as either supplied by, or remote from, a stenotic artery.



Coronary angiography demonstrates a severe stenosis in the circumflex artery. There is a corresponding perfusion defect in the inferolateral wall during stress PET and CMR imaging.

Abstract 118 Figure 1

Results Patient characteristics are shown in the Abstract 118 table 1. Mean age ± SD was 64±9 years. One CMR examination was non-diagnostic. The interval between PET and CMR was 2±6 days (77% same day), between PET and XCA 22±28 days and between CMR and XCA 22±29 days. The prevalence of CAD was 81%. For the detection of CAD PET sensitivity was 80% (95% CI 59% to 92%) and specificity was 67% (24% to 94%). CMR sensitivity was 83% (95% CI 62 to 95%) and specificity was also 83% (36% to 99%). In patients with CAD ischaemia was localised to 63% of the territories supplied by stenotic arteries by PET and 76% by CMR. Remote ischaemia was detected in 24% of territories by PET and 16% by CMR.

Abstract 118 Table 1

Characteristic	Number (percentage) of affected patients
Male	25 (81%)
Diabetes	12 (39%)
Previous PCI	10 (32%)
Hypertension	22 (71%)

Conclusions CMR is at least as accurate as PET for the diagnosis of CAD and also for the localisation of ischaemia to coronary territories. Relatively low numbers mean that CIs are wide and further work is required. Using an anatomic test as the reference-standard for functional tests has well-described limitations. Remote ischaemia is likely to occur for several reasons including underestimation of disease severity at XCA, microvascular disease and also false positive results.

119 CARDIOVASCULAR MAGNETIC RESONANCE IMAGING (CMR) DETECTS SUBCLINICAL CARDIOMYOPATHY IN ASYMPTOMATIC PATIENTS WITH LEFT BUNDLE BRANCH BLOCK (LBBB) AND NORMAL ECHOCARDIOGRAPHY

doi:10.1136/heartjnl-2011-300198.119

M Mahmod, T D Karamitsos, J J Suttie, S G Myerson, S Neubauer, J M Francis. *University of Oxford Centre for Clinical Magnetic Resonance Research (OCMR), Oxford, UK*

Introduction Asymptomatic left bundle branch block (LBBB) is a common indication for referral for cardiovascular magnetic resonance (CMR) imaging. However, it is not known whether referral for LBBB returns a high diagnostic yield. We evaluated the diagnostic value of CMR in these patients.

Methods All clinical CMR referrals for LBBB from January 2005 to November 2010 were reviewed by two independent investigators. Only patients with asymptomatic LBBB and normal echocardiograms (echos) who underwent complete CMR evaluation were included in the study. Patients were excluded if they had cardiac symptoms or known coronary artery disease. Anthropometric data, pre-existing conditions, medications, smoking status, family history and echocardiographic data were recorded.

Results From January 2005 to November 2010, 63 asymptomatic patients with LBBB were referred to our institution for CMR from a total of 3596 CMR referrals. Of these, 34 had normal echos; 20 subjects who had abnormal echos and 9 who had no echos at presentation were excluded from further analysis. Mean age of the 34 patients with normal echos was 54±9 years, and 19 (56%) were men. Demographic data and left ventricular (LV) measurements are presented in the Abstract 119 table 1. The most common associated medical conditions were hypertension (11 patients—33%) and hyperlipidaemia (8 patients—24%). Ten subjects (30%) had a family history of heart disease. Nine (27%) patients underwent coronary angiography which was normal. Of the 34 patients, 14 (41%) were found to have pathological findings on CMR. The commonest abnormalities were dilated cardiomyopathy (DCM) (23%), followed by LV hypertrophy (LVH—defined as LV wall thickness >13 mm) (9%), arrhythmogenic right ventricular cardiomyopathy (ARVC) (6%) and Ebstein anomaly (3%). Two patients (6%) had mid wall late gadolinium enhancement. In the remaining 20 (59%) patients, no abnormalities on CMR were detected.