Results Female master athletes demonstrated significantly increased absolute and indexed right ventricular dimensions compared to sedentary controls, with the greatest increases in basal and longitudinal measurements. Athletes also demonstrated a significantly larger right atrial area. Athletes had increased longitudinal RV systolic function based on TAPSE. There was no significant difference in RV fractional area change between athletes and controls. None of the study group revealed regional wall motional abnormalities or dyskinetic RV segments (table 2).

Conclusions Female master athletes continue to demonstrate echocardiographic features of cardiac adaptation into their later years. Chronic endurance exercise is associated with increased right heart size, but no obvious evidence features of arrhythmogenic right ventricular cardiomyopathy. Larger studies including cardiac magnetic resonance scanning for fibrosis and cardiac monitoring are required to identify potential sub-clinical features of adverse RV remodelling.

Conflict of Interest None

165

LOGISTICAL DEMAND OF RUNNING A HIGH-VOLUME MRI SERVICE FOR PATIENTS WITH CARDIAC IMPLANTABLE ELECTRONIC DEVICES: FINDINGS FROM A 'ONE-STOP' SERVICE MODEL

Benjamin Dowsing, Anish Bhuvu, Lizette Cash, Emily Webb, James Moon, Charlotte Manisty. *Barts Health NHS Trust, London, UK*

10.1136/heartjnl-2021-BCS.162

Introduction Patients with cardiac implantable electronic devices (CIEDs) should have access to Magnetic Resonance Imaging (MRI) when needed. Patients are still less likely to be referred and hospitals may not provide a service. A major barrier is reducing the logistical demand required at scale for a safe service. We aimed to quantify the logistical requirements of a high-volume Cardiac Device-MRI service.

Methods A single centre retrospective audit of a high-volume Cardiac Device-MRI service in a tertiary cardiac imaging unit in the UK. Six months of consecutive referrals from September 2020 were reviewed for patient and CIED details and barriers met. Referrals were sorted by source, indication, MR-Conditional labelling and referrer specialty.

Results 116 MRIs (48% cardiac, 52% non-cardiac) were performed on CIED patients in six months (table 1). 53% were external referrals, 11% inpatient and 25% were suspected malignancy. Referrers were 47% cardiologists and 53% other specialty. Time from referral to scan was 15 days (interquartile range, IQR: 8 – 32). There were no complications. 70% of referrals contained complete CIED details and 34% identified the CIED MR labelling. 17% were referred with incorrect MR-Conditional labelling and 8% with incorrect non-MR Conditional labelling. 7 additional days were required to obtain complete CIED details, 10% had delays over 2 weeks (0-145 days). A cardiac physiology department was contacted for 54%, involving 2 departments in 27%. For cancer referrals, obtaining correct details took 1 day longer compared to other referrals and required 2 extra emails to maintain provision within the national time to treatment targets of 62 days. Missing data was similarly present in referrals from Cardiologists and non-Cardiologists (59% versus 61% respectively). The non-Cardiologists recorded more incorrect CIED details (8% vs 0%) (figure 1).

Abstract 165 Figure 1

Abstract 165 Table 1

	All MRI Scans Performed (%)	Internal Referral (%)	In-patient MRI (%)	Cardiac MRI (%)
PPM	55	52	56	60
ICD	23	32	30	32
CRT – D	12	16	14	8
Conditional CIED	52	46	60	63
Referred by Cardiologist	47	66	33	100

External referrals required 17 days (11 – 42), compared to 14 (6 – 35) days for internal referrals to obtain CIED information. Missing data was similarly present in external and internal referrals (67% versus 64%), and 35% required 3 or more repeat discussions with referrers after initial referral. Patients with non-MR Conditional CIED took 14 days longer to obtain complete referral details than MR-Conditional CIEDs. Even when referrers were aware of non-MR Conditional labelling, 41% required further discussion between patient and referrer regarding risks and benefits of MRI scanning.

Conclusions Both cardiology and non-cardiology referrers of patients with cardiac implantable electronic devices to MRI incorrectly classify MR-Conditional labelling. There is a large logistical burden to maintaining an MRI service for patients with CIEDs and may explain why some patients are not referred for MRI when required. An online referrals platform is under development to streamline this process, and institutional registration is available at www.mrimypacemaker.com.

Conflict of Interest Nil

166

CT CORONARY ANGIOGRAPHY VERSUS CT FRACTIONAL FLOW RESERVE: A SINGLE CENTRE EXPERIENCE

Mohamed Egred, Hannah Sinclair, Reuben Loi Yongli, Mohamed Farag, Anna Beattie. *Freeman Hospital, Newcastle upon Tyne, UK*

10.1136/heartjnl-2021-BCS.163

Background Computerised tomography coronary angiography and fractional flow reserve (CTCA and CT-FFR) are non-invasive diagnostic tools for the detection of flow limiting coronary artery stenoses. Although their negative predictive values are well established, there is a concern that the high sensitivity of these tests may lead to overestimation of coronary artery disease (CAD) and unnecessary invasive coronary angiography (ICA). We compared the positive predictive value (PPV) of

CT-FFR with computerised tomography coronary angiography (CTCA) against the gold standard of ICA in different real-world patient groups.

Methods We conducted a retrospective study of 477 patients referred for CTCA or CT-FFR for investigation of possible coronary ischaemia. Patients were excluded if the image quality was poor or inconclusive. Patient-based PPV was calculated to detect or rule out significant CAD, defined as more than 70% stenosis on ICA. A sub-analysis of PPV by indication for scan was also performed. Patients that underwent invasive non-hyperaemic pressure wire measurements had their iFR or RFR compared with their CT-FFR values.

Results In a patient-based analysis, the overall PPV was 59.3% for CTCA and 76.2% for CT-FFR. This increased to 81.0% and 86.7% respectively for patients with stable angina symptoms. In patients with atypical angina symptoms, CT-FFR considerably outperformed CTCA with a PPV of 61.3% vs. 37.5%. There was not a linear relationship between invasive pressure wire measurement and CT-FFR value ($r=0.23$, $p=0.265$).

Conclusion The PPV of CTCA and CT-FFR is lower in the real-world than in previously published trials, partly due to the heterogeneity of indication for the scan. However, in patients with typical angina symptoms, both are reliable diagnostic tools to determine the presence of clinically significant coronary stenoses. CT-FFR significantly outperforms CTCA in patients with more atypical symptoms and the targeted use of CT-FFR in this group may help to avoid unnecessary invasive procedures.

Conflict of Interest None

167

WOMEN WITH EARLY ONSET HYPERTENSION ARE MORE LIKELY TO HAVE CARDIAC MRI FINDINGS ASSOCIATED WITH FUTURE DEVELOPMENT OF HEART FAILURE THAN MEN

¹Howell Williams, ²Jonathan Rodrigues, ³Konstantina Mitrousi, ⁴Will Ormerod, ⁵Dylan Walker, ⁶Nathan Manghat, ⁶Emma Hart, ³Angus Nightingale. ¹North Bristol NHS Trust, Bristol, UK; ²Department of Radiology, Royal United Hospitals Bath, UK; ³Department of Cardiology, Bristol Heart Institute, UK; ⁴Bristol Medical School, University of Bristol, UK; ⁵Department of Radiology, Bristol Heart Institute, UK; ⁶School of Physiology, Pharmacology and Neuroscience, University of Bristol, UK

10.1136/heartjnl-2021-BCS.164

Introduction Hypertension (HTN) is a major risk factor for developing of heart failure (HF). Patients with early onset HTN (≤ 40 years) are at increased risk compared to those who develop HTN in later life. The transition from HTN to HF is incompletely understood but involves left ventricular (LV) changes at the cellular level. These include diffuse interstitial fibrosis, measured by extracellular volume fraction (ECV). Elevated ECV is associated with an increased risk of death and HF hospitalisation but the extent of elevated ECV in patients with early onset HTN is not known. In addition, among patients with HF with preserved ejection fraction (HFpEF), women outnumber men by a ratio of 2:1. The reasons for this are not known.

We aimed to investigate cardiac MRI parameters including ECV in patients with early onset HTN who do not have HF.

Methods Data from consecutive patients from a tertiary HTN clinic referred for CMR (Siemens, Germany) over a 3-year period was retrospectively analysed. Elevated ECV was defined

Abstract 167 Table 1 Factors assessed for differences between patients ≤ 40 years with ECV $\geq 28\%$ vs ECV $< 28\%$

Parameter	ECV $< 28\%$	ECV $\geq 28\%$	P value (test)
Age (years)	33.3 $\pm$ 5.7	33.1 $\pm$ 5.1	0.93 (t-test)
BMI (kg/m ²)	30.8 $\pm$ 6.9	30.4 $\pm$ 7.7	0.90 (t-test)
Office SBP (mmHg)	151 $\pm$ 16	151 $\pm$ 24	0.92 (t-test)
Office DBP (mmHg)	95 $\pm$ 10	95 $\pm$ 9	0.97 (t-test)
Number of antihypertensives taken	1.7 $\pm$ 1.6	1.7 $\pm$ 1.8	0.98 (t-test)
Treatment with ACE-inhibitor or ARB	13/20	6/9	1.0 (Fisher's exact)

as $\geq 28\%$ as this is associated with increased HF hospitalisation. Data are mean $\pm$ SD. Alpha was set at 0.05.

Results 29 patients ≤ 40 years underwent CMR during the study period; mean age 33 ± 5.4 years, 15/29 (52%) female. Elevated ECV was identified in 9/29 (31%) patients ≤ 40 years and the majority were female (8/9, $p=0.01$, Fisher's exact test). This gender difference was not seen in patients > 40 years old with HTN who underwent CMR during the same period (29/59 [49%] had an elevated ECV with 14/29 female, $p=0.19$, Fisher's exact test). Among patients ≤ 40 years, LV hypertrophy (all concentric) was more common in those with ECV $\geq 28\%$ (5/9) than those with ECV $< 28\%$ (2/20, $p=0.02$, Fisher's exact test). Among the female patients ≤ 40 years, there was a trend towards increased LV mass in the 8 patients with ECV $\geq 28\%$ compared to 7 with ECV $< 28\%$ (78 ± 14.4 g/m² vs 67 ± 3.8 g/m², $p=0.06$, t-test). Among patients ≤ 40 years, there were no significant differences between the ECV $\geq 28\%$ and ECV $< 28\%$ groups in LV ejection fraction or LV strain, strain rate, and diastolic strain rate. There were also no differences in the parameters in table 1.

Conclusions Among patients with early onset HTN, one in three had elevated ECV. This was independent of age, BMI, blood pressure (BP), and BP treatment. These patients are likely to be at increased risk of HF in later life. Patients with early onset HTN and an elevated ECV were more likely to be female. This may reflect an expected gender difference; recent studies indicate healthy females have higher ECV than healthy males, and this study further highlights the importance of separate ECV reference ranges for men and women. However it may also reflect early pathological fibrosis in response to HTN, particularly as in patients > 40 years old there was no gender difference among patients with an elevated ECV. Increased LV fibrosis at a younger age may be a contributor to the increased development of HFpEF among female patients.

Conflict of Interest None

168

PREVALENCE AND ADVERSE CARDIAC EVENTS IN ANOMALOUS AORTIC ORIGIN OF CORONARY ARTERY (AAOCA) IN CT CORONARY ANGIOGRAPHY IN WEST OF SCOTLAND

¹Punit Bedi, ²Oliver Peck, ²Jacqueline Adams. ¹Royal Alexandra Hospital, Glasgow, UK; ²Golden Jubilee National Hospital Glasgow

10.1136/heartjnl-2021-BCS.165

Background Anomalous aortic origin of a coronary artery (AAOCA) is a congenital abnormality of the origin or course of coronary artery. The clinical manifestations of coronary artery anomalies vary in severity based on its course. It is reported as a leading cause of sudden cardiac death in young