

connections. This study uses MR time resolved angiography to examine contrast circulation in a cohort of patients with Fontan circulation to optimise contrast injection protocol for CT.

Methods Time to peak signal intensity was recorded using regions of interest on the aorta, the pulmonary arteries and the Fontan conduit on MR TWIST angiography images. Patients were stratified into groups according to ejection fraction, global longitudinal strain, indexed stroke volume and cardiac index to examine the effect on time to peak signal intensity.

Results 35 patients were included in the study. Mean time to peak contrast enhancement was 31s in the thoracic aorta, 46s in the right pulmonary artery, 41s in the left pulmonary artery and 55s in the Fontan conduit. Cardiac performance shows little relationship to peak vascular enhancement whether measured by ejection fraction, global longitudinal strain, stroke volume index and cardiac index.

Discussion This MRI data suggest that optimal timing for a single phase examination to show all the major vessels is around 55 seconds following start of contrast injection. In TWIST MR angiography the IV bolus is 4-5 seconds long. A longer bolus is required for CTA, around 20s, suggesting an additional delay will be required. Further work will be done to see if a single phase examination at 70 seconds is an ideal initial strategy, with targeted further imaging if unsuccessful.

5 THORACIC AORTA AND PULMONARY ARTERY DIMENSIONS IN PATIENTS UNDERGOING ECG-GATED COMPUTED TOMOGRAPHY ANGIOGRAPHY

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Introduction Normal values for vascular dimensions are derived from echocardiography or magnetic resonance imaging (MRI), with limited data available on electrocardiogram (ECG)-gated computed tomography (CT) angiography. This abstract assesses aortic and pulmonary artery diameters and the factors affecting them, in patients undergoing CT as part of the SCOT-HEART (Scottish COmputed Tomography of the HEART) trial.

Methods Vessel diameters were measured on CT coronary angiography (CTCA) in six locations: annulus, sinus of Valsalva (SOV), sinotubular junction (STJ), ascending and descending aorta at right pulmonary artery level, and main pulmonary artery (MPA). The SCOT-HEART database provided demographics and cardiovascular risk factor information.

Results Images of 1000 patients (mean age 58±9, 58% male) were assessed. Amongst patients with normal coronary arteries and no history of hypertension, mean dimensions were: annulus short-axis 19±2mm, annulus long-axis 27±3 mm, SOV 31±4 mm, STJ 27±3 mm, ascending aorta 30±4 mm, descending aorta 22±2 mm, and MPA 23±3mm. Male sex, height, and body surface area (BSA) correlated with increases in all dimensions (p<0.001). Age correlated with aortic dimensions only (p<0.03). Patients with normal coronary arteries on CTCA had smaller aortic dimensions (p<0.001). Patients with hypertension had larger MPA and

aortic dimensions (p<0.02), apart from at the annulus. Sex and BSA were independent predictors of all dimensions. Hypertension was an independent predictor of some aortic dimensions. Age was an independent predictor of all aortic dimensions, except the annulus.

Conclusion Aortic and pulmonary dimensions can be assessed on CTCA, with sex and BSA having an important impact on normal dimensions.

6 COMPARISON CTCA DOSE AUDIT BETWEEN INITIAL SERVICE DEVELOPMENT AND SUBSEQUENT SERVICE ESTABLISHMENT PHASE FOR A DGH CTCA SERVICE

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Introduction The delivery of computed tomography coronary angiography (CTCA) services is variable but underprovided across the UK. Hampshire hospitals foundation trust (HHFT) is trying to contribute to this necessary national increase in CTCA provision. The aim of this poster presentation is presentation of our initial ionizing radiation dose audits for governance and to share issues we faced locally which might be relevant to other sites starting similar services.

Methods Retrospective analysis of all patients attending HHFT for CTCA at HHFT was obtained by interrogation of the Computerized Radiology Information System (CRIS) database between 2013 and April 2018, then re-audited between May 2018 and February 2019. The total Dose-Length Product (DLP) units (mGycm) and heart rate at time of acquisition were identified allowing comparison between the initial service development & second service establishment phase.

Results The median total DLP was 113.11 during initial service development (January 2013 – April 2018 phase). The median total DLP was 192.91 during service establishment phase (May 2018 – February 2019) Median DLP became higher in establishment phase.

Conclusion Initial success of the service along with initial tight patient selection led to a lower first round DLP. Subsequent appointment of an Electrophysiology Cardiology Consultant and increasing awareness of service led to evolving referral patterns with more atrial fibrillation (AF) ablation scans requested. Identifying this in the second round of audit has led to discussions with referrers & establishment of routine DLP recording onto CRIS

7 RADIATION DOSES OF CT CORONARY ANGIOGRAMS DONE AT SOUTHEND UNIVERSITY HOSPITAL; ONE YEAR AFTER THE 2017 NATIONAL SURVEY

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Introduction In 2018, Southend University Hospital performed 846 CT coronary angiograms. We participated in the 2017 Prospective National Survey of coronary CT radiation. Our median radiation dose was 194 mGycm compared to the national median of 209 mGycm. After the audit, 64 slice scanners with improved low contrast detectability were installed. These were powered by Adaptive Statistical Iterative