

autopsy. The angiographic aspect of the PMCT has been described in centres in England and Europe using different techniques. This study was built on this foundation to develop an alternative approach by adopting interventional techniques under both ultrasound and CT guidance to achieve diagnostic PMCTAs and further preserve the integrity of the body.

Methods This prospective study was conducted after the approval of the ethics committee. Sudden adult deaths of unknown cause referred for Coroner's autopsy were recruited. The participants had PMCTA of the coronary arteries with our minimally invasive interventional techniques prior to autopsy (the technique will be described in detail).

Results All the ten participants underwent successful PMCTA. The participants' age ranged between 49 to 81 years old and passed away from both coronary and non-coronary related cause of death. Radiologist assessment of coronary artery disease (CAD) on PMCTA versus pathologist autopsy showed 83% concordance (25/30 coronary arteries) with Cohen Kappa coefficient 0.67. CAD severity scores (0 = normal, 1 = mild, 2 = moderate, 3 = severe) between the radiologist and pathologist were non-significant overall (P-value = 0.21), and artery specific (LAD P-value = 0.56; LCx P-value = 0.32; RCA P-value = 0.32).

Conclusion This minimally invasive imaging guided technique is able to achieve diagnostic quality PMCTA of the coronary arteries to investigate coronary related cause of death.

P21 ARTIFICIAL INTELLIGENCE ASSESSMENT OF THE THORACIC AORTA IS ACCURATE, RELIABLE AND HAS POTENTIAL CLINICAL IMPACT

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Objective To assess the diagnostic accuracy, reliability and clinical impact of artificial intelligence (AI) derived thoracic aorta analysis (AI-Rad Companion, Siemens) on routine clinical gated and non-gated chest CT.

Methods This was a single centre retrospective study. AI diagnostic accuracy was assessed on 210 consecutive CT aortas and compared to cardiothoracic radiologist reference standard. AI test-retest accuracy was assessed on immediate sequential pre- and post-contrast CT aortas in 29 patients. Real-world AI clinical impact was assessed in 197 non-gated CT chests with comparison to manual radiology reports and patient electronic records to establish the detection rate of previously unknown aortopathy.

Results AI analysis was feasible in 97% (421/436 scans). Diagnostic accuracy of AI was good to excellent (intraclass correlation coefficient [ICC] 0.87–0.96). Test-retest accuracy of expert reader (ICC 0.88–0.98) and AI (ICC 0.82–0.94) for the ascending aorta were good to excellent. AI identified new aortopathy in 27% of non-gated scans versus routine clinical reports (X2 51, $p < 0.001$).

Conclusion AI provides measurements of the thoracic aorta comparable to an expert reader with similar reliability. Whereas manual reporting of non-dedicated studies significantly underreports thoracic aneurysms, AI identifies previously unknown aortopathy in a significant proportion (27%) of non-gated CT chests. The use of AI software in

non-dedicated CT chest imaging could support earlier diagnosis of thoracic aneurysms before potentially fatal complications.

P22 A FOLLOW UP ON OSCRIS: SINGLE CENTRE EVALUATION

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Objective Our centre's One Stop Cardio Radiology Integrated Service (OSCRIS) for Computed Tomography Coronary Angiography (CTCA) reporting was commenced in 2012. We have previously demonstrated the efficiency of this system. We undertook service evaluation to assess if previous gains were sustained.

Methods Retrospective analysis CTCAs performed between 1st January 2022 and 28th February 2022. We compared OSCRIS with Standard CT Patient Pathway (SCTPP) model.

Results Out of 570 CTCAs performed, nearly 2/3rds were reported by OSCRIS (59.5%, $n=339$). All patients (100%) were informed the same day in the OSCRIS model and a management plan initiated. In the SCTPP model, the average time to informing the patient was 31.5 (± 27.7) days. This was similar to the previous audit where the time to patient information and management was 4–6 weeks in the SCTTP model. 14.7% of patients in the SCTTP model were yet to receive information at a median of 114 days from the date of the CTCA. Patients in the SCTPP model were also more likely to receive only a calcium score (rather than a full CTCA) compared to those in the OSCRIS model (9.3% vs. 0.3% respectively, $p < 0.0001$). Patients in the OSCRIS model were more likely to have further clinical assessment or investigations (35.1% versus 19.3% $p < 0.001$). A majority of patients in both models were discharged back to primary (OSCRIS 68.3% versus SCTTP 83.2%, $p < 0.001$).

Conclusion The OSCRIS model continues to demonstrate efficiency and safety. The SCTTP model would require better infrastructure to match the efficiency of the OSCRIS model.

P23 PROTOCOL OPTIMISATION FOR COMPUTED TOMOGRAPHIC PULMONARY ANGIOGRAPHY IN PATIENTS WITH A FONTAN CIRCULATION

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Objective To review and describe optimal contrast enhanced CT imaging of the pulmonary arteries and inferior conduit in patients with a Fontan (total cavo-pulmonary connection, TCPC) circulation for the purposes of evaluation of Fontan circuit thrombosis.

Methods A retrospective review of all Fontan patients undergoing computed tomographic pulmonary angiography (CTPA) at a large NHS trust commissioned for congenital heart disease practice between 2015 and 2022 was performed. Both paediatric and adult patients were included. Patients with a superior cavo-pulmonary anastomosis (bidirectional Glenn circuit) only were also included. Demographic, clinical, scan and

contrast data were collected by 2 clinicians. Measurements were internally validated by 2 consultant cardiac radiologists. Data was analysed and reported.

Results 52 CTPA were performed during the study period and included for evaluation. A protocol using a low voltage (e.g. 80 kilovolt) with 800 mg/kg of contrast and a scan time delay of 70 seconds yields a mean intravascular attenuation of >250 Hounsfield units (HU) in the Fontan conduit and pulmonary arteries in patients with TCPC.

Conclusion Consistent and accurate diagnosis of Fontan thrombosis in both paediatric and adult patients must involve an adaptive approach by radiology departments to ensure CT protocols yield quality diagnostic data for this unique group of patients. Our institutional approach meets the international standards of mean intravascular attenuation of >250HU within the target vasculature of interest. This data presents a significant sample size to contribute toward developing an evidence base for CTPA imaging in Fontan patients.

P24 LVEF MEASURED WITH SAME DAY ECHOCARDIOGRAPHY AND CMR IN PATIENTS WITH SUSPECTED CARDIOTOXICITY

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Objective Left ventricular ejection fraction (LVEF) is widely used for assessment of cardiotoxicity in cancer patients. Cardiovascular Magnetic Resonance (CMR) is the reference standard for LVEF assessment, but echocardiography is most widely used. This study sought to compare LVEF measured by echocardiography and CMR in cancer patients with suspected cardiotoxicity.

Methods 745 patients underwent same day imaging with echocardiography and CMR. Cases with suboptimal image quality and those in whom 2D Biplane Simpson's method could not be performed were excluded. A sub-set (n=74) also had 3D echocardiography derived LVEF. Agreement was determined by Bland-Altman analysis.

Results Mean age of patients was 60±5 years, of whom 62% were female. 2D echocardiography LVEF was significantly lower compared to CMR, (median 60% [interquartile range 54–65%]) vs 63% [interquartile range 56–69%], $p<0.001$). Using Bland-Altman analysis, mean bias was -3.7±7.6% (95% limits of agreement [LOA] -18.5 to 11.1%) of 2D echocardiography versus CMR derived LVEF. In 74 patients in whom CMR, 3D echocardiography and 2D echocardiography were performed, LVEF was 60.0±10.4%, 58.4±9.4% and 57.2±8.9%, respectively ($p=0.0006$). There was better agreement with 3D echocardiography and CMR derived LVEF (mean bias of -1.6±6.3 [95% LOA -13.9 to 10.7%]) compared to 2D echocardiography and CMR derived LVEF (mean bias of -2.8±6.3 [95% LOA -15.2 to 9.6%], $p=0.02$).

Conclusion 2D echocardiography and CMR derived LVEF are not interchangeable. 2D echocardiography has variations of ±15% compared to CMR. 3D echocardiography has better agreement with CMR derived LVEF and should be used for assessment of cardiotoxicity.

P25 PREDICTIVE VALUE OF CT CALCIUM SCORE IN RISK STRATIFICATION OF CORONARY REVASCULARIZATION, ACUTE CORONARY SYNDROME OR DEATH IN HIGH-RISK PATIENTS: A SINGLE CENTRE REGISTRY EXPERIENCE

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Objective Atheroma based assessments provide better prognostic information than ischaemia testing. This retrospective registry aims to determine the utility of calcium score for risk-stratification in a high-risk sub-population.

Methods Consecutive patients presenting with chest pain, who had sequential CT-based coronary calcium scan and clinically indicated invasive coronary angiogram were included. Baseline risk-score strata were related to a composite-outcome of time to coronary revascularization, acute coronary syndrome or death.

Results 51 of 356 patients (mean age 65 SD±1.59 years, 25% women) had an invasive angiogram (SYNTAX score 4 [IQR 0–11]), following CT-coronary calcium scan (calcium score 292 [IQR 69–743]). Median follow-up time was 2.3 years (IQR 0.31–4.7). The composite-outcome was observed in 26 patients (event-rate 17.9/100 person-years). End-point distributions differed for calcium and SYNTAX scores (Log-Rank $p=0.03$ and $p<0.001$, respectively). Calcium score strata was a significant predictor even after adjustment for SYNTAX score tertiles (adjusted hazard ratio 1.76 [95% CI:1.08–2.85]). While calcium score compared less favourably in discriminating risk (Harrell's C-statistic 0.67 [95% CI:0.56–0.77] versus 0.80 [95% CI:0.71–0.89] for SYNTAX score), calcium scores of zero had good negative-predictive-value (100% [95% CI:87%–100%]), while scores ≥1000 had good positive-predictive-value (88% [95% CI:47%–99%]).

Conclusion In a high-risk population, the presence of any calcium in the coronary tree, i.e., calcium score ≥1, is predictive. Calcium score has predictive value in indicating risk at extreme ends of the spectrum (calcium score of zero and ≥1000). Exact scores ranging from 1–1000 offer limited additional value in terms of risk-stratification.

P26 FEASIBILITY OF RADIOGRAPHER LED CARDIAC CT LISTS TO REDUCE WAITING TIMES

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Objective In our tertiary cardiac centre, computed tomography coronary angiography (CTCA) lists are supervised by Consultants to ensure optimal heart rate control. However, waiting times of 16 weeks led to an initiative of