

## Clinical: Cardiac

### P-009 Cardiac CT angiography – minimising the radiation dose

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**Aims/Objectives:** This poster reviews the radiation dose-reduction strategies in cardiac CT and sets out a 5 point plan to minimise dose for every patient.

**Content:** Brief descriptions of the methods of ECG gated acquisition, scan volume reduction, low kV techniques, automated tube modulation, and breast elevation. We describe the application of these techniques to patients of different body habitus and how, when used in combination they significantly reduce dose.

**Relevance/Impact:** CT Cardiac Angiography dose should be lower than for conventional diagnostic cardiac angiography. Achieving as low a dose as possible whilst maintaining image quality involves tailoring the technique and protocols to individual patients.

**Outcomes:** By applying this stepwise dose minimising method we have reduced estimated dose to lower than 1 mSv in some cases. Although the dose will often be higher than this, we are confident that using this tool will optimise dose reduction.

**Conclusion:** We provide a 5 point dose reduction strategy that can be applied to every Cardiac CT to minimise the radiation dose.

### P-010 Impact of NICE guideline on cardiac imaging requests for “chest pain of recent onset”

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**Introduction:** The NICE guidance “Chest Pain of Recent Onset” recommends that patients who present with possible new stable angina should have clinical stratification to further imaging. The aim of the review was to assess the change in practice following NICE guidance and future usage of imaging modalities in a teaching district general hospital setting.

**Methods:** A retrospective review of MPI requests over a 3 month period (January - March 2011) at a department servicing two DGHs in a Trust without CT Calcium scoring was carried out. Exclusion criteria: (i) imaging not to assess angina, (ii) insufficient clinical details, (iii) known CAD. Their clinical risk was stratified as per the NICE guidance using age, gender, symptoms and risk factors. The MPI results were then reviewed.

**Results:** There were 538 MPI requests, 255 were included, which were referred with chest pain of recent onset and sufficient clinical details. The number of patients in each risk group (number abnormal MPI) were as follows : <10% risk = 30 (17), 10-29% risk = 55 (24), 30-60% risk = 74 (36), 61-90% risk = 69 (30), >90% risk = 27 (16).

**Discussion:** Based on clinical risk, 198 patients (77%) did require imaging for further risk stratification following the NICE guidelines. However, 55 of 198 (28%) were appropriate for CT Calcium Scoring. Moreover, there were abnormal MPI results in all groups. Of note, 48% of patients in the <30% risk categories had ischaemia. This suggests functional imaging may be required in a higher proportion of patients.

### P-011 Intrinsic cardiac masses for the general radiologist: an MDCT study

*Katharine Orr; Sarah Hamilton; Michael Williams;*

*Peninsula Radiology Academy; Derriford Hospital, Plymouth*

**Aims/Objectives:** To provide a pictorial review of cardiac masses as seen on MDCT for the non-specialist radiologist.

**Content of presentation:** A review of cardiac filling defects seen on MDCT including common causes such as pseudomasses from poor mixing of contrast enhanced and non-contrast enhanced blood, true thrombi, ruptured papillary muscles and atrial myxomas as well as rarer causes such as other

primary cardiac tumours, metastases from testicular tumours, squamous carcinoma and myeloma and tumours growing down veins into the heart from bronchial carcinoma, hepatoma and renal cell carcinoma.

**Relevance/impact:** Cardiac masses are relatively uncommon but general radiologists using MDCT now recognise more cardiac abnormalities. This pictorial review of cardiac masses illustrates some of these.

**Outcomes:** To raise awareness of the differential diagnoses of cardiac filling defects.

**Discussion:** The most common cause of a cardiac filling defect is thrombus. However, there are other diagnoses which have similar appearances on MDCT which are important to consider.

Metastatic cardiac tumours are 20 – 40 times more common than primary neoplasms. Of primary cardiac tumours, 75% are benign (half of which are myxomas) and 25% are malignant.

#### P-012 **NICE guidance for recent onset chest pain: time to be broken?**

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In our institution we perform coronary calcium scoring and subsequent CT coronary angiogram (CTCA), on all patients referred for investigation of coronary arteries. In current NICE guidance for investigation of suspected coronary artery disease, patients with high Agatston scores are advised to undergo invasive angiography without CTCA, due to perceived inaccuracy from calcification. We use new generation high-definition HDCT scanners for cardiac imaging which increase diagnostic accuracy. We proposed that many patients with high calcium levels, but HDCT-proven stenoses are treated without further diagnostic procedures, thereby reducing both cost and time to treat.

**Methods:** Departmental computer systems were interrogated to identify patients with Agaston scores over 400 scanned using our HDCT scanner during 2010. CTCA findings of these patients were compiled from radiology reports, plus information regarding further investigations and management were obtained from cardiology departmental records.

**Results:** 59 patients were retrospectively identified with high Agaston scores proceeding to HDCTCA. 24 (41%) patients underwent subsequent diagnostic invasive angiography within 6 months.

The remaining 35 patients did not undergo additional invasive angiogram. Of these, 3/35 (8%) had no CT-detected stenosis, 6/35(17%) had mild and 28/35(80%) had moderate/severe stenoses.

**Conclusions:** Treating solely on CTCA results saved 35 invasive angiograms during 2010. From the national tariff, the overall cost of an invasive angiogram is £995, therefore during 2010 a total £34825 has been saved. We conclude that HDCTCA alone is sufficient to guide treatment in a majority of patients with coronary artery disease, even in the presence of extensive coronary artery calcification.

### Clinical: Vascular

#### P-013 **Congenital and acquired variants of the left brachiocephalic vein and its branches – implications for cardiac and radiological interventions**

*Rhys Llewelyn, Southwest Peninsula Radiology Programme*

**Aims:** To delineate by MDCT variants of the left brachiocephalic vein relevant to venous vascular interventions.

**Content:** A series of cases of venous anomalies of the left brachiocephalic vein with actual or potential difficulties in transvenous interventions are shown. These include left SVC, double SVC, left vertical vein, left vertical vein with partial anomalous pulmonary venous drainage, left subaortic brachiocephalic vein and rarer connections with the azygous system. Multiplanar reformatting helps in delineating the precise anatomy.

**Outcome:** An explanation of anomalous anatomy which may complicate venous vascular interventions and thus reduction of risk to patients.

**Relevance:** An estimated 200,000 procedures are performed annually in the UK requiring central venous access, including placing lines for secure access, large volume exchange, transvenous