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Monday 10 September Proffered papers 1: Cardiac radiology
11.40 am–11.50 am

Presenting Author
Dr Graham Collin

Coronary CT angiography for the risk stratification of acute chest pain presenting to A&E: 2 year experience from Heart of England NHS Foundation Trust

Purpose: Heart of England NHS Foundation Trust was the first UK institution to offer Volume 320-row Cardiac CT. We present data from the first 2 years of this novel chest pain management pathway.
Methods and materials: Chest pain patients presenting to the A&E with a strong clinical suspicion of underlying coronary artery disease and who met the inclusion criteria underwent a Volume Cardiac CT examination on an Aquillion One CT scanner. The results have been collated and analysed.
Results: 220 patients had VCCT. 73% had normal or near normal coronary arteries and 13% were referred for angiography. 12% had significant non coronary pathology diagnosed at CT. Of the 25 patients who also had invasive angiography absolute concordance rates was 44%. Stenoses were over-graded, usually by one grade, in 48% and under-graded in 4%. Patients discharged on the basis of normal CT coronary angiography so far have had 0% myocardial infarction rate. One patient with positive findings on CTCA had an MI which was treated with stenting.
Conclusion: VCCT as a direct access tool for Emergency chest pain admissions is a robust low dose test. Its high negative predictive value means that patients can be safely discharged with benefits both to the patient and to the hospital. A significant proportion of patients have non-cardiac diagnoses which can be made on the basis of CT coronary angiography.

Contributing Author
Shahid Hussain

Monday 10 September Proffered papers 1: Cardiac radiology
11.50 am–12.00 pm

Presenting Author
Dr Jonathan Rodrigues

The effect of voxel averaging on peak velocity measurements in phase contrast magnetic resonance angiography (PCMRA)

Purpose: ECG-gated PCMRA is an established non-invasive in vivo method to measure blood flow. Siemens Argus flow analysis software defaults to calculating peak velocity as the mean of the voxel with the highest velocity and its adjacent 4 voxels. We aimed to quantify the effect of this voxel averaging (VA) on calculated peak velocity compared with the single voxel technique (SV).
Methods and materials: 145 peak velocity measurements in 14 different anatomical locations in 37 subjects (healthy volunteers, congenital & acquired heart disease patients) were analysed by Siemens' Argus default VA method and again by SV technique. The effect of flow velocity, breathing instruction and scanner type (Siemens Symphony Vs Avanto) were also assessed.
Results: There was a significant mean percentage increase in peak velocity of 7.1% when SV method was used in comparison to VA ($p < 0.0001$). Significant increases in peak velocity were obtained by SV method compared to VA regardless of patient type, anatomical location, scanner type and breathing instruction ($p < 0.05$ for all subgroup analyses). Disabling VA technique had no effect on recorded flow volume.
Conclusion: Voxel averaging produces a significant underestimation of peak velocity. At peak velocities >300m/s, this error may be clinically significant, e.g. misclassifying valvular stenoses. For the assessment of peak velocity by PCMRA, voxel averaging should not be used.

Contributing Authors
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Monday 10 September Proffered papers 1: Cardiac radiology
12.00 pm–12.10 pm

Presenting Author
Dr Graham Collin

Analysis of patterns of disease in a population of Caucasian and South Asian patients attending for Coronary CT angiography with a clinical diagnosis of low to intermediate risk chest pain

Purpose: We set out to determine whether there are ethnic or gender differences in patterns of disease in patients who present to the Emergency Department with a clinical diagnosis of low to intermediate risk chest pain.
Methods and materials: Over a 2 year period 220 patients attended for coronary CT angiography following an emergency department assessment for chest pain. The records of these patients were reviewed and age, gender, ethnic group and coronary CT angiography results were assessed.
Results: 220 patients underwent CT coronary angiography. 43% were female. 47% were white British; 43% were of South Asian origin. 15% of South Asian patients had significant narrowing on CT coronary angiography compared to 26% of Caucasian British patients ($p = 0.055$). 15 (16%) of female patients had significant coronary disease vs 32 (26%) in men ($p=0.10$). 7 males had severe stenosis vs 0 females ($p=0.02$). 12% of patients had other significant findings not related to their coronary arteries.
Conclusion: South Asians are known to have higher coronary risk profile, however when they present with a clinical diagnosis of low to intermediate risk chest pain the chance of stenosis on CT coronary angiography is less than a British Caucasian group. More men have coronary disease, and more severe disease than women in this low risk group.

Contributing Author
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