NHS
Health Education England

SCHOOL OF RADIOLOGY ANNUAL CONFERENCE 2019

Summary of Abstracts

(Presentations and Posters)

Oral Presentation Abstracts

09:55 - Victoria Burrows

A single centre retrospective review of the use of CT angiography in the investigation of acute aortic syndrome (AAS) – Time for change

Burrows V, Shahin Y, Geh T, Cleveland T - Sheffield Teaching Hospitals NHS Foundation Trust

Aims: Review the detection rate of acute aortic syndrome using CT angiography in a large teaching hospital and assess practice against current recommendations.

Materials and methods: A retrospective review of all CT angiograms performed between November 2017 and November 2018. Scans were identified using the hospital radiology information system. Aneurysm surveillance imaging and pre breast reconstruction vascular anatomy delineation scans were excluded. The reports were reviewed to identify aortic dissection, intra mural haematoma or penetrating aortic ulceration. Other pathologies and dose data were also recorded.

Results: 166 cases were included. 86 males (average age 65) and 80 females (average age 66) were imaged. Seven (3 male and 4 female) were positive for AAS (4.2 %). One scan was non diagnostic and 158 were negative for AAS. An alternative acute pathology was identified on 30 scans and 49 incidental findings discovered. The average dose was 1160mGycm^2 (180.5 – 4670.4).

Conclusion: The detection rate for AAS is low. The current CT protocol for investigation of AAS includes a non-contrast CT thorax and a CT angiogram from aortic arch to common femoral arteries. The associated dose for this investigation is relatively high. A robust management strategy for CT imaging in the context of AAS would help identify high risk patients, tailor CT imaging more appropriately and reduce dose in low risk patients. Application of the recent guidelines and recommendations from the British Society of Cardiovascular Imaging and British Society of Cardiovascular CT would help guide referrers and improve imaging protocols.

10:05 - Lee Wun Chong

Utilisation of Contrast-Enhanced Magnetic Resonance Angiography (MRA) in the Assessment of Deep Inferior Epigastric Artery Perforator (DIEP) Flap for Breast Reconstruction Surgery

Dr LW Chong, Mr A Akali, Dr R Lakshminarayan

Department of Radiology and Department of Plastic Surgery, Hull Royal Infirmary.

Background: Deep inferior epigastric perforator (DIEP) flap is increasingly used for autologous breast reconstruction surgery due to its lower risks of morbidity compared to the more traditional transverse rectus abdominis muscle (TRAM) flap technique.

Aim: This study aims to identify and characterise the ideal-sized (defined as at least 2.7 mm based on our plastic surgeons' experience) perforators using Magnetic Resonance Angiography (MRA). The study also evaluated a presumption that perforators on the left are generally larger than on the right.

Materials and Methods: Fifty consecutive patients who had MRA prior to DIEP reconstruction were included. MRA acquisition sequences, MRA images, radiologist reports, and surgical entry database were reviewed retrospectively. Intraoperative findings were compared. The diameter and characteristics of the perforators fulfilling the criteria of being 'ideal-sized', at least 2.7 mm were collected. Wilcoxon test was used to compare the size of the left and right perforators.

Results: Ninety-three ideal-sized perforators were identified (diameter of 2.8-4.2 mm). Fifty-one of these were located on the left, and forty-two on the right. We observed that the left perforators were indeed larger than the right (Wilcoxon test, p=0.017). Most of the perforators were found in the superior region and medial rows. Additionally, lateral row perforators were observed to have a shorter intramuscular course.

Conclusion: Contrast-enhanced MRA is a useful pre-operative imaging to locate ideal deep inferior epigastric perforators for breast reconstruction. Perforators on the left were found to be larger than the right, and more ideal-sized perforators were located on the left.

10:15 - Krit Dwivedi

CT pulmonary angiography-derived right atrial area can risk stratify patients with PAH and PH.

Krit Dwivedi, Chris Johns, Ze M Goh, Smitha Rajaram, Catherine Hill, Kavita Karunasaagarar, Ben Currie, Matthew Chin, Robin Condliffe, David Kiely, Andrew Swift

Purpose: Right atrial (RA) area on echo and mean RA pressure (mRAP) at right heart catheterization (RHC) have prognostic value in pulmonary hypertension (PH). CTPA is commonly performed on patients with unexplained breathlessness & suspected PH. Prognostic value of RA on CTPA in PH is unknown.

Aim: Investigate if CTPA RA area (CT-RAx) correlates with mRAP, and if it can risk stratify in PH.

Methods: 410 PH patient, including 158 with pulmonary arterial hypertension (PAH), who underwent baseline CTPA and RHC within 90 days were identified from ASPIRE registry. Pearson correlation between CT-RAx and mRAP was assessed. Cohort was divided by ERS mRAP thresholds for low, medium and high risk (<8, 8-14 and >14 mmHg) and CT-RAx difference between groups assessed with one-way ANOVA. Outcomes were analysed using Kaplan-Meier and Cox regression.

Results: 89 patients died, 54 of whom had PAH. Mean survival was 4.7 for PH and 4.4 years for PAH. CT-RAx correlated well with mRAP in both PH (r=0.482, p<0.001) and PAH (r=0.467, p<0.001). CT-RAx stratifies into ERS RHC risk groups in both PAH and PH with significant (p<0.001) difference between groups. CT-RAx was a significant predictor of outcome in both PH (HR 1.30; 95% CI 1.07–1.58 ; p=0.008) and PAH (HR 1.35; 95% CI 0.89–1.47; p=0.027).

Conclusion: CT - RA area is a simple axial measurement which correlates with mRAP and predicts survival. Further studies to identify optimal CT prognostic thresholds is warranted.

10:25 - Nyasha Shangwa

Audit of Outcomes for Radiologically Placed Oesophageal Stents at HEY NHS trust.

Dr Nyasha Shangwa (radiology reg) & Dr Siva Muthukumuramasamy (Non Vascular Interventionalist / GI radiologist)

Purpose: Oesophageal stents are a long established means of maintaining oesophageal patency. They consist of a metal or plastic cylinder with a variety of features each with its own strengths and weaknesses. Indications include both benign and malignant disease of the oesophagus. Known complications include migration of the stent and tumour ingrowth into the stent.
Our trust uses the SX Ella stent, a metallic stent with a silicone outer coating at a cost of £800 a stent. Covered stents, such as the one we use have lower rates of tumour ingrowth but tend to migrate more.

Materials and methods: Our aim was to evaluate our recent experience of oesophageal stent placement and complications. This is a retrospective review at our trust of all oesophageal stents placed between March 2015 and August 2017.
75 patients were included. There were 20 females and 55 males with an average age of 73.

Results: The commonest indication for stent placement was oesophageal adenocarcinoma (68%). Strictures were more likely to be found in the lower oesophagus. The commonest complication was stent migration (17%) and tumour ingrowth (7%). Average life expectancy following stent placement was 1 month.

Conclusion: Oesophageal stenting is a long established means of palliating these patients and maintaining oesophageal patency. We have confirmed that our complication rates are similar to those provided in the current literature. We will re-audit our practice in 12 months with a bigger data set.

10:35 - Nyasha Shangwa

CT Assessment for acute appendicitis: A Year in the Life of a University Teaching Hospital

Dr Nyasha Shangwa (Radiology reg) & Dr Emma Helbren (G.I Radiologist)

Purpose: Acute appendicitis (AA) is the most common indication for emergency abdominal surgery. Computed tomography (CT) is increasingly used in the investigation of the acute

abdomen. Prior to its use, up to a quarter of appendicectomies were histologically normal. There is also a high post-operative complication rate (28%). This makes the ability to recognise AA and it's relevant mimics on CT a vital skill.

Materials and methods: This is a single centre, retrospective audit looking at the correlation between the pre-appendicectomy CT and post-appendectomy histology. Our targets were; a positive predictive value (PPV)≥ 92% and a negative appendicectomy rate (NPR) < 10%. Throughout 2017, specimens from histopathology labelled as 'appendix' were evaluated. If indexed as 'inflamed' this was deemed positive for AA. The radiology reports were classified according to the impression given.

Results: 289 patients were included in the study. Of these, 125 had a CT and 5 appendicectomies proved to be negative (histologically normal) and 120 were positive (AA). The positive predictive value for pre-appendicectomy CT was 99% and the negative appendicectomy rate was 2%. CT was also useful for problem-solving. 19 patients had a CT after an initial negative ultrasound (US). CT more accurately diagnosed AA (18 vs 3). US has a higher specificity (86% vs 66%) in comparison to CT. However, the appendix was only visualised in 60% of cases.

Conclusion: All adults patients were the indication for imaging is to identify or exclude appendicitis should have a contrast enhanced CT of the abdomen and pelvis as their first line (and definitive) modality of imaging.

11:40 - Elizabeth Rogan

An Audit of the Documentation of Radiology Handover at Sheffield Teaching Hospitals

Dr Elizabeth Rogan, ST4 radiology registrar, Supervised by Dr Ruth Batty

Introduction: Clinical handover is essential, both for providing continuity of care and for helping to reduce the risk of patient errors. In 2015 the Royal College of Radiologists produced 'Guidance notes on Handover and Review', which outlined principles for good handover.

In December 2016 a new electronic system was introduced to the radiology department at Sheffield Teaching Hospitals for radiology registrars to document handover, which is to be filled out every time the duty bleep is handed over, both during normal working hours and out-of-hours. Prior to this, handover had been documented sporadically and inefficiently on paper. An audit was carried out in July 2018 to evaluate whether handover is being adequately documented on this new system.

Methods: 42 weeks' of data was analysed using Microsoft Excel. Specific questions included: 'Is handover being documented?', 'Is patient identifiable data being recorded to aid the registrar starting their shift?' and 'Is handover documented better at a certain time of day?'.

Results: Overall compliance was promising with 74.5% of entries filled out, but there is big room for improvement. Suggestions for improvement included regular reminder emails to be sent out to registrars. A survey has also since been carried out asking registrars the main

reasons why they might not fill out handover. Results of the survey show that verbal handover does invariably happen, but the documentation of handover electronically is often forgotten mainly because the registrars are too busy. The handover documentation will be re-audited in summer 2019.

11:50 - Amanda Isherwood

Introduction of a formal handover in radiology

Dr Amanda Isherwood and Dr Georgios Antoniades

Hull University Teaching Hospitals NHS Trust

Background: The NPSA, RCP, The BMA and others have published work indicating that high quality clinical handover improves patient safety.

Our Trust switched from non-resident on-call to a full shift system in 2017 triggering a review of our handover process to ensure safety at change of shift.

Standards: Handover should take place at every change of shift.

Handover should be documented and include time and date, attendees and clinical details.

Targets:

Handover at 0900, 1700 and 2100 (100%)

Any documentation (100%)

Date/Time (90%)

Attendees (90%)

Clinical details (90%)

Methodology: As we initially had no handover procedure, the first round required direct observation of whether handover occurred and was recorded. The ST1 doing acute CT was invariably paired with another registrar and could observe handover between the senior and the on-call registrar at 0900 and at 1700 for 3 weeks, without themselves being involved. This prevented assessment of handover at 2100.

Results:

Rate of handover:

0900: 75%

1700: 100%

Documentation:

0% for all documentation targets

Action: Although handover occurred, documentation was non-existent. A formalised, paper based handover system was introduced.

Subsequent audit: Methodology changed to assessing paper records. Results indicated handover rate was 80% at 2100 and lower 0900 and 1700 rates of 75%, but large increases in documentation to 77% from 0%. There were issues with record loss with paper.

Action: implement an IT based system.

Third round methodology assessed IT records. Results indicated improved handover and documentation rates of 94% meeting all targets.

Action: repeat to ensure ongoing compliance.

12:00 - Benjamin Rea

Seeing Radiology in a different light - healthcare perceptions of Radiologists and Radiology as a specialty.

Aims:

To understand how Radiologists and Radiology as a specialty is perceived by medical students.

To see whether this perception is shared by other different healthcare professionals.

To understand how Radiologists perceive themselves and their specialty.

Materials and methods: A simple word association study was performed which involved interviewing different healthcare professionals. This included medical students, postgraduate doctors and Radiologists. During the study each individual was asked to write down the first five words that they associated with Radiologists or Radiology as a specialty. These results were then collated and analysed to look for differences between groups, or any common themes that emerged.

Results: As expected, the words Radiologists used were more positive, with team working identified as a common theme. This however is at odds with the medical student data, who viewed Radiologists as intelligent but introverted and isolated doctors. Postgraduate doctors appeared to have a mixture of words associated with the specialty, with positive comments increasing in frequency as the professional became more senior.

Conclusions: Common perceptions held by medical students still tend to be in line with historical stereotypes. As the group surveyed progressively became more experienced, these stereotypes appeared to fall away, which may be because Radiologists' work becomes increasingly visible as you progress through your career. By understanding what others and Radiologists value about our specialty, we can aim to integrate these best aspects of Radiology into medical student placements or teaching, helping to popularise the specialty, and dismiss historical stereotypes.

12:10 - Aubrey Smith & Shahid Seedat

Bollinger scoring application in evaluation of infrainguinal peripheral arterial disease in MR angiography.

A.G. Smith, S. Seedat, L. Kenning, D.F. Ettles, R. Lakshminarayan

Academic Department of Radiology, Hull Royal Infirmary, Hull

Aims: The Bollinger scoring system (BSS) has been utilised to accurately measure atherosclerotic disease burden in digital subtraction angiography (DSA) as demonstrated in the BASIL trial. BSS utilisation in atherosclerosis assessment in CT angiography has also been proven. With increasing use of contrast-enhanced MR angiography (MRA) in atherosclerotic disease assessment, we aim to evaluate the efficacy of the BSS in peripheral arterial disease (PAD) in MRA imaging.

Material and methods: The infrainguinal arterial tree was split into 6 segments in each limb down to the calf as per BSS methodology. Intraobserver (1 radiologist, 179 segments), interobserver (3 radiologists, 468 segments) and MRA vs. gold standard DSA (2 radiologists, 183 segments) scores were obtained. Subgroup analysis was performed on above knee (AK) and below knee (BK) arterial vasculature. Agreement was calculated using Kappa statistics, Spearman's Rho and intraclass correlation coefficients (ICC) using SPSS.v21.

Results: Intraobserver analysis of 179 segments demonstrated very good levels of agreement (Kappa=0.855 p=<0.001). Interobserver analysis between 3 radiologists scoring 468 segments revealed an ICC average measure of 0.945 (95% CI 0.934-0.954). Pairwise Spearman's rho between observers were as follows: Obs1 vs.Obs2=0.796, Obs1 vs. Obs3=0.644, Obs2 vs.Obs3=0.642. Two-tailed significance was P<0.001 for all correlations. Good agreement was observed between MRA and DSA (Kappa= 0.764 p=<0.001) when 2 radiologists scored 183 segments. No difference in agreement AK(Kappa=0.722) and BK(Kappa=0.702) was demonstrated.

Conclusion: The BSS methodology is a useful tool to evaluate infrainguinal PAD in MR angiography.

Conclusion: All adults patients were the indication for imaging is to identify or exclude appendicitis should have a contrast enhanced CT of the abdomen and pelvis as their first line (and definitive) modality of imaging.

12:20 - Jim Zhong

Performance of FDG PET-based textural features for prediction of loco-regional recurrence in advanced larynx and hypopharynx squamous cell carcinoma

J. Zhong, P. Brown, H.L. Nelstrop, R. Prestwich, G.M. McDermott, S. Currie, S. Vaidyanathan, A. Scarsbrook

Aim: To determine whether metabolic tumour parameters and radiomic features derived from fluorine-18 fluorodeoxyglucose (FDG) positron emission tomography-computed tomography (PET-CT) are prognostic predictors in patients with locally advanced larynx and hypopharynx squamous cell carcinoma (SCC).

Materials and methods: All patients with advanced stage larynx and hypopharynx SCC treated at a specialist cancer centre that underwent baseline FDG PET-CT between August 2008 and May 2017 were included. Primary tumour and nodal disease were segmented using LIFEx software (University of Paris-Saclay, France) and radiomic analysis (first- and second-order parameters) was performed which included calculation of metabolic tumour volume (MTV). Lesions less than 64 pixels (5 ml) were excluded. Univariate Cox regression was performed using SPSS Statistics (Version 22, IBM Corp, USA) correlating each tumour characteristic and textural feature to progression-free survival (PFS) with two-tailed significance taken as $P<0.05$.

Results: 101 patients (54 hypopharynx and 47 larynx tumours) with 119 lesions were included (79 tumour and 40 nodes). Median age 62 (range 41-82), 76 (75%) were male. 62 patients received chemo-radiotherapy and 39 had radiotherapy alone. Median follow-up was 26 months (range 0-105). 39 patients progressed during follow-up; 22 at the primary site and 17 within loco-regional nodes. Median loco-regional PFS was 23 months (range 0-105). CT tumour volume (ml), PET MTV and PET-derived grey-level zone length matrix (GLZLM) were independent predictors of PFS ($P<0.05$). No other features correlated with PFS.

Conclusion: Baseline MTV and PET-derived GLZLM are prognostic predictors in patients with locally advanced larynx and hypopharynx SCC.

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Poster Abstracts

Aarushi Gangahar

Ultrasound assessment of the groin in children

Aims: Although scan technique for the groin is similar in adults and children, the anatomy of the joints and cartilaginous enthyses may be unfamiliar and changes over a relatively short period of time as the cartilage progressively ossifies. Congenital and developmental lesions such as patent processus, undescended or malpositioned testes are more likely to be encountered. Young children may not accurately localise or communicate the site of their symptoms, requiring a greater flexibility of approach. Our pictorial discussion will describe the approach used in our department, focussing on anatomy, probe position and US technique and how to vary the examination according to the indication in order to examine the hip joint, musculo-tendinous attachments, hernial orifices or palpable lumps. We will show normal anatomy and avulsion injuries, discuss Valsalva techniques and various types of groin hernia and inguinoscrotal developmental abnormalities and how to distinguish them. Space permitting we will include some of the wide spectrum of groin lumps and bumps encountered in a DGH setting.

Materials and methods: We have demonstrated technique with a willing volunteer, and our USS machine. Pathologies are demonstrated with pictures taken from cases that have been scanned over the past couple of years.

Conclusions: US is excellent for the examination of the groin in children. Scan technique can often be tailored to the specific question being asked, but with young children presenting with non-specific symptoms a more structured approach may be required.

Timothy Guest

Aberrant Coronary Artery Origins Detected on Cardiac CT, their Significance and Treatment

Learning objectives: Enable identification of aberrant coronary artery origins. Understand their significance and management strategies

Background: Aberrant coronary artery origins are thought to be present in approximately 1% of the population [1]. Detection is important as they are a recognized cause of sudden cardiac death [2] and identification is useful in planning for invasive coronary procedures.

Findings and procedure details: We present a case series of aberrant coronary artery origins each one demonstrating a different key learning point. Case 1: Right coronary artery (RCA) origin from left main stem, inter-arterial course; Case 2: RCA origin from left anterior descending (LAD), inter-arterial course; Case 3: High RCA take-off from ascending aorta; Case 4: RCA origin from left coronary sinus; Case 5: Left coronary artery (LCA) from right coronary sinus, inter-arterial course; Case 6: Separate ostia of the LCA and left circumflex artery (Absent left main stem); Case 7: High RCA origin & Ring of Vieussens as sole supply to LAD territory.

In young patients, these anomalies can present with sudden cardiac death. Various theories have been proposed for this association, including slit like ostium, acute angulation at the origin and compression of the vessel between the aorta and pulmonary artery. Such patients are generally treated with definitive surgical revascularization, with either coronary artery bypass grafting or reimplantation of the coronary ostia.

Conclusion: Familiarity with the CT appearances of various aberrant coronary artery origins and an understanding of the clinical significance of these anomalies are essential in making a correct diagnosis and planning patient treatment.

References:

1. Angelini P, Velasco JA, Flamm S. Coronary anomalies: incidence, pathophysiology, and clinical relevance. Circulation 2002;105:2449–2454
2. Eckart RE, Scoville SL, Campbell CL, et al. Sudden death in young adults: a 25-year review of autopsies in military recruits. Ann Intern Med 2004; 141:829–834.
3. Kim SY, Seo JB, Do KH et al. Coronary Artery Anomalies: Classification and ECG-gated Multi–Detector Row CT Findings with Angiographic Correlation. RadioGraphics Mar 2006; Vol. 26, No. 2

Nadia Jawad

Pulmonary arteriovenous malformations – A pictorial review of radiographic appearances

Nadia Jawad and Graham J Robinson

Aims

- To recognise the radiological appearances of pulmonary arteriovenous malformations
- To understand the clinical importance of a radiological diagnosis and the reason for treatment

Background: A pulmonary arteriovenous malformation (PAVM) is a rare vascular anomaly in which there is an abnormal communication between the pulmonary arterial system and the pulmonary venous system. Although it can be an isolated abnormality, it is usually associated with the autosomal-dominant condition hereditary haemorrhagic telangiectasia (HHT) in which patients present with epistaxis and cutaneous telengiectasia. However, many patients are asymptomatic and PAVMs are often discovered through screening family members of patients with HHT or as incidental findings on plain-film chest radiography or CT angiography. The gold standard for diagnosis is digital subtraction angiography (DSA). Radiological diagnosis is essential, as most patients require definitive treatment to reduce the future risk of stroke and brain abscesses, both of which can occur as a consequence of right to left shunting.

We offer a pictorial review of the radiographic appearances of PAVMs from cases presenting at our specialist HHT centre. The differential diagnoses for AVMs are also discussed, as they can often be mistaken for normal pulmonary vasculature or pulmonary neoplasia, and are important considerations in the differential diagnosis of hypoxia.

Conclusion: A PAVM is a rare but important condition to have in the differential diagnosis for a pulmonary nodule. Imaging with CT is the usual method for confirming the diagnosis. Patients are almost always offered treatment to prevent the potentially devastating consequences of a right-to-left shunt.

Andrew Martin

Case Report: A New Spectroscopy Finding in Infantile Neuroaxonal Dystrophy (INAD).

Introduction: Infantile neuroaxonal dystrophy (INAD) is a rare autosomal recessive disorder that is associated with developmental delay and regression.

Case: A female patient of consanguineous parents presented with gross motor delay at 15 months. She was known to have 2 paternal uncles who had died with a diagnosis of INAD. Over the next 15 months she exhibited regression in several domains and following genetic testing was diagnosed with a *PLA2G6* mutation in keeping with INAD.

Neuro-radiological findings: The cerebellar vermis demonstrated a significant reduction in the NAA/Cr ratio of 0.69.

Conclusion: This case highlights what we believe to be a new imaging feature of a low NAA/Cr ratio in the cerebellar vermis with normal ratios in the cerebellar hemispheres and basal ganglia in a patient with genetically confirmed diagnosis of INAD.

Dominic McGowan

Testicular masses: An imaging overview

D. McGowan, C. Stubbs, K. Fatania, J. Zhong and F. Shameem

Aims/Background: Scrotal masses are a common indication for imaging. Testicular cancers are uncommon though highly emotive. It is the most common malignancy of young adult men, the majority of which are primary germ cell tumours (GCTs). Ultrasound plays a unique role in the assessment of these tumours with patients going straight to orchidectomy where there is high level of suspicion for malignancy and subsequently it is the gold standard and first line of imaging. Imaging also plays a central role in disease staging.

Method: Using cases from a large UK district hospital, this educational poster aims to demonstrate the normal anatomy of the testis on imaging, to outline the most common types of testicular tumours, a differential diagnosis for testicular masses, staging of testicular tumours and the imaging modalities involved.

Results: We present a series of cases that demonstrate the varied ultrasound findings of testicular masses. In addition, we aim to explore the relevant differential diagnoses that could pose diagnostic pitfalls and their specific imaging findings. Common differential diagnoses for testicular masses include haematoma, infection, and cystic lesions. We will also present the common appearances and sites of metastatic disease.

Conclusion: Accurately identifying true testicular malignancy on imaging is crucial as many patients will go on to have an orchidectomy largely based on imaging. Subsequently a good understanding of the appearances of common malignant tumours is a prerequisite for any professional imaging these patients.

Christine McMullin

Clinical and radiological outcomes of patient presenting to the fast track breast clinic with breast pain

Dr C M McMullin, Mr L Maraqa, Dr P Somarajan

Aims: The aim of the audit was to assess the clinical outcomes of patients attending the breast clinic with breast pain both clinically and radiologically as documented on the fast track outcome proforma.

Method: A retrospective audit of the patients attending the fast track clinic was carried out. CRIS was used to identify the patients that had presented to the clinic with breast pain in the months of February and March 2019. Exclusion criteria included patient with palpable lumps and men with maslagia. The outcomes were recorded as per the fast track outcomes that is P1-5 for clinical, U1-5 for ultrasound and M1-M5 for mammogram.

Results: 151 patients attended the fast track clinic with mastalgia. The average age was 51.7years (R 24-84).29 patients (19.2 %) were under 40 and only had an ultrasound. 144 patients (95%) had clinical outcomes of P1/P2 and all of these were concordant with the radiological outcomes. 4 patients had a clinical outcome of p2/p3, two had P3 and another had a P4 outcome. Of the4 patients with P2/P3 the radiology was concordant. The two patients with P3 had discordant radiological outcome of U1 /M1 and U2/M2 respectively. The patient with P4 had radiological outcome of U1/M1.

Conclusion: Patients with breast pain should perhaps be seen in a breast clinic and not the fast track clinic initially to enable imaging triage.

Wee Ping Ngu

A Re-audit Assessment of Compliance in Completing Primary Survey Forms in Trauma Patients: A Tertiary Centre's Perspective.

WP Ngu, Michael P, Antoniades G. Hull University Teaching Hospitals NHS Trust.

Introduction: The Royal College of Radiologist guidelines recommend that a primary survey report should be issued immediately following a trauma scan and a formal report authorized by a radiology consultant within an hour of acquisition.[1] This highlights any life-threatening injuries which can be promptly managed by the trauma team. This improves patient safety and minimizes unnecessary delay. At our institution, an onsite radiology consultant out-of-hours is not available and reports are authorized the following day.

Aim: To audit completion of primary survey forms and authorization of formal reports within 24 hours.

Methods: Retrospective study conducted between May-July 2018 and December 2018-January 2019. Data was obtained using the electronic patient record and PACS.

Results:

1st audit cycle

Total: 48 patients.

52% (n=25) primary survey forms were completed.

100% reports were authorized within 24 hours.

2nd audit cycle

Total: 38 patients.

82% (n=31) primary survey forms were completed.

100% reports were authorized within 24 hours.

Conclusion: The integration of pan-body CT has significantly increased the survival rates of trauma patients.[2] This emphasizes the need for a systemic approach in interpreting trauma scans particularly during a busy shift. The primary survey report is an efficient checklist to ensure no critical radiological features are missed. We presented the initial findings at the local departmental audit meeting and sent reminder emails to the registrars and radiology consultants. The results from the re-audit have shown significant improvement in our practice with a 82% success rate (previously 52%.) To achieve 100%, we need to increase awareness within the department, continue circulating regular reminders and perform monthly audits.

References:

1. The Royal College of Radiologists. Standards of Practice and Guidance for Trauma Radiology in Severely Injured Patients: The second edition. London: The Royal College of Radiologists, 2015.

2. Huber-Wagner S, Lefering R, Qvick LM, et al. Effect of whole-body CT during trauma resuscitation on survival: a retrospective, multicentre study. Lancet 373(9673):1408-9.

Neville Nicholas

A pictorial review on endovascular management of paediatric aortic trauma – a single UK centre experience

N Nicholas, D Shaw, S Puppala.
Leeds Teaching Hospitals Leeds, UK

Learning Objectives

1. To recognise the feasibility and the challenges of endovascular repair of the paediatric aorta in trauma.

2. To learn about the various Computed Tomography (CT) manifestations of paediatric aortic trauma and understand how different imaging techniques can aid problem-solving.

Background:

Traumatic aortic injury (TAI) in the paediatric population is rare and accounts for only 2.1% of all trauma-related deaths. Aortic injury imaging in the paediatric population can be challenging to interpret and sometimes require multi-modality approach for problem-solving. Endovascular therapy (EVT) of the paediatric aorta in trauma is a novel technique that has emerged an alternative to open repair in patients who are not suitable for surgery and have suitable endovascular anatomy. Paediatric population pose a unique set of challenges to EVT, and the cases described in this review will showcase these challenges and the scope of EVT.

Procedure Details:

This section will detail the different mechanisms of aortic injury, classification of aortic trauma and will describe five cases of paediatric aortic trauma that were managed at our institution.

Conclusion:

With established adult aortic endovascular intervention expertise, endovascular specialists are now beginning to manage paediatric TAI with EVT as these skills are transferable. Fortunately, paediatric TAI is rare, and EVT should be considered in patients who are not suitable for surgery and have suitable anatomy. Endovascular repair may necessitate the off-label use of devices, and these decisions are made with the support of the multi-disciplinary team. Further evidence is necessary to validate the long-term outcomes and follow-up strategy for this technique

Kavi Fatania

Finding the leak: Imaging of post-cystectomy and cystoprostatectomy complications.

Kavi Fatania, Dominic McGowan, Chris Stubbs & Jim Zhong

Background: A number of surgical options are available for patients undergoing a radical cystectomy and urinary diversion, commonly for bladder cancer or less frequently a benign condition. Due to the complexity of these procedures, early and late complications frequently occur. Knowledge of the normal postoperative appearances after urinary diversions and potential postoperative complications is crucial to optimise patient management and because many of these complications can be clinically silent.

Methods: This pictorial review introduces the basic principles of the common surgical techniques, the role of imaging, specifically computed tomography (CT) and fluoroscopy in the postoperative setting, the normal postoperative anatomy and imaging appearances of early and late complications.

Results: Early complications include anastomotic leaks, fluid collections (abscess, urinoma, lymphocele, and haematoma), while later complications include ureteral strictures, fistulas, calculi, and tumour recurrence.

Conclusion: Knowledge of the appropriate imaging techniques and familiarity with normal postoperative imaging appearances and possible complications are needed to achieve an accurate and prompt diagnosis of complications and obtain information that is essential for adequate management planning.

Daniel Ward

The introduction of ST1 radiology weekend on-call shifts in Sheffield

Aims: Demand for out-of-hours imaging continues to increase, resulting in ever-increasing workloads for on-call radiology registrars. Previously one ST3+ registrar and one ST2 registrar covered weekends at Sheffield's major trauma centre.

ST1 weekend on-call shifts were introduced to support more senior registrars by responding to bleeps and dealing with requests.

This project aims to assess whether an ST1 supporting the more senior on-call team reduces their workload.

Materials and methods: ST1s worked a 1-in-7 Saturday on-call where they would carry the on-call bleep and their main roles included dealing with clinical requests and reporting nasogastric tube (NGT) radiographs. Data were prospectively collected and retrospectively analysed for 17 consecutive Saturdays from April to July 2018. Clinical requests were categorised for analysis purposes. Data collected included the date and time of each request, relevant further details, and whether the ST1 discussed the request with a senior.

Results: 707 requests were analysed across the 17 shifts (mean = 41.6 requests per shift). Where documented (n=543), 299 requests were dealt with by the ST1 independently (=55.1%). ST1s dealt with 25 NGT position checks independently, with 7 being discussed with a senior.

Conclusions: ST1 on-call shifts may help ease out-of-hours radiology workload. ST1s deal with more than half of requests independently and we would expect this to increase with experience.

Supervising two junior registrars increases senior registrar responsibility but certainly benefits ST2s who have more time for on-call reporting. ST1s should feel better prepared for ST2 and beyond having done on-call during their first year.

Ian Graham

Study to determine the incidence and appropriateness of requests for a CT-TAP following a diagnosis of a primary brain malignancy.

Aims/Background: There is no Royal college or NICE guideline regarding the need or appropriateness for a CT body following a radiological diagnosis of a primary brain tumour. As a generalisation, the likelihood of a primary brain malignancy metastasising to the body is very low. There was an impression amongst neuroradiologists at Hull Teaching hospital that there was a high number of requests for unnecessary CT bodies following a radiological diagnosis of a primary brain malignancy. This study therefore aimed to determine the extent to which unnecessary CT-thorax/abdomen/pelvis are requested following a radiological diagnosis of a primary brain malignancy

Materials and methods: Retrospective review of 58 patients with a primary diagnosis of brain malignancy on either CT or MRI and any subsequent CT-TAP requests. Information was gathered from local IMPAX/Lorenzo and scanned clinical letters.

Patient lists were taken from the neuro-oncology meetings from October – December 2018.

Only patients who had been given a radiological diagnosis of a primary brain malignancy or the wording of the CT/MRI head report was highly suggestive of a primary brain malignancy.

Patients were excluded if the report suggested possible brain metastatic disease or a possible non-cerebral primary.

Many of the patients reviewed in the neuro-oncology MDT were referrals from outside Hull Teaching Hospital and unfortunately in many cases the initial report was not available on IMPAX and it was often not clear from available clinic letters what the initial diagnosis had been. For this reason these patients were excluded from the study.

Results: Out of the 58 patient reports reviewed, 6 (10%) underwent a CT-TAP following a radiological diagnosis of a brain primary. None of these 6 CT-TAPs found any body primary malignancy. There were no requests for CT-TAPs following a CT/MRI brain primary diagnosis that had been rejected by the radiology department in this period.

Conclusion: It appears from this study that around 1 in 10 patients receiving a diagnosis of a primary brain malignancy went onto have a CT-TAP looking for any further extra-cranial sites of malignancy. None of these CT-TAPs found any other sites of malignancy. Therefore, although the sample is small, it seems appropriate that a request for a CT-TAP searching for others sites of malignancy should be declined if a clear radiological diagnosis of brain primary is made.

Lee Wun Chong

Air Embolism during the Coiling of Ruptured Cerebral Aneurysm

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Case History: A 47 years old man presented with sudden transient loss of consciousness and right sided weakness. CT showed grade 3 subarachnoid haemorrhage, mild hydrocephalus and three right sided intracranial aneurysms. The right pericallosal aneurysm was thought to be the source of haemorrhage and was consented for coiling of the aneurysm. The patient also had a large anterior communicating artery aneurysm and a small right internal carotid artery aneurysm.

Problem/Complications: There was occlusion of the right (A2) anterior cerebral artery towards the end of the difficult procedure, probably due to air embolism as a bubble of gas was seen in the adjacent large anterior communicating artery aneurysm. Air possibly got in through the microcatheter even though all lines were connected to flush lines. Patient developed left leg weakness following the procedure. MRI brain showed right frontal lobe infarction in the territory of the A2 branch.

Outcome: A change in practice with introduction of 0.2 micron bubble filters and a designated senior nurse to observe the lines and ensure the syringes were kept vertical for microbubbles to settle.

Take home points: We need to be aware of the risk of air embolism during cerebral intervention. Air embolism can cause severe brain injury. We should observe the lines, settle the microbubbles in syringes and use micron bubble filters for neuro-intervention procedures.