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Background: Introduction of Computed tomography (CT) has helped in accurate localization of lesion, needle puncture and access to any area of the body. CT guided biopsy of lung lesions has rapidly emerged as a well established, less-invasive, rapid and fairly accurate diagnostic technique. Despite being high sensitivity, specificity and relatively cost effective the diagnostic modalities have its own pitfalls and complications.

Aim: To assess diagnostic yield of CT-guided lung biopsy and complications.

Method: Retrospective audit of 100 patients over 2 years. Data obtained from PACS, CRIS and histology from ICE software.

Results: 100 Patient (mean age 69 years; Median 72 yrs; male/female =42/58). Commonest tumour site RUL (25%) and common approach posterior approach 40%. Histology diagnosis of malignant 63 %, benign 11 %, insufficient sampling 11% and Infective or fibrotic 13%. The overall yield of the biopsy was 91 %.

Complicaion: Pneumothorax 30% (Asymptomatic n=23; Symptomatic n = 7) and 10 % required chest drainage (n=3). Hemoptysis 5 % and hemorrhage 3% but no significant major bleeding complications occurred. No correlation between the needle size and complications noted.

Conclusions: CT-guided lung biopsies is safe, minimally invasive procedure and has an excellent diagnostic accauracy with no mortality but has a reasonable rate of complication.

These complication rates can further be minimized by focused, dedicated and supervised training of junior trainees with regular feedback and organizing simulated hands on workshops. Further Maintaining standardizing data also facilitate for auditing, research and comparing between centers.

P-117 **Review of catheter directed thrombolysis for acute limb ischaemia**

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Aims/objectives: A retrospective review of patients who underwent percutaneous catheter-directed thrombolysis was performed. The results were compared to the Cardiovascular and Interventional Radiological Society of Europe (CIRSE) standards published in 2011.

Relevance: Intra-arterial thrombolysis is an established alternative to open surgery, but is only used in severe limb ischaemia due to the potential for complications.

Outcomes: 11 patients underwent thrombolysis during the three year study period. The mean age of the patients was 62 years, with 10 male and 1 female. All the patients were managed in appropriate high dependency beds.

The angiographic outcomes were categorised into groups: Complete Technical Success - 6 patients, Partial Technical Success - 4 and Failure of Thrombolysis - 1 patient. There was clinical success in 9 patients, but of these 4 required bypass operations to achieve this.

Two patients underwent subsequent amputation. Complications were classified as 1 major, which was an intra-abdominal haemorrhage and one minor, which was a groin haematoma.

Discussion: Despite being a tertiary vascular unit, catheter directed thrombolysis for acute limb ischaemia is an uncommon procedure in our centre. This is a time consuming procedure for interventional radiology, but can be useful for assisting in limb salvage.

Major complication rate was 9%, which is within the limits set by the CIRSE standards. However, small cohort size prevents statistically significant conclusions.

Overall there was good adherence to CIRSE guidelines. Possible areas for review include the greater use of pre-procedure non-invasive imaging and monitoring of acid-base balance.

Errors and discrepancies

P-118 **Discrepancy highlighting - system to highlight and potentially expedite patients with discordant radiology reports**

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Aim: The aim of the discrepancy system is to adhere to the RCR guideline 'communication of untoward or unexpected findings'. Also the National Patient Safety Agency Safer Practice Notice 16: "Early identification of failure to act on radiological imaging reports".

Content: Prior to introduction of this service, possible missed fractures were taken to the Emergency Department (ED) on a rather adhoc basis.

Reports by the Radiographer Reporting service are timely but it was felt that a delay still occurred thereby potentially delaying any necessary re-call of patient's with missed fractures/pathologies (treatment discrepancies).

A robust system is now in place and every day (Mon-Fri) the reporting Radiographers check the ED computer notes for potential discrepancies between the report and the treatment of the patient. These cases are then highlighted to an ED Consultant who decides whether to recall the patient for clinical assessment or further treatment

Impact/relevance: This system has proven to be appropriate and timely and has had an impact on patient management. It has been used at the pilot site since May 2010 and many significant abnormalities have been picked up and re-called using this system.

The impact of the service is to improve patient care/outcome by immediate re-call of patients who may, previously have suffered morbidity due to a missed abnormality.

Outcomes: Discuss ongoing audits of the service including ED consultants opinions and also problems with implementation of the service

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P-119 **Lump in neck GPs ability to referrer to community ultrasound reduces work load of cancer pathway. But at what cost?: Delayed diagnosis, professional and legal vulnerability**

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Outcome for head and neck cancers is improved with early diagnosis. At our Local hospital a dedicated Lump in Neck Clinic (LINC) is the gateway for referral from GP to specialist otolaryngology surgeons and radiologists, with clinical examination, ultrasound scans and fine needle aspiration (FNA) to identify cancer with minimal delay.

GPs can refer directly to LINC or to a (cheaper) community Ultrasound scan (US). We investigate how GPs are referring patients for community imaging before referral to LINC, resulting in a possible delay in diagnosis.

Data collection includes all GP referrals for community Ultrasound neck or thyroid from January to March 2013. Including content on referral form, ultrasound operator, ultrasound report, advice for referral to LINC and patient outcome.

123 patients underwent community scans of which 23 were referred on to LINC. 6 underwent surgical procedures, with 1 diagnoses of cancer. 23 of the 123 community US reports advised referral to LINC clinic however 6 of these had no follow up locally. Of the 123 scans 98 were performed by ENT specialist radiologists with 100 being reported as benign.

In conclusion, GP scans reduce the workload for head and neck cancer pathways. However resulting in a delay to diagnosis of cancer and putting patients, radiologists and GPs in a vulnerable position should cancer be missed at initial GP US.

P-120 **Do you see what I see? Clinical review of discordant chest x-ray consultant radiologist and radiographer interpretations**

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Aim: 20% observer variation is reported in the literature for chest x-ray (CXR) interpretation. However, not all errors are clinically significant. We examined the clinical significance of discordant radiographer chest x-ray reports.

Methods: 100 CXRs were randomly selected from a consecutive series of 1,000 interpreted by a trained reporting radiographer in clinical practice. Three consultant radiologists (CR) independently assessed 50 CXRs for agreement with the radiographer report, with 50% overlap to assess inter-radiologist variation. Abnormal cases were categorised as clinically significant/insignificant. Clinical review of discordant cases provided the definitive diagnosis.

Results: 99 cases were available for review (40 abnormal, 30 significant). Seven CXRs were discordant.

CR1	CR2	CR3	Radiographer	Clinical-Review	Comments
AS	AS		AS	0	CR1 added "cardiomegaly"; CCF
		AS(X)	AS	√	COPD vs CCF
N			AN	0	Bronchial wall thickening
	AS	N(X)	N	X	Mediastinal lymph node
	AS(X)	N	AS	X	Rotation misinterpreted as consolidation
		N	AS	X	Composite misinterpreted as consolidation
	AS	AS	N	X	Linear Atelectasis

AS=Abnormal, significant; AN= Abnormal, not significant; N=normal; √=right; X=wrong; 0=immaterial

The reporting radiographer over-reported and under-reported two x-rays; one of each was also an error from a radiologist. Mediastinal lymphadenopathy was missed by both the radiographer and one radiologist; active tuberculosis was diagnosed after lymph node biopsy. In one case, the radiographer correctly diagnosed heart failure rather than COPD.

Conclusion: Chest x-rays are a frequent source of discordant interpretations. Disagreement between a reporting radiographer and consultant radiologists is similar to inter-radiologist disagreement.

P-121 **Missed lung cancers on chest radiographs**

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Chest radiography is the most common clinical assessment of patients presenting with chest symptoms. It is vital to have a high standard of reporting by radiologists in order to detect lung cancer as early as possible, or to suggest appropriate follow up if features are suspicious on chest radiograph. The RCR National audit in 2005 used the following targets: (1) The lesion should be identified in >75% of chest radiographs performed within one year of the diagnosis (2) When a lesion is reported, further investigation should be recommended in >95% of cases.

The sample consisted of 40 patients diagnosed with lung cancer within the last 6 months. Patients were identified through lung cancer MDTs. Those without a chest radiograph within the last 12 months preceding the diagnosis were excluded from the audit. Radiograph reports were reviewed, and reports were categorized as: (1) Appropriate reports, lesion identified; (2) Appropriate reports, Lesion identified as indeterminate, and appropriate further investigation or follow up suggested; (3) Non-specific reports, lesion identified as indeterminate but no follow up suggested; (4) Missed cancers, lesion not identified; (5) Examination not reported.

Our institution met our modified standars for correct identification of >75% of malignancy on radiographs. Communication fell marginally below standards, with 85.1% of the reports deemed appropriate.

P-122 **Obesity increases precision errors in fat, lean and bone mineral density measurements on total body dual energy x-ray absorptiometry scans**

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University of Exeter; Babcock International Group; King's College, London

This study investigated the effect of obesity on precision errors in total body (TB) dual energy x-ray absorptiometry (DXA) measurements.

144 female volunteers were recruited and underwent duplicate TB DXA scans (GE Lunar Prodigy, Bedford, UK) with repositioning between scans. The mean age was 41.04 ± 15.34, mean BMI 26.07 ± 5.55. Subgroups were created

based on the WHO criteria for body mass index (BMI) and on percentage body fat. The RMSCV% was calculated for each of the groups for TB and individual regions of interest (ROI's).

Total body DXA is increasingly being used for accurate assessment of body composition in research and clinical applications.

The RMSCV% (ROI's and TB) for BMD, fat and lean tissue ranged from 0.77 to 2.20, 2.98 to 6.81, 1.42 to 3.69, respectively for the optimal BMI group; 0.69 to 2.61, 1.72 to 8.62, 1.34 to 4.74 respectively for the overweight group and 0.91 to 3.30, 1.55 to 10.36, 1.68 to 8.15 respectively for the obese group. When the analysed by percentage body fat subgroups, those with >45% fat had the highest precision errors.

These data demonstrate increasing precision errors with increasing BMI, many of which are significantly greater than the 1% considered usual for DXA. This relationship is maintained when analysed using body fat cut-offs. The lowest precision errors were in the total body results and the errors increased when using compartmentalised measurements. It is important to consider the BMI of those undergoing TB DXA measurements to be aware of the associated errors.

P-123 **Mimics of pancreatic tail lesions on cross sectional imaging**

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Aintree University Hospital NHS Foundation Trust

Aim: We aim to present imaging appearances on CT and MRI of entities that mimic lesions within tail of the pancreas.

Content: A series of cases of imaging mimics of normal pancreatic tail and pancreatic lesions including splenunculus, Splenic haemangioma, aneurysm, peritoneal deposit, pancreatic pseudocyst, pancreatitis, fat infiltration, distended pancreatic duct with stone, IPMN etc is presented with variety of cross sectional imaging appearances and pitfalls in recognition.

Relevance/impact: A variety of pancreatic and peripancreatic entities can mimic pancreatic tail pathology and a thorough understanding and knowledge of these is required to differentiate normal variants and pathological entities from pancreatic tail neoplasms. This can help reduce unnecessary further imaging, endoscopic interventions or surgery by differentiating pancreatic tail mimics and benign conditions from malignant lesions. This review is aimed at summarizing the commonly encountered entities that mimic pancreatic tail lesions outlining the salient imaging features, mainly on CT and MRI.

P-124 **Audit of the management of "adrenal incidentalomas"**

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Basildon and Thurrock University Hospitals NHS Foundation Trust

Aim/objectives: To determine if evidence-based "adrenal protocol" was followed for managing the detection of adrenal incidentalomas at Basildon and Thurrock University Hospitals (BTUH).

Content of presentation: Standard and criteria - 100% of patients should have biochemical analysis (Endocrinology referral) to assess functionality of the incidental adrenal lesions.100% of patients should have dedicated adrenal imaging for further characterisation.

Methodology: Reports of 760 patients with abdominal-CT over 6 months were reviewed retrospectively.

Relevance/impact: Adrenal incidentaloma is an unsuspected, asymptomatic mass detected on imaging, usually computed-tomography (CT), obtained for other purposes. Asymptomatic masses may later prove to be functional. They can be benign/malignant and functional/non-functional. The incidence is 4-5% on average. Evidence-based "adrenal protocol" needs to be followed on detection, consisting of biochemical analysis and dedicated imaging for further characterisation.

Outcomes: 21 patients were found to have adrenal lesions. 5 studies were being followed up for a previously identified adrenal lesion and therefore 16 (2.1%) were incidentalomas. 0% of the cases had biochemical analysis whilst only 27% of the cases had dedicated imaging for characterisation. Radiologists were lacking consistency in the reporting of adrenal incidentalomas.

Discussion: The audit was presented at BTUH Audit Meeting to highlight the current management guidelines based on non-enhanced-CT (NECT) and washout-CT detailing characteristics and size of lesion. Imaging algorithm was

implemented and data is being collected for future re-auditing. Emphasising the management of adrenal incidentalomas through this audit could reduce discrepancies nationally and improve patient safety.

Molecular and functioning imaging

P-125 How can PET/CT amyloid imaging aid in the diagnosis of alzheimers disease?

Clare Moody; Louise Jordan
Newcastle Hospitals NHS Trust

Aim: How can functional imaging through Positron Emission Tomography (PET) aid in Alzheimers Disease (AD) diagnosis by detecting beta-amyloid neuritic plaques in the brain.

Content: Amyloid imaging for early AD diagnosis will be discussed in terms of its impact on the patient care pathway. A positive amyloid scan can increase the clinical certainty of AD whereas a negative scan can exclude AD from the diagnosis. Various radio-isotopes are available for use in amyloid imaging, although this focuses on 18F-florbetapir (AMYVID), which has FDA approval for clinical use.

Relevance: Amyloid imaging using PET/CT is a highly researched topic with several companies producing radio-isotopes. AD is a progressive and fatal neurodegenerative disease, early detection can increase the scope for improved management and treatment. Currently, clinical diagnosis may take up to 3 years and requires the patient to have onset of dementia. At this stage any treatments to reduce the build up and continued deposition of amyloid plaques may be too late, an early diagnosis could have a positive impact on the patient and also on NHS resources.

Discussion: Key issues concerning beta-amyloid imaging, voiced by the FDA and the Alzheimers Society, are image interpretation and inter-reader variability. Specific image interpretation training for all reporting clinicians has been introduced.

Studies are in progress on the use of these tracers as biomarkers of AD progression and to assess anti-amyloid therapies. It is hoped this will contribute to drug development in AD, provided that early responses to treatment are sensitive to changes detectable by PET amyloid imaging.

P-126 Optimising body CT imaging for SPECT.CT tumour isotope imaging

Davina Mak; Peter Strouhal; Peter Turner; Fiona Whittingham; Helen Balmforth
Royal Wolverhampton Hospital

Aims: Artefacts are often seen on body CT scans as part of whole body isotope SPECT.CT scans, including respiratory motion and related to air in bowel or air-surface interface artefacts. We looked at ways to minimise these and so optimise CT images from a diagnostic perspective with minimal patient impact.

Impact: CT images acquired for localisation and attenuation as part of whole body SPECT CT tumour isotope scan have greater potential to provide additional diagnostic information, with no additional radiation burden, by the implementation of some or all of these manoeuvres.

Outcomes: Reduction in bowel gas artefacts can be achieved with oral contrast in MIBG and Octreotide scans; soft tissue-air interface artefacts can be mitigated with wedges to subtly alter patient position and normal saline bags for parathyroid scans; respiratory movement artefacts is markedly improved using end-expiration in any chest scans.

Discussion: Minor additional patient preparation with minimal inconvenience for patients or staff produces a greater diagnostic yield from the CT component of SPECT.CT in any neck, chest and abdominopelvic scans. Minimal/no associated risks are seen, no compromise on scanning time encountered and only a minimal increase in staff involvement required.

P-127 "New clear" hybrid imaging for pulmonary emboli

Peter Strouhal; Peter Turner; Helen Balmforth; Fiona Whittingham
Royal Wolverhampton Hospital

Aims: To propose updated (hybrid) imaging algorithm for the detection of pulmonary emboli.

Content: Quick review of development of VQ planar imaging into SPECT and to illustrate how Q SPECT alone can be used as a gatekeeper for CTPA imaging; subsequently detailing a new technique of integrating this with CTPA images