

Results: The most common mechanism of injury was alleged assault 47%. Fractures were detected in 4%. Less than 1% of patients undergoing X-ray underwent corrective surgery. A wide range of signs were recorded, however only three signs were found in fractured zygomatic complex cases: alteration in sensation in the trigeminal nerve infraorbital division, flattening to the mid face and a palpable step deformity.

Discussion: The West Yorkshire Comprehensive Local Research Network are taking the project further as a prospective study with HLA funding with the aim to elicit a link between signs significantly present in cases of fractured zygomas. If a link is found, guidelines could be devised to aid the clinician in requesting imaging in the case of a fractured zygoma.

P-055 MRI of parenchymal brain lesions in behcet's disease

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Aims/ Objectives: To present the MR imaging features of different patterns of brain tissue involvement in Behcet's disease and discuss the main differential diagnoses.

Content: We report three cases of the relatively rare Neuro-Behcet's disease affecting the brain parenchyma and discuss the temporal changes and the main differential diagnoses of MRI finding in such cases with review of related literature.

Relevance/Impact: Awareness of the key MR imaging features of such a disease will help radiologists avoid misinterpretations that alter patients' management.

Discussion: Parenchymal brain involvement in Behcet's disease is rare. Brain MRI, particularly DWI, shows the different patterns and temporal changes of brain lesions and help differentiating neuro-behcet's disease from other disease entities of similar predilection to the mesodiencephalic structures such as ischemia, carbon monoxide (CO) and methanol toxicity, infection and diabetic uraemia.

Clinical: general

P-056 Hip surveillance in cerebral palsy: what the general radiologist needs to know

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Objectives: To illustrate by way of pictorial review how to calculate hip migration percentage and acetabular index on a pelvic radiograph in patients with cerebral palsy. A knowledge of the relevant lines and angles is necessary and this poster will demonstrate these in the accompanying pelvic radiographs.

Content: As part of the hip surveillance pathway for children with cerebral palsy in our region, pelvic radiographs are performed to monitor hip deformity and subluxation, as it can have an impact on the long term management of patients.

We audited the reports of pelvic radiographs performed over a 12 month period in a multisite NHS Trust to determine whether adequate information was being provided.

Relevance: Patients with cerebral palsy are at risk of developing gradual hip deformity and subluxation as part of the natural course of their condition. Early detection can identify the need for appropriate orthopaedic intervention. The information provided in the radiology report is central to this.

Outcomes: In the cases included in our audit, we found that the majority of reports were generic. This highlights the need for further education about the adequate assessment of pelvic radiographs in children with cerebral palsy.

Discussion: Providing detailed information is relatively simple using a digital radiograph; we aim to demonstrate for the general radiologist the simplicity of measuring hip migration percentage and acetabular index. As a result, paediatricians and orthopaedic surgeons will be better equipped to manage these patients, who often have complex needs.

P-057 **18F-FDG PET-CT in the management of unknown primary head and neck malignancy**

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Aim: The aim of this study was to assess the value of 18F-fluorodeoxyglucose positron emission tomography computed tomography (PET-CT) in patients with squamous cell and undifferentiated cancer neck nodes and no primary site on conventional assessment.

Method: 78 patients with neck nodal metastases from an unknown primary cancer were studied. PET-CT was performed in all patients, 1-hour post FDG injection.

Results: Uptake suspicious of an occult primary cancer was found in 46/78 (59.0%) patients. Subsequent investigations confirmed a primary site in the base of tongue in 14, pharyngeal palatine tonsil 14, post cricoid 1, lung 1. PET-CT diagnosed primary cancers in 30/78 patients (38.5%); sensitivity, specificity, PPV, NPV, 30/30 (100.0%), 32/48 (66.7%), 30/46 (65.2%), 32/32 (100.0%) respectively. PET-CT detected additional disease in 4 patients: contralateral nodal disease 2, mediastinal nodal disease 1, and liver metastases 1.

Conclusions: 18F-FDG PET-CT is of value in the assessment of patients with occult head and neck primary cancers. However, false positive results remain a limitation of the investigation.

P-058 **Where's the gonad shield? - a trust-wide audit of gonad shield use in paediatric pelvic radiographs**

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Aims/Objectives: To re-iterate the importance of using gonad shielding in paediatric pelvic radiographs, share the results of our audit, discuss why usage varies and how it can be improved.

Content : We conducted a retrospective audit based on data from four hospitals. All paediatric pelvic radiographs performed within a one-year period were assessed for the presence and correct placement of a gonad shield. In total, 997 films were reviewed in the study. We will also illustrate how and where they should be placed.

Relevance/Impact: The gonads are deemed to be the most radiosensitive organs in the body. Gonad shields are readily available yet there is little guidance indicating when they should be utilised; literature suggests that use in the first radiograph is not essential, but that for follow up (e.g. for Perthes disease, slipped capital femoral epiphyses) they should be used.

Outcomes: 109 (11%) of all the radiographs had a shield; of these 9% were on the first radiograph. 118 radiographs were follow-ups; in this subgroup, gonad shields were used in 25 radiographs (22%). Of these, they were correctly placed in 11 radiographs (9%).

Conclusion: Our suspicion that usage of shields could be improved was founded; discussion with other hospitals in the region found similar issues. Gonad shield usage can be improved; this can be done by reiterating how to correctly place them and clarifying in what scenarios they should be used; we believe that at the very least, this should be in follow up non-trauma radiographs.

P-059 **FDG PET/CT and paraneoplastic neurological syndrome**

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Introduction: Paraneoplastic neurological syndromes (PNS) are a group of central nervous system disorders associated with cancer and onconeural antibodies, suggesting that they are immune mediated. The aim was to establish the incidence of positive scans for occult malignancy within the context of referrals for PET/CT made for possible paraneoplastic syndrome.

Methods: This was a retrospective audit of FDG PET/CT scans performed at St Bartholomew's hospital from February 2006– October 2011, where the clinical history provided was “?

Paraneoplastic". There were 26 patients (16 female) aged 21-81 (mean 56). Antibody status was checked using the "electronic patient record" database.

Results: In 4/26 patients (15%) – the FDG PET/CT scan identified possible occult malignancy. 3/26 (12%) were histologically proven. 7/26 patients had no previous imaging, 18/26 had MRI brain +/- spine, and only 1/26 had a previous full body CT to exclude malignancy. Of the 22 negative PET scans 11/22 had no evidence of malignancy on future imaging, 11/22 had no further imaging. 7/26 (27%) had antibody testing, with 3/4 patients with positive PET/CT scans testing positive.

Discussion: FDG PET/CT has a high sensitivity for detecting occult disease and is hence a useful screening test in the investigation of patients with paraneoplastic syndrome. This audit highlights the referral needs to be more detailed and less than 1/3 of patients had onconeural antibody analysis performed prior to the PET/CT study, thus perhaps we should only perform PET/CT when onconeural antibodies have been performed and there is a strong clinical suspicion of PNS.

P-060 **An audit of GP paediatric ultrasound requests**

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King's College Hospital*

Aims: To evaluate validity, volume and type GP paediatric ultrasound requests.

Content : Four months of GP paediatric ultrasound requests audited. The number and type of requests were examined to see if they were indicated according to "Making Best Use of Radiology (MBUR)" guidelines. The ultrasound findings and pathology pick-up rate was also analysed.

Relevance: There are numerous paediatric ultrasound requests and paediatric clinic referral is encouraged for complex/chronic pathology prior to ultrasound. Clinical information provided is often limited, based on this many are inappropriate. Investigation may induce anxiety in parents or potentially delay diagnosis in absence of findings. Additionally inappropriate requests prolong waiting lists and increase costs, minimising unwarranted requests is necessary.

Outcomes: 219 scans in a tertiary centre were analysed. 2/3 of requests were warranted via MBUR. Testes, soft tissue and neck ultrasounds were most frequently indicated. Foot, spine and kidney scans were least indicated. 2/3 of scans had no abnormality and 2/3 were unable to explain symptoms. Utilising MBUR criteria increased detection of significant abnormalities by 71%.

Discussion: Renal ultrasounds have a low abnormality detection rate and may be falsely reassuring, explaining why paediatric clinic assessment is suggested. MBUR is a useful guidance tool for improving detection. However, ultrasound is an adjunct to clinical examination rather than replacement. When performing scans it was found GP's were not examining correct creases when assessing hips and unaware of concerning features for sacral dimples or lymphadenopathy. A joint meeting with GP's and paediatricians was conducted to advise on MBUR

P-061 **Accuracy of PET-CT in nodal staging of oesophageal adenocarcinoma**

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Cardiff and Vale University Health Board*

Aim: The aim of the study was to review the correlation of oesophageal adenocarcinoma nodal disease on PET-CT and histology, taking into account factors such as neoadjuvant chemotherapy and duration between imaging and surgery.

Method: We retrospectively reviewed all PET-CT performed for biopsy-proven oesophageal adenocarcinoma between September 2010 and September 2011. Data collected included PET-CT nodal staging and their maximum standardised uptake value (SUV max), date of surgery, neoadjuvant chemotherapy and time from PET-CT to surgery.

Results: During the study period, 75 oesophageal adenocarcinoma patients underwent PET-CT for biopsy-proven oesophageal adenocarcinoma. The demographic distribution is 66 male and 12 female, with an average age of 64 years. PET-CT nodal status was accurate in those who received no neoadjuvant chemotherapy and proceeded to surgery within four weeks. PET-CT accurately

demonstrated the nodal status in almost half of two patient groups, 1) patients who received neoadjuvant chemotherapy prior to surgery, and 2) those had no neoadjuvant chemotherapy prior to surgery. Nodal staging is histologically up-staged and down-staged in equal proportion in the remaining patients. PET-CT failed to show any focal FDG uptake in the primary tumour in four patients, one of whom had positive lymph nodes at surgery after 47 days of imaging.

Conclusion: Although oesophageal adenocarcinomas are known to have low grade FDG uptake, the nodal accuracy is not affected if surgery is performed soon after the PET-CT imaging. Factors such as neoadjuvant chemotherapy and prolonged (> four weeks) duration between imaging and surgery alter the accuracy of nodal status.

P-062 The added benefit of using SPECT/CT with sestamibi over the sestamibi- pertechnetate subtraction scan, with histo-pathological correlation

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Objectives: Parathyroid pathology has traditionally been investigated using MIBI-pertechnetate subtraction planar imaging. The primary purpose of this study is to validate the use of SPECT/CT in the detection of parathyroid disease by patho-radiological correlation. The second purpose is to compare both techniques mentioned above and their ability to detect parathyroid disease.

Methods: 206 patients who have had parathyroid imaging were identified retrospectively. 102 of these patients underwent MIBI-pertechnetate subtraction planar imaging. 104 patients underwent imaging with SPECT/CT. The radiological reports of these techniques were analyzed and recorded. 76 patients underwent surgical excision and therefore had histo-pathological data. Radiological data was compared with histo-pathological specimen results and the subsequent information analyzed statistical tools.

Results: Out of 41 patients who had planar subtraction imaging, 27 had radiotracer uptake and subsequent positive histo-pathological confirmation. Two patients had no uptake on planar subtraction imaging, confirmed with negative histopathology. The number of false positives and false negatives were four and eight respectively. In contrast, out of the 35 patients undergoing SPECT/CT, 33 had radioisotope uptake which was confirmed histo-pathologically. One patient was found to have no uptake on SPECT/CT and also histo-pathologically negative. Finally, there was only one false positive in the SPECT/CT cohort of patients.

	SENSITIVITY (%)	SPECIFICITY (%)	ACCURACY (%)	PPV/NPV (%)
SUBTRACTION IMAGING	77.1	33.3	70.7	87.1/20
SPECT/CT	100	50	97.1	100/97.1

Conclusions: SPECT/CT has shown a clear improvement in identifying histologically positive and negative disease in relation to radiotracer uptake. This is confirmed by the high positive and negative predictive values. Furthermore, this technique has found to be more sensitive, specific, and accurate when compared to conventional planar subtraction imaging.

P-063 A holistic approach to improving the claustrophobic patient's experience in an MRI unit

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Our aim was to ensure a consistently high level of care, for every patient, for every scan, within the setting of a new MRI unit with two state of the art scanners. One scanner is an "Open" MRI, particularly useful for claustrophobic, bariatric, paediatric, and special needs patients.

We used the opportunity of the redesign of the unit to investigate and implement a variety of holistic techniques aimed at improving the claustrophobic patient experience and compliance for MRI scanning. We considered all sensory stimuli and communication methods. Our chosen

approaches included neuro-lingistic programming, developing rapport, aromatherapy, ergonomics and spatial design, including feng shui principles. Following their scan, all patients were asked for their feedback on the holistic approach.

98% of patients reported that they felt that the MRI team empathised with their levels of anxiety, therefore reducing them. Although 10% of the patients surveyed had previously attempted and failed to complete their MRI scan, all but 2 concluded their scan successfully on the open MRI after the new approach was adopted.

This suggests that holistic techniques are useful, even subtle or subliminal ones, in making the MRI scan experience more comfortable and successful. We have found that our holistic approach enhances the patient experience and in turn improves our service quality. As with so many innovations in service delivery that are initiated by addressing the specific needs of a minority of patients, all of our service users have benefited as a result.

P-064 A pilot study investigating the long-term effects on function, bone mineral density and lean tissue mass post fracture in a female postmenopausal population

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Aim: To investigate long-term outcomes of lower-limb fracture in a post-menopausal population.

Relevance: Disuse osteopenia has been reported as a long-term consequence of complicated lower limb fracture [1]. This study investigates the effects of lower-limb fracture and immobilisation on a range of physiological and functional parameters. Thirteen postmenopausal women were recruited who had sustained a lower-limb fracture (excluding hip fracture) between 1 and 10 years ago (mean 3.5 yrs) and during the post-menopausal period. The results were compared to 45 postmenopausal controls. Lower limb function and activity were recorded and bone mineral density (BMD) and lean tissue mass measured using DXA (GE Lunar Prodigy).

Outcomes: The fracture group had significantly lower pedometer readings of 6006 steps v's 9752 steps ($p < 0.001$) for controls. Lower limb function scores were 58.3/80 v's 72.7/80 for the fracture group and controls respectively ($p < 0.001$). The fracture group had reduced BMD measurements compared to the control group, but no difference in lower limb lean tissue mass was found between the groups. No significant differences were found between the ipsi- and contra-lateral BMD measurements at the hip in the long-term fracture group.

Discussion: These results demonstrate a long-term impairment in lower-limb function and activity post lower-limb fracture in postmenopausal women. Lower BMD results in the fracture group suggest that reduced BMD is likely to play a role in the occurrence of these lower-limb fractures but no significant long-term differences in ipsi- and contra-lateral BMD at the hip are apparent post fracture.

[1] Knapp KM et al. CSM, 2010: 629020

P-065 Characteristics of prevalent round breast cancers

Michael Crotch-Harvey, East Cheshire NHS Trust

Introduction: The revised NHSBSP standards for cancer detection rates in the prevalent round are challenging. Meeting these standards will be even more problematic following the age extension of the screening programme, as there will in effect be two 'prevalent' rounds. In an attempt to improve our cancer detection rate, without increasing recall rates, a retrospective study of cancers detected in the appropriate age range was undertaken.

Methods: All breast cancers diagnosed between Jan. 2009 and Mar. 2011 were reviewed and women aged between 46 and 52 at time of diagnosis were identified. Histological and radiological features were recorded. These features were then compared with a previous audit encompassing all age groups.

Results: Ninety cancers were identified in 85 women, evenly distributed between symptomatic and screen detected. In comparison to other age groups, tumour size was relatively small and there was a high proportion of DCIS. A dense mammographic background was noted in 42% of cases. Masses and microcalcifications were the predominant radiological abnormalities. Of the 14 cancers equal to or less than 15mm, irregular masses associated with microcalcification comprised 50%.

Conclusion: In this age group malignancies are most often manifested by irregular masses, microcalcifications or a combination of both. The introduction of digital mammography will be helpful in the dense breast and in the detection of microcalcifications but there is evidence that small masses are less well seen. Optimising software algorithms for such abnormalities in this group will therefore be important.

P-066 **Lung cancers with rare paraneoplastic phenomena**

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Aim: To highlight two rare cases of Paraneoplastic manifestations of lung cancer

Case 1: A 65year old gentleman who presented in the Accident and Emergency department drowsy. Finger prick blood sugar was low and laboratory test confirmed a blood sugar of 1.9mmol/L. He was a known case of mesothelioma. Serum C-peptide and insulin were normal, and insulin-like growth factor level was elevated. He was managed with regular intravenous glucose and glucagon during hypoglycaemic attacks.

Case 2: A 74year old man, known bronchogenic lung cancer on palliative radiotherapy. He presented with unsteady gait. Examination revealed cerebellar signs, and brain imaging did not provide the a diagnosis for this. However admitting blood showed an eosinophil count of 26.64. Previous blood test showed a gradual increase in eosinophils. Immunochemistry was negative for autoantibodies. He had a trial of steroids which did not improve his neurological symptoms or eosinophils.

Outcome: the patients in both cases died within 6months of these symptoms. No described treatment for both cases.

Discussion: Paraneoplastic syndromes are due to production of chemokines by the tumor cells or generation of antibodies against the tumor which cross with normal cells. They do not represent metastasis.

Commonly described associations with lung cancers are Lambert Eaton myasthenic syndrome, Cushing's syndrome, Hypercalcaemia.

Both hypoglycaemia and eosinophilia are known but rarely reported and indicate a poor prognosis. No treatment is described but usually directed at the underlying tumor for which both cases were palliative.

Immune modulation is reserved for those with positive autoantibodies eg anti-Ri, Hu, Yo.

P-067 **Role of diagnosis and staging in the management of lung adenocarcinoma**

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Lung cancer is the leading cause of cancer related mortality worldwide. Adenocarcinoma is a subtype of non-small cell lung cancer and its frequency is increasing rapidly as compared to squamous cell carcinoma to become the most common subtype of non-small cell lung cancer. Comprehensive literature review is conducted to evaluate role of diagnosis and staging in the management of lung adenocarcinoma. Patient history, physical examination, laboratory tests, histology and imaging plays vital role in the diagnostic evaluation, staging work-up and metastatic assessment of patients with suspected lung adenocarcinoma. Treatment and prognosis are determined through diagnosis and staging of disease spread. For an early stage, surgery is the preferred method of treatment whereas for advanced disease a multi-modality approach is adapted including, chemotherapy and radiotherapy. Diagnostic imaging in conjunction with clinical and physiological assessment helps to identify tumour at an early stage which in turns effects the treatment planning. PET-CT scanning along with mediastinoscopy and biopsy determines the most

accurate staging of lung adenocarcinoma. This staging is very critical portion of the disease management because patient outcome depends upon stage adapted therapeutic strategy. Even a small change in the staging (e.g. IIIA to IIIB) can significantly alter the treatment selection. Therefore, the choice of imaging modalities and other methods of patient assessment for diagnosis and staging require careful consideration and evaluation before employment. Further developments in the assessment technology are very promising and will further improve the accuracy of diagnosis and staging which in turn will facilitate better patient management.

Imaging Informatics

P-068 **Audit on GP requests for USS abdomen in which an abnormality is found**

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Introduction: 1) % of GP requests in which a clinically relevant abnormality is found on USS abdomen scan should be no less than that from outpatient requests.

2) Open access to GP's should be provided if requests from GP's yield as many abnormal results as those from hospital doctors from outpatient clinic. If not it may be necessary to agree new guidelines.

Methods: A retrospective study of a randomly selected sample of 100 GP and 100 OP requests over a period of 6 months. Data collection with the help of PACS system. All inpatient/follow up/ surveillance scan requests were not included.

Results: 45% of GP referrals had relevant abnormal findings, 38% of OP requests had relevant abnormal findings on USS abdominal scan. 95% of USS requests were done by ultrasonographers.

Conclusion: To continue with current protocol of providing open access for USS requests to GP's. Feedback forwarded to GP's and OP's doctors with copy of audit results. Plan to re-audit in 12 months. Importance of Ultrasonographers in cutting down workload of consultant radiologists.

P-069 **Communication of urgent and significant radiological findings**

Ramya Thiagarajah, Peninsula Radiology Academy

Aims/ Objectives: To assess the standard of communication of urgent and significant radiological findings in our department against the expectations of our referring hospital clinical colleagues.

Content of Presentation: Introduction, Method, Survey Questions & Results, Conclusion

Relevance/Impact: Communication of urgent and significant radiological findings is an important issue which continues to be an area of concern, as evidenced by several recent published articles. One of the continuing hot buttons is results of urgent and significant clinical findings slipping through the cracks with a failure of the Radiologist to communicate the results to the Referring Clinician (Yee 2010, Berlin 2011).

Outcomes/ Discussion: The 100% Target recommended by the RCR was not achieved.

The survey does however reflect positively on the current service provided and the results are in line with a previous referrer satisfaction audit that was completed in our department in 2011.

It also highlighted areas of concern and possible room for improvement, which can be discussed further at the next departmental managerial meeting.

P-070 **IRMER regulations: compliance rate of radiograph reporting by non-radiology clinicians**

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Aims/objectives: To determine the compliance with the IRMER 2000 regulation 7(8) - that all radiographic exposures require clinical evaluation to be recorded - for radiographs reported by non-radiology clinicians.