

Ultrasound findings of these referrals were mainly epididymal cyst 38%, normal 35% and hydrocele in 7%. Malignancy was diagnosed in 3 cases only (Age range 18-44 years).

Discussion: Majority of ultrasound findings were normal or benign conditions and performed with poor clinical indications.

Testicular cancer is uncommon after fifth decade.

Robust training of GPs on scrotal diseases management may improve efficiency.

Ultrasound showing an innocent condition can be reassuring for patients, but GP with confident clinical skills can do the same.

P-034 **Audit of Down syndrome screening in ultrasound**

Michelle van Zyl, Vin Majuran

Kingston Hospital NHS Trust

Downs syndrome affects approximately 1:1000 pregnancies in the UK every year. Our maternity department offers women a combined screening test at 11 - 14 weeks, comprising an Ultrasound scan to measure Crown Rump Length (CRL) and Nuchal Translucency (NT), and a maternal blood test. NT is the area of subcutaneous fluid at the back of the neck which is present in all fetuses. Increase in NT thickness can be associated with chromosomal abnormality. Operators must accurately measure NT to improve detection rates and keep false positive rates (FPR) low.

Downs syndrome screening Quality Assurance Support Service (DQASS) monitor NT and CRL measurements. Individual performances are compared to the expected distribution curve and assigned a Green flag (good), Amber flag (satisfactory) or Reg flag (needs further training). Fetal Anomaly Screening Programme (FASP) guidelines state that the local Screening Support Sonographer informs all operators of their DQASS flag and reviews images to improve performance. Sonographers were asked to submit 1 CRL image and 3 NT images to be scored against the FASP criteria. Findings were presented.

Prior to the audit (03/2011), 100% sonographers had an Amber flag, and the department had a DR of 76% and FPR of 2.4%. Following the second DQASS cycle (09/2011), the department has 33% Green flags and 66% top Amber with an improved DR of 91% and FPR of 3.4%. (expected DR 83%, FPR 3.4%).

The aim of the audit; to improve antenatal screening, has been achieved, and further image review sessions will commence in April 2012.

Clinical: MSK

P-035 **The paediatric cervical spine: a pictorial review of developmental anomalies**

Mike Mackenzie; Sandra Monks;

Pennine Acute Trust

Urgent radiological assessment of the paediatric cervical spine can be challenging since there are numerous confusing vertebral manifestation of normal anatomical variations, ossification centres and synchondroses (Fesmire, 2004). More so, the paediatric spine is the location of both congenital and acquired conditions, which presents particular risks to the reviewing advanced practitioner radiographer. Radiological appearances which infrequently occur and offer challenges to emergency and radiology clinicians, such as congenital bony and ligamentous disorders are discussed and pictorially reviewed.

Proficient recall of anatomical variants is paramount for accurate image interpretation. Many cervical variants include anatomical wedging (C3/4), exaggerated predental space, widening of intervertebral spaces, pseudosubluxation, reduced or reversal of cervical lordosis and pseudo fractures are amongst some of the difficult radiological manifestations that clinicians encounter (kilmo, 2007).

Lustrin (2003) and Jeneau (2010) explains that cervical spine trauma in children is typically located in the superior vertebral region owing to the unique biomechanics and anatomy with increased threat of neurologic injury rather than damage to skeletal structures. Kilmo (2007) clarifies that although

serious injuries to the paediatric cervical spine occur infrequently, there are biomechanical features that allow it to significantly flex and extend which presents unfamiliar scenarios in the diagnosis, in comparison with adults.

This presentation will pictorially review and discuss paediatric upper cervical anomalies which can mimic presentations of trauma.

P-036 Spineanalyser: precision and agreement using dual-energy lateral vertebral assessment scans

aren Knapp; Ben Rock; Callum Birch; Susan Hopkins; Sarah Gallimore; Andy Shallcross; University of Exeter; Royal Cornwall Hospital;

The aim of this study was to evaluate the precision and accuracy of SpineAnalyser software (Optasia Medical) using lateral vertebral assessment (LVA) images acquired on the GE Lunar Prodigy.

LVA images from 64 men, mean age (SD) 58.4y (12.0), mean BMI 29.9kg/m² (4.6) were analysed using the standard GE Lunar software, SpineAnalyser, and evaluated by two independent readers using the Genant semi-quantitative scale. The intra-operator vertebral height precision error was calculated using 10 scans analysed 10 times each by one operator.

SpineAnalyser provides a quick and easy method for identifying vertebral fractures from radiographs and other x-ray-based technologies. This study investigates if this software can be applied to dual energy LVA scans from the GE Lunar prodigy.

The percentage agreement between all methods for individual vertebrae (n=573, n fractures=17) ranged from 96 to 98.6%. The best agreement was between GE Lunar and SpineAnalyser quantitative morphometry. The precision results ranged from RMSCV% 0.19 to 7.14% (65 to 90 df) and 2.5 to 3.0% when calculated across all vertebrae (1017 df). T4 was excluded due to the low numbers of scans where this was adequately demonstrated. The best precision was in well-defined thoraco-lumbar vertebrae.

These results demonstrate that SpineAnalyser provides a reproducible method for measuring vertebral height and quantifying vertebral fractures from dual energy LVA scans. The agreement between SpineAnalyser and GE Lunar software is comparable to the agreement between independent readers. SpineAnalyser is a fast reliable method for quantifying vertebral height measurements and identifying vertebral fractures.

P-037 Schematic presentation of the causes of spinal ankylosis

Asimena Mermekli; Alpesh Mistry; Andoni Toms; Radiology Academy, Norfolk and Norwich University Hospital, Norwich

Aims/ Objectives: The objectives are to identify the different types of spinal ankylosis, examining their morphological characteristics and patterns of disease.

Content: The following types of ankylosis are presented: degenerative, inflammatory, neuropathic, traumatic and infective. Additionally, less frequent causes are discussed: fluorosis, acromegaly hypoparathyroidism and secondary to medication. Schematic diagrams of the spondyloarthropathies are presented to aid with the differential diagnosis.

Relevance/Impact : An outline of the causes, typical appearances and patterns of spinal ankylosis enables a systematic and logical approach to differentiating the diagnoses. This knowledge and enhanced understanding are necessary when reporting plain radiographs of the spine and sacroiliac joints.

Outcomes: Osseous spinal excrescences causing ankylosis can be seen in a variety of conditions and can originate from the intervertebral disc or paravertebral structures. Radiographically, some changes are subtle and similar for a number of conditions, whereas others are distinct.

Discussion: There are different appearances of the spine and sacroiliac joints depending on the underlying condition. In some cases more than one pathology can co-exist, but usually one is prominent. A discussion on the causes of ankylosis and the distinguishing features are presented.

P-038 The utility benefit of CT in the imaging of scaphoid injury – no longer a pain in the wrist!

Stephen Lyen; Andy Planner;

Great Western Hospital, Swindon

Aims/Objectives: The aim of our project was to evaluate patients who underwent CT for suspected scaphoid fracture, assessing their long term outcome and the clinical efficacy of a CT based strategy.

Content: 100 patients had CT for suspected scaphoid fracture from May 2008 to Dec 2009. All relevant imaging and electronic casenotes were reviewed over a minimum of 23 months from time of injury. We demonstrate the results of patient follow up including imaging, number of orthopaedic outpatient appointments, clinical diagnoses and management.

Relevance/Impact: The optimum diagnostic imaging in scaphoid trauma remains controversial. Occult scaphoid fractures are common in medical malpractice and the burden of patient follow-up can be demanding. CT is attractive as a second line investigation to stratify patients due to its relatively low cost, speed of use and accessibility compared to MRI.

Outcomes: Mean time from injury to CT was 23 days. 80/100 CTs were normal. 20/100 showed occult fractures not appreciated on plain film (4 scaphoid, 11 radial, 2 triquetral, 3 trapezium). 4 patients had subsequent imaging (total 3 MRIs, 1 US, 3 scaphoid XR), all were normal. 6 patients with a normal CT had >1 follow-up outpatient appointments for persistent pain, no fractures were subsequently diagnosed. All patients with a normal CT were managed conservatively with no serious complications.

Discussion: CT would appear a safe and effective tool for stratifying patients with scaphoid injury and should form part of a departmental imaging algorithm. This potentially has a huge impact in reducing follow-up clinic appointments.

P-039 Radiography of the acromioclavicular joint

Zohaib Yaqub; Sabah Awan;

Hull and East Yorkshire Hospitals NHS Trust; Airedale NHS trust;

Acromioclavicular (AC) joint injuries are generally caused by a direct blow to the shoulder or fall on to an outstretched hand. AC injuries are more prevalent in athletes. Patients with AC injuries present with pain around the AC joint area and reduced range of movement. Following the initial clinical assessment, the patient has a radiographic assessment to confirm the diagnosis.

Antero-posterior view of the shoulder is a routine radiographic projection for patients with suspected AC joint injury. However, there is variation in literature and clinical practice about the secondary projections used from no secondary projection to Zanca, axillary lateral and stress views. This poster aims to improve radiographers' understanding of the the AC joint anatomy and the type of AC joint injuries. Moreover, the poster presents the findings of a systematic literature review performed by two radiographers for literature published between 1970 and 2011 to inform practice of the optimal radiographic projections for diagnosing AC joint injuries.

P-040 Metatarsalgia - a pictorial review of the various differential diagnoses and their imaging

Teik Chooi Oh; Syed Ali; Simon Beardmore; Nitin Ramamurthy; Raj Kumar; Tony McEvoy;

Royal Preston Hospital, Lancashire Teaching Hospitals Foundation Trust

Metatarsalgia is a common forefoot pain problem presenting to clinicians. There is an extensive range of differential diagnosis available and some cases are not very specific from history and clinical examination alone. Imaging plays an important role, ranging from plain x-rays and ultrasound to CT and MRI as well as radionuclide imaging.

We present a pictorial review of the various forefoot pain differentials, using various modalities described above. Diagnoses extend beyond the metatarsals and those shown include soft tissue masses (Morton's neuroma, bursitis, Giant Cell tumours, tendon disorders (including tears and tendinopathies), plantar plate injury, stress fractures, Freiberg's disease, sesamoid pathology

(including fractures and sesamoiditis) various arthropathies as well as the less common soft tissue and bony neoplasms.

Pictorial review will also discuss the various ideal first-line and follow-up imaging modality for each of the diagnoses. This will help the Primary care and Specialist doctors to refer patients for the correct imaging.

P-041 Neck of femur fracture? or not?

*Nadeem Butt; Alastair Forrester; Moustafa El-Badawy;
Hairmyers Hospital, East Kilbride*

Aims/Objectives: Hip fracture is a major public health issue due to an ever-increasing aging population. About 70,000-75,000 hip fractures occur each year and annual cost for all UK hip fractures cases is about GBP 2 Billion. Plain film for suspected neck of femur fracture is a common investigation. However, occasionally plain films do not support clinical findings due to either limited sensitivity or other factors. We perform MRI in selected patients to identify plain film occult fractures. This study analyses effectiveness of this protocol.

Methods: Radiology information system identified 204 cases of inpatient MRI pelvis, lower limbs and hips since introduction of this algorithm. 80 cases were performed for other indications and were excluded. Another 8 cases were excluded because of inadequate sequences. 116 cases were reviewed.

Outcome: 32 (27.5%) of MRI cases showed occult Neck of femur fracture. Insufficiency fractures, significant soft tissue injuries and pathological fractures constituted 25 (21.5%), 14(12%) and 8(7%) respectively. No abnormality was found in 32 (28%) cases.

Discussion: MRI pelvis should be performed on all patients with suspected neck of femur fractures, normal plain films and immobility. Our study demonstrated a large number of cases with occult pelvic and NOF fractures and other abnormal findings despite normal plain films. Identification of such cases contributed positively in management of these patients by timely diagnosis and aiding in treatment planning.

References: 'Hip Fracture: The management of hip fractures in adults'. (CG124: National Institute for health and clinical excellence.

P-042 Effectiveness of intra-articular steroid injection for hip arthritis

*Nawaraj Subedi; Clare Groves;
Bradford Teaching Hospitals NHS Trust*

Background: Hip osteoarthritis is a common problem. Total hip arthroplasty is the definitive treatment but limited by higher cost and short lifespan of prostheses requiring revision surgeries, and some unfit elderly patients may prefer to avoid surgery altogether. Intra-articular steroid injection is an effective alternative which may help delay/avoid the hip replacement. With this study, we aim to demonstrate the benefits of hip injection across the study cohort with varying degree of disease severity.

Methodology:Prospective study of patients attended for fluoroscopic intra-articular steroid injection in our department in 9 months study period. Comparative statistical analysis of Oxford Hip Pain Score pre- and 6-8 weeks post intra-articular injection was performed. Hip radiographs of all patients were categorised as normal, mild, moderate or severe disease (four categories) based on modified Kellegran-Lawrence severity scale and improvement on hip score on each of these disease severity categories was assessed.

Results:The cohort of 100 patients comprised M:F ratio of 36:64 with a mean age of 58 years. The mean increase in post procedure hip score of 7.32 points confirms statistically significant benefits of the therapy ($p < 0.001$, 95% CI; 5.55- 9.09). No significant difference in pre-injection hip score within and between the four severity categories ($p = 0.51$). Significant improvement in hip score ($p < 0.05$) is demonstrated in each of the four severity categories.

Conclusion: This study confirms that intraarticular steroid injection is highly effective therapeutic measure for hip osteoarthritis across all grades of disease severity.

P-043 Now an e-poster

P-044 Evaluation of ALVAL using US in patients with MoM

Teik Chooi Oh; Syed Ali; Simon Beardmore; George McLauchlan; Jeremy Viner; Anas Hatab; Royal Preston Hospital, Lancashire Teaching Hospitals Foundation Trust

Metal-on-metal (MoM) hip replacements are increasingly common in the past decade but up to 3% experience a complication with aseptic lymphocyte-dominated vasculitis associated lesion (ALVAL). Patients with ALVAL develop a non-specific hip pain which is difficult to diagnose clinically.

Traditionally, the imaging of choice has been Magnetic Resonance Imaging (MRI) but the local streak artefacts from metallic implants can sometimes degrade the image quality and obscure an early ALVAL. Increasingly, our Radiology department evaluates ALVAL queries initially with Ultrasound (US). We have found US to be an effective tool in excluding or confirming ALVAL. In addition, there can be features of adverse reactions to metallic debris (ARMED) such as an echogenic effusion. This along with biochemical markers can help aid in ALVAL.

We present various appearances of ALVAL and other imaging features of adverse reactions to metallic debris on US and MRI.

Accurate diagnosis of ALVAL is important because intraoperative confirmation of chronic inflammation suggestive of ALVAL will necessitate a replacement of the prosthetic component surfaces. By establishing accurate diagnosis of ALVAL using US, we can avoid the more resource-heavy MRI as well as its potential downfalls with local artefacts.

P-045 Direct GP access for soft tissue lump ultrasound imaging

Basavaraj Chari; Sylvia Connolly;

Warrington and Halton Hospitals NHS Foundation Trust; St Helens and Knowsley NHS trust; Whiston Hospital, Prescott;

Introduction: Soft tissue lumps and bumps are among the common presenting symptoms in the primary health care sector. Such lumps, bumps, nodules or masses comprise a broad and potentially bewildering array of benign and malignant processes. The origin of these lesions could be cutaneous, subcutaneous, involving muscle or bone and it is a difficult decision at the primary health care level for an appropriate hospital referral for evaluation. The management of such lesions depends upon their nature and the imaging is of paramount.

Methods: We performed a retrospective analysis through the radiology information system looking specifically for patients who were referred directly by GP for soft tissue lump ultrasound scanning. The request and report were analysed and demographics, outcome i.e. benign, malignant or inconclusive lesions which proceeded to have further imaging were tabulated.

Results: A total of 215 GP referrals were included in the study (93 males, 122 females). The age range was between 1 and 99 years (mean 47.85). Total number of normal scans - 57, benign findings - 139, obviously malignant - 2, indeterminate - 17. Further imaging included - MRI in 15, repeat US in 4, CT in 2 and Plain films in 2 patients. From further imaging, confirmed malignant lesions - 4 (1.86%), benign - 9 and normal studies - 7.

Conclusion: Ultrasound is an ideal tool for soft tissue imaging. A direct access given to the primary care sector helps early diagnosis and effective management. It helps increasing diagnostic confidence to the GP and reduces unnecessary patient anxiety.

Clinical: Neuroradiology

P-046 Imaging skull base pathology

Uma Viswanathan Nair; Kimberley Lam; R Hanlon; H Lewis-Jones;