Conclusion: This research demonstrates that the dose from the CT component of the hybrid scanner results in the lowest absorbed dose to the reproductive organs.

Clinical: Paediatrics

P-109 Paediatric radiography: back to basics

Nadine Jeakings; Michael Sciven

University Hospital Southampton FT

Aims/Objectives: The screaming child can strike terror in a radiographer, this presentation aims to help remove those fears and provide tools to obtain the best diagnostic image.

Relevance: With up to 50% of children presenting to radiology departments in a typical year the SCoR believe that all radiographers should be competent in imaging children.

Content: Paediatric imaging spans a vast age and developmental spectrum from 23 week old premature to 18 years; from 500 gram babies to 20 stone plus teenagers. This presentation will look at the developmental differences between the ages and how to tailor your imaging approach to the age and developmental level of the child. We will also discuss coomon paediatric specific pathologies and the routine imaging they require and the best ways to achieve the best images possible.

Paediatric patients are more susceptible to radiation than their adult counterparts; we will look at ways to reduce the radiation burdens on the paediatric population. Often ultrasound can be used as the first line imaging modality due to the slim body habitus, and we will discuss when ultrasound is indicated in preference to radiation-based examinations.

Discussion: Paediatric radiographs of common examinations will be reviewed and we will discuss why the images are or of good/bad diagnostic quality and either how to improve them or for good diagnostic, how they were obtained.

P-110 Something sweet – does sucrose have a role in paediatric radiology?

Nadine Jeakings; Howard Portess; Heather Emery; Vijay Baral

University Hospitals Southampton FT

Relevance: One of the universal challenges within all modalities of paediatric imaging is keeping the patient still during image acquisition. We look at the use of sucrose in the neonate and infant populations and reviews the evidence base behind this. It discusses the indications and contraindications for the use of sucrose and our experience with its use. We also compares the use of sucrose to other methods of keeping the patient still during the imaging exam.

Discussion: Sucrose is used internationally on neonatal units, including the trust's neonatal unit . It is employed for painful and distressing procedures for example heel prick blood test. The imaging examinations performed in Children's X-Ray department are not painful but the patient may become distressed due to the unfamiliar environment and people, as well as being undressed and required to be kept still in a predefined position. Certain examinations also require the baby to be starved prior to the examination making the feed and wrap technique unachievable. We have introduced the use of sucrose in our department because sedation is rarely used and analgesia is not necessary. Following a brief training session regarding the safety and appropriate use of sucrose, it is both authorised and administered by the radiographers.

P-111 Paediatric major trauma CT - early experiences within a newly established major trauma centre

Franchesca Wotton; Harriet Barber; Sarah Hamilton; Tinu Purayil; Julia James; Sharon Brown; Judith Foste

Peninsula Radiology Academy

Background: Our centre achieved Major Trauma Centre (MTC) status in April this year and it is well known that there is a current lack of a nationally recognised paediatric trauma CT protocol. Within our centre, paediatric patients who sustain major trauma will often undergo a dedicated trauma CT scan based upon the adult trauma CT protocol – dual-phase single acquisition including the head to the proximal/mid femur. The aims of this poster are to demonstrate our early experiences of dedicated paediatric trauma CT (patients aged 18 or less) within a newly established major trauma centre based upon the results of a 4 month internal audit.

Methods: An audit was carried out incorporating 1 month pre and 3 months post achieving MTC status. Examples of the parameters included are:

(1) Patient demographics

(2) Mechanisms of injury

(3) Number of patients receiving dedicated trauma CT versus those who had other imaging.

(4) Injuries demonstrated by the dedicated trauma scan

(5) Radiation doses

Discussion: The results of our audit showed that 12% of all patients receiving a dedicated trauma CT within the 4 month period were aged 18 or under. However, 42% of these paediatric trauma scans were normal, and sometimes a trauma CT was performed on the basis of mechanism of injury alone. The radiation doses could be lowered by modifying technique with a more targeted CT based upon the clinical picture, which further compounds the requirement for a specific paediatric trauma CT protocol.

P-112 Imaging characteristics of spontaneous duodenal haematoma in children

Rebecca Geach; Rebecca Hunt; David Grier

Bristol Royal Hospital for Children

Aim: To illustrate the imaging characteristics of spontaneous duodenal haematoma in children

Relevance: Intramural duodenal haematoma is commonly described as a complication of blunt abdominal trauma, non accidental injury and as a result of endoscopic intervention. Spontaneous haematomas however are rarer and factors that predispose include, anticoagulation therapy, idiopathic thrombocytopenic purpura (ITP), thrombophillia, leukaemia and lymphoma. The intramural haematoma can be an uncommon cause of acute bowel obstruction and can be overlooked when there is no history of trauma. The diagnosis should be considered in any child presenting with obstruction. Knowledge of its characteristic imaging findings across different modalities is helpful for prompt diagnosis and appropriate supportive management as surgical intervention is rarely required and may be hazardous.

Content: We illustate two cases of spontaneous intramural haematoma in children both of whom were sufferring with leukaemia and presented with acute bowel obstruction. The first case was diagnosed and followed up via ultrasound and we illustrate the key diagnostic ultrasound and doppler features. This is supported in the second case with chaacteristic imaging feactures demonstrated on both barium studies and computed tomography.

Conclusion: Spontaneous intramural haematoma although rare can be a cause of acute bowel obstruction in children. An awareness of the imaging characteristics acros a range of modalities allows a promp diagnosis and appropriate management.

P-113 Paediatric craniocervical swellings - old wives tale- a radiologic perspective

Nawa Sumbwanyambe; Z Al-Ani; A Elsayed; K Precod

North East Lincolnshire; Manchester Radiology Training

Aim: A learning review on suggested diagnostic algorithm in managing paediatric craniocervical masses.

Content. In a short case review collection, we look at different clinical scenarios of children presenting with facial and neck swellings. In conjunction with the clinical history we explore the presentation, pathologies and management pathway for the different masses according to the relative anatomic sites , differentials to be considered and age old lessons taught in the basics of medical education.

Conclusion: A multidisciplinary approach is required in the evaluation and management of children presenting with craniocervical masses. A wide differential list should always be considered and high index of suspicion should be maintained

P-114 Fetal intra-abdominal calcification: location, location, location

Yousef Alwan; S Saipriya; Janette Keit; Chris Rawlingson; Carol Wallace

Blackpool Teaching Hospitals, NHS Foundation Trust

Aims: The role of the second trimester anomaly scan is to determine the presence of structural abnormalities. An abnormality that may be detected is fetal intra-abdominal calcification. The aim of this poster is to discuss by way of pictorial review causes of fetal intra-abdominal calcification.

Content: Anomaly scans in our centre have detected five cases of intra-abdominal calcification in the past five years. The location is important in determining the aetiology. Calcification may be within the peritoneum, limited to the liver or localised to a mass.

Peritoneal calcification can be a sign of meconium peritonitis. The causes include jejunal or ileal atresia. Coexisting abnormalities include dilated bowel and fetal ascites. A meconium pseudocyst may form in contained perforation.

Fetal liver calcifications can be on the surface and related to meconium peritonitis, or intra-parenchymal and associated with a mass. Liver masses include hepatoblastoma. Viral infections can cause liver calcification. Calcification in the adrenal gland can be due to adrenal haemorrhage, or be present in neuroblastoma tumours.

Relevance: Management of fetal intra-abdominal calcification is dependent on the location, associated findings, and in some cases results of infectious screens (the TORCH organisms). Isolated peritoneal calcification tends to have a favourable outcome.

Outcomes: While in most cases expectant management is sufficient, referral to specialist neonatal centre may be necessary, especially at time of delivery where paediatric surgical expertise is available.

Discussion: Fetal intra-abdominal calcification may be detected in the second trimester anomaly scan and this poster illustrates cases from our centre.

P-115 Multisystem review of usual and unusual manifestations of infantile and childhood leukaemia

Kandise Jackson; Vivian Tang

Central Manchester Children's Hospital

Objectives: To provide a pictorial review of the use of radiology in assessment of leukaemic patients at diagnosis and during treatment

To provide examples of common and uncommon multisystem manifestations.

Background: Leukaemia is the most common childhood malignancy. Acute lymphocytic leukaemia accounting for 70-80% of cases and acute myeloid leukaemia accounting for 10% of cases.

Majority of children develop radiographic evidence of skeletal involvement during the course of their disease. Children can present with non-specific limb pain and pathological fractures. Leukaemia is often diagnosed by haematological investigation without the initial need for body imaging. Imaging can subsequently be used to assess findings directly due to leukaemia and also in the assessment of secondary complications relating to chemotherapy and bone marrow transplant.

More unusually body imaging is performed before a clinical diagnosis of leukaemia has been made when the presentation and haematological and biochemical investigations are atypical.

Leukaemia during infancy is considered separately in this review due to its different epidemiology, genetics, clinical features and disease pattern compared to leukaemia in older children.

Content: Pictorial review showing examples of multisystem manifestations of leukaemia including skeletal, CNS and extra-medullary disease in the thorax, abdomen and soft tissues. Emphasis will be placed on unusual presentation, uncommon radiological findings and infantile leukaemia.

Conclusion: Leukaemia can have various multisystemic presentation prior to haematological diagnosis. This pictorial review will demonstrate a range of common and uncommon radiological findings at presentation and complications relating to treatment.

P-116 Image review for post operative cochlear implants in paediatrics

Katie Haynes; Nadine Jeakings; Heather Emery; Michael Scriven; Vince Batty

University Hospital Southampton

South of England Cochlear implant centre have implanted over 800 devices since 1990; these are being implanted in children under the age of one up to adulthood. The postoperative x-ray is essential for reviewing implantation prior to discharge.

This poster will review other techniques of imaging postoperative cochlear implantation in relation to the modified stenvers view currently undertaken in paediatric radiology at University Hospital Southampton.

Currently the Modified stenvers view is undertaken for all age groups, however with changing technology due to the discontinuation of skull units this method needed to be reviewed. Criteria for reviewing other techniques are reliability and ease of reproducibility. Adaptability of the technique for different patients is especially important with paediatrics having a broad developmental spectrum. Consideration needs to be given to thyroid and orbit dose with the change in technique. And crucially, any difference in image quality, as it is essential to be able to visualise the electrodes and the situation within the cochlear.

A skull phantom was positioned using techniques described within literature to visualise implanted cochlear devices. The resultant images were reviewed in relation to the current modified stenvers technique by the consultant radiologist who specialises in ENT and reports all of the postoperative cochlear implantation x-rays.

All the techniques demonstrated the cochlear adequately on the phantom. Each technique has its benefits for children of different ages and would be down to the radiographers' personal choice.

P-117 Imaging of Taylor Spatial Frames for leg length discrepancies

Sian Lawler

Chelsea and Westminster Hospital NHS Foundation Trust

Aims: There is an increasing use of the Taylor Spatial Frame in clinical practise these days to correct congenital leg length discrepancies in paediatrics. The radiographer's role in this process is becoming more important. Understanding of the frame itself and how it works is vital to good quality imaging.

Content: Leg length discrepancies of <20mm can be compensated for by the body but anything over this requires surgical correction. The Taylor Spatial Frame is one way of correcting these discrepancies. The frame offers simultaneous corrections of multidirectional deformities. The radiographer is key in producing images that are reproducible and analysable by the software used. It is key the radiographer is aware of the psychological aspects for the patient as well as the importance of imaging.

Relevance: There is a higher use of Taylor Spatial Frames than ever before. It is vital radiographers are aware of what is required from them.

Outcomes: By expanding on the radiographers knowledge and role during this process better quality images can be achieved. Being aware of the entire process the patient goes through will improve radiographers approach to these patients.

Discussion: With Taylor Spatial frames being used more frequently it is important radiographers have a good understanding of the frames and their use. Good quality imaging gives the surgeon a higher rate of accuracy and reliability when taking measurements which is key to the patients overall outcome.

Innovation in service delivery

P-118 CT thorax, abdomen and pelvis audit: an audit comparing non-trauma requests made by GPs and the accident and emergency department

Cheng Xie; Amdad Ahmed; Arpan Banerjee

Birmingham Heartlands and Solihull Hospitals, Heart of England Foundation NHS Trust

Purpose: Body Computed Tomography (CT) imaging is an important diagnostic tool increasingly used in the primary care setting and by hospital Accident and Emergency departments (A&E) to make a clinical diagnosis. The potential problem with body CT imaging is the high radiation dose incurred by patients. The Royal College of Radiology (RCR) has set guidelines to help regulate the requesting process. The aim of this audit was to review thorax, abdominal and pelvis CT scans requested by GPs and A&E, to determine what proportion are within Royal College of Radiology recommendations.

Method: Retrospective audit of 101 CT thorax, abdomen and pelvis requests from primary care centres and 101 from A&E department in 2012.

Results: 72% GP and 91% A&E referrals met the RCR referral criteria, of these 78% GP and 87% A&E referrals were suspected malignancies. 28% GP and 9% A&E referrals did not comply with RCR criteria. The non-compliant referrals ranged from unexplained anaemia, abdominal pain, hernia, to suspected gallbladder conditions without an initial ultrasound scan. 53% GP scans showed abnormalities including malignancy (20%), and in 69% A&E scans with abnormalities 37% demonstrated malignancy.

Conclusions: A significantly higher portion of requests made in the hospital settings meets the recommendations made by the Royal College of Radiologists. Oncology-related pathology forms a major source of inpatient and outpatient referral. Although, the GP referrals did not meet the RCR guidelines, the percentage of pathology in the two groups was fairly comparable. A detailed analysis will be presented.

P-119 Innovative approach to 'Excellence in Quality' for ultrasound services

Ankia Meiring

InHealth Ltd

Our organisation continuously strives for ‘Excellence in Quality’ and as part of our initiative to improve the quality for ultrasound services; we have put together a few important key activities to ensure that the quality in our service is delivered.Our most recent addition to our Ultrasound service was the newly designed audit process that is specifically targeted at community based services. This enables the auditors to assess various categories for specific protocols followed, ultrasound image quality, report writing-skills and appropriate onward recommendations for each patient. The ultrasound examinations performed are set against revised protocols, guidelines and a robust escalation policy to ensure that the patient follows the correct pathway when abnormalities are detected. The aim of the audit is not just for overall quality but to derive which category the operator requires improvement. Remedial action is put in place for all operators that demonstrate underperformance of a category.With the continuous need to provide a service that is faster and more readily available, we have introduced locums. The short coming of this decision is constancy in quality as the turnaround time for each locum is costly. Hence our locums go through a formal one week induction program. Prior to their appointment they undergo an introduction interview to familiarise themselves with the company and also allows the organisation to ask the relevant questions to ensure that the candidate is fit for purpose. The first day is the start of the induction process to disseminate ultrasound protocols, guidelines and escalation policy and familiarise with company policies. Day 2 – 4: work alongside another sonographer with double reporting. Day 5: undergo a formal competency assessment with one of the lead sonographers. Once signed off, they will be able to work individually. If unsuccessful, the induction process will resume. Up to date, we have had no locum repeat the induction week. To develop continuously improvement across the team, we have also introduced a mandatory Saturday training clinic for all permanent staff members. This is lead by a consultant radiologist and is run on a weekly basis to allow all to rotate through the clinic 2 – 3 times per year. The clinic varies between general, gynae, small parts and musculoskeletal ultrasound cases. On this day, the sonographer is formally assessed and given the chance to bring case studies or learning objectives to discuss. This