

The current understanding of visceral metastatic disease in prostate cancer is poor. Improved awareness of the atypical metastatic manifestations of prostate cancer will enable accurate staging and therefore prognostication, and will facilitate the development of new, targeted treatments.

Purpose: To illustrate and review atypical and visceral metastatic disease in prostate cancer, with images selected from the recent experience of a District General Hospital Radiology Department.

Summary: We present a review of atypical and visceral metastatic disease in prostate cancer.

p146 **Does giant multilocular prostate cyst adenoma respond to LHRH or is it a case of mistaken diagnosis of prostate cyst adenocarcinoma, both rare cases**

Abeeku Hammond

University Hospital South Manchester

Prostatic cyst adenomas and cystadenocarcinoma of the prostate are rare tumours of the prostate with few reported cases all over the world. Few literatures have reported mixed response of prostate cyst adenoma with LHRH, is it a case of mistaken diagnosis considering the rarity of both cases. We report a case of both cases where prostate cyst adenocarcinoma respond well to LHRH but prostate cyst adenoma doesn't. The first case is a 59 year old Caucasian man presented with both worsening lower urinary symptoms and high PSA. The prostate was enlarged and TRUS biopsy revealed a small foci of 3+4 (mostly 3) adenocarcinoma prostate. MRI requested for staging showed a large multi-cystic mass lesion arising from lateral aspect of base of prostate. LHRH shrunk the mass and repeat MRI 3 months showed improvement of the peripheral zones that contained the carcinoma. PSA was also unrecordable. The second is a 79 Year old seen as a case of a rising PSA. MRI diagnosed large cystic and solid mass arising from the prostate and extending to the abdomen. TRUS biopsy plus aspiration of the fluid from the multiloculated cyst showed benign cystic adenoma with no evidence of any malignancy. He was put on LHRH and repeat MRI in 6 months showed multiloculated cyst adenoma of the prostate appears stable with no significant reduction in size. Rarity of both diseases makes misdiagnosis a possibility and reported cases of giant multilocular prostate cyst adenoma might actually be a prostate cyst adenoma carcinoma

1. Maluf, H.M., et al., *Giant multilocular prostatic cystadenoma: a distinctive lesion of the retroperitoneum in men. A report of two cases. Am J Surg Pathol, 1991. 15(2): p. 131-5.* 2. Allen, E.A., et al., *Multilocular prostatic cystadenoma with high-grade prostatic intraepithelial neoplasia. Urology, 2003. 61(3): p. 644.* 3. Datta, M.W., et al., *Giant multilocular cystadenoma of the prostate responsive to GnRH antagonists. Urology, 2003. 61(1): p. 225*

PAEDIATRICS

p148 **The use of sedation in non-accidental injury skeletal surveys?**

Angela Staley¹; Vanessa Waspe²

¹*Nottingham University Trust;* ²*Nottingham University Hospital*

Purpose: Skeletal surveys are lengthy and often distressing examinations. This is a very emotive time for the families / carers. It is also difficult for staff involved with increased allegations being made against radiographers. High quality images are essential for accurate diagnosis, to avoid misdiagnosis and ultimately to protect the child. Poor radiography has been highlighted in high profile safeguarding cases. The required time to perform a SKS, leads to X-ray rooms being occupied for lengthy periods, impacting on our other services users. Historically, the CT was performed under sedation prior to the SKS examination. A decision to reverse this process was taken. Evaluate this change of practice.

Methods: We collected the data from examinations pre and post-trial. This included the timings in department, the dose and type of sedation prescribed. Survey Monkey was used to gather information from other external centres on their practise with regard to sedation. Survey Monkey was used to capture the views of the nursing staff that accompanied the patients within our Trust.

Results: The time the patient spent in the department was reduced when sedated correctly. All CT head scans performed was still successful The survey from the nurses within our Trust favoured our change of practice.

Conclusion: Our change in practice has had a positive impact on the service we provide. The survey showed other centres were overwhelmingly opposed to the use of sedation. We developed a sedation protocol for the medics to follow on the wards ensuring the correct doses were given.

p149 **Imaging of the paediatric pelvis aid to the newly qualified radiographer**

Jenna Knowles; Paula Evans

Warrington and Halton Hospitals NHS Foundation Trust

Within the UK, there are only 28 specialist Children's hospitals which means that in a large number of non-specialist centres (eg. District General hospitals) the radiographers are X-raying children under the age of 18. Primary imaging was requested 128 times within a year to help diagnose a pathology/injury from the Accident & Emergency department within our District General hospital. As this is not a specialist unit for Paediatrics, some radiographers (both experienced and newly qualified) are more cautious about imaging and interpreting X-rays when dealing with children under the age of 16 years old. My aim is to help aid these radiographers on decision making regarding pelvis radiography in a paediatric patient which help to aid with different diagnoses with a particular focus on Perthes Disease, Transient Synovitis, Slipped upper femoral epiphysis (SUFE) and the atraumatic limping child. This will in turn help to reduce radiation exposures as well as promote awareness of different pathologies and how they appear on the images we produce.

p150 **The hitchhiker's guide to childhood body tumours: 3 year experience of a tertiary referral centre for paediatric oncology**Linda Stephens ¹; Rachel Dixon ¹; Edmund Cheesman ¹; Ross Craigie ¹; Bernadette Brennan ¹; Cristina Dias ²; Neville Wright ¹; Rui Santos¹¹Royal Manchester Children's Hospital; ²The Francis Crick Institute

Background: Childhood cancers, although individually rare, represent up to 1% of all new tumours in the UK. The treatment journey is arduous for patients and their families, and associated morbidity and mortality is not uncommon. Early diagnosis is crucial to achieve the most effective treatment that will allow the best outcome. The survival rate of children with cancer has improved significantly in recent years as a result of strong collaborative multidisciplinary approach, innovative imaging techniques, precise histopathological identification, genetic characterization and effective multimodality treatment.

Purpose: This educational exhibit is intended to give a brief overview of the types and spectrum of presentations of childhood body tumours and emphasize their salient clinical and radiological features with pathological correlation. This is a single unique information resource, with contribution from different specialities, which is an important tool for all levels of healthcare professionals that are involved in the management of childhood cancer.

Summary: Retrospective review of childhood body tumour cases presented at the paediatric oncology multidisciplinary team meeting over a period of 3 years (2014-2016) was undertaken and selected cases with input from oncology, radiology, histopathology, genetics and surgical specialities were chosen to illustrate the wide range of paediatric body tumours seen in our institution. Typical and atypical presentations of common tumours and more rare tumours are discussed, and a concise review of the most important clinical, radiological, histopathological and surgical findings that have played a fundamental role in the diagnosis and management of these patients is presented.

1. Office for National Statistics (2015) *Cancer Registration Statistics: England Statistical Bulletins 2*. Bhatia, Saro, Armstrong et al. (2015) *Collaborative Research in Childhood Cancer Survivorship: The Current Landscape*. *Journal of Clinical Oncology* 33(27), 3055-3064. 3. Weiser D, Kaste S, Siegel M, Adamson P. (2013) *Imaging in Childhood Cancer: A Society for Pediatric Radiology and Children's oncology Group Joint Task Force Report*. *Pediatric Blood Cancer* 60(8), 1253-1260.

p151 **Managing discomfort in non-emergency MRI: Children's coping strategies during their first procedure**Sundaran Kada ¹; Milka Satinovic ¹; Paul Miller ²; Lisa Booth²¹Bergen University College; ²University of Cumbria

Background: Undergoing an MRI examination can be a stressful event at any age, however though some evidence exists as to how adult patients cope with MRI examinations, very little research exists as to how children manage and prepare for these exams.

Methods: Children who had no previous experience of MRI, undergoing a non-emergency examination of the brain were included. Semi-structured interviews with N=22 children, aged between eight and sixteen years, were conducted immediately post-MRI procedure. Qualitative data were thematically analysed in accordance with Straussian Grounded Theory.

Results: The primary concern among interviewees related to how they had coped with the discomfort of an unfamiliar medical procedure; this was managed through a process herein termed Involving participation. This comprised three phases. The first, preparative preparation, describes the children's attempts to ready themselves for the examination (with parents) ahead of arriving in hospital. The second, enabling participation, describes how the children (immediately before examination, with input from parents and radiographers) endeavored to understand what was to come, and select viable distraction techniques. Finally, sustaining participation describes the children's reports of actualising their preparations during the examination itself.

Conclusion: While much work in the domain portrays children as relatively 'passive' agents during an MRI procedure, the findings point to how they can (with varying degrees of success) actively and constructively work with others. This has direct import for the improvement of support, both prior to and within a procedure itself.

p152 **Transcranial Doppler screening in children with sickle cell disease**

Shruthi Patel; Laurence Abernethy

Alder Hey Children's Hospital, Liverpool

Background: Stroke in young children is one of the complications of sickle-cell disease. TCD helps in monitoring these children by identifying those at risk and guiding subsequent pharmacological therapy. Our study describes the practical procedure of patient evaluation and illustrates through STOP criteria, the importance of uniform methodology and operator experience in a centre with small but rapidly growing population of affected children.

Methodology: A retrospective evaluation was performed of the outcomes in patients with a TCD examination at our institution from September 2015-August 2016 using PACS. All ultrasound were performed by the same operator, using Philips iU22 scanner with 1-5MHz transducer. The patient's age, previous TCD imaging, along with analysis of 8 major intracranial vessels with highest peak velocity was recorded for analysis.

Results: The annual study cohort at our institution was 56 patients with total of 58 TCD examinations. 2 examinations were excluded from data analysis as they were TCDs for known non-sickle cell disease. These patients had mean age of 7.6 years with range from 2-18 years. Of 56 TCD examinations, 1 (1.7%) was conditional, 3 (5.3%) incomplete and 52 (92%) normal by STOP criteria. The sole reason for incomplete examinations was restless patients under age of 5 years. Most common vessels unable to measure the peak velocities leading to incomplete examinations were at the site of bifurcation of ICAs and ACAs.

Comments: This was an annual audit following STOP criteria for analysis of intracranial vessels using TCD. By measuring peak velocities in co-operative child, TCD screening is the best tool to detect high risk of stroke in children with underlying diagnosis of sickle-cell disease. Performing TCD in younger, restless children can be difficult, and provision of this service for small but rapidly growing population presents many challenges.

1. Jones A, Granger S, Brambilla D, Gallagher D, Vichinsky E, Woods G, Berman B, Roach S, Nichols F, Adams RJ. Can peak systolic velocities be used for prediction of stroke in sickle cell anemia? *Pediatr Radiol.* 2005;35:66-72. Adams RJ, McKie VC, Hsu L, Files B, Vichinsky E, Pegelow C, Abboud M, Gallagher D, Kutlar A, Nichols FT, et al. *N Engl J Med.* 1998;339:5-11. 2. Armstrong-Wells J, Grimes B, Sidney S, Kronish D, Shiboski SC, Adams RJ, Fullerton HJ. Utilization of TCD screening for primary stroke prevention in children with sickle cell disease. *Neurology.* 2009;72:1316-1321. 3. Arkuszewski M, Krejza J, Chen R, Kwiatkowski JL, Ichor R, Zimmerman R, Ohene-Frempong K, Melhem ER. Sickle cell disease in children: accuracy of imaging transcranial Doppler ultrasonography in detection of intracranial arterial stenosis. *Neuroradiol J.* 2012;25:402-410.

p153 **A pictorial review of nasal obstruction causing respiratory distress in the newborn**

Elaine O'Boyle¹; Sahil Chhabda¹; Fiona Lam²; Kanchana Rajaguru³; Kapila Jain³

¹Chelsea and Westminster Hospital; ²Royal Free Hospital, London; ³Lister Hospital, Stevenage

Background: Respiratory distress is one of the most common reasons a neonate is admitted to the intensive care unit. The extra thoracic causes of respiratory distress in a newborn are diverse and may be secondary to cardiovascular, neuromuscular and airway pathologies. Congenital nasal obstruction results in respiratory distress in newborns as they are obligate nasal breathers. Variation of normal development is the most common cause of congenital nasal obstruction. The different causes for congenital nasal obstruction in newborns include choanal stenosis/atresia, darcocystoceles, pyriform aperture stenosis and encephaloceles. Failure to accurately diagnose congenital nasal obstruction can lead to both short- and long-term complications, including chronic lung disease, respiratory failure and even cardiopulmonary arrest. Imaging and radiological interpretation therefore plays a vital role in the diagnosis and correct management of nasal obstruction in the newborn.

Objectives: The objective of this poster is to briefly review the embryology of the nasal passage and present a pictorial review of different nasal obstruction cases from our institution. This exhibit will provide a pictorial review of choanal atresia (Figure 1), darcocystoceles (Figure 2) and pyriform aperture stenosis and the salient imaging features used to help make the clinical diagnosis.

Conclusion: Due to the wide range of differential diagnoses discriminating the cause of respiratory distress in the newborn is often a diagnostic challenge. We endeavour to highlight the significant radiological features of nasal obstruction which can cause respiratory distress and that can often help make the fundamental diagnosis and prevent long term complications.

1. Adil E et al. Congenital nasal obstruction: clinical and radiologic review. *Eur J Pediatr.* 171(4):641-50, 2012 2. Reuter S et al, Respiratory Distress in the Newborn, *Pediatr Rev.* 2014 Oct; 35(10): 417-429. 3. Lowe LH et-al. Midface anomalies in children. *Radiographics.* 20 (4): 907-22

p154 **Neonatal head ultrasound for paediatricians - a website and workbook**

Iwan Roberts; Lucy Bradley

Sheffield Children's Hospital NHS Foundation Trust

Background. Paediatricians in training may be expected to carry out neonatal head ultrasound with limited training and support. Without access to RITI, there seem to be limited resources to support good practice. This project was carried out as part of a 6-week medical student attachment in paediatric radiology.

Method. Existing resources were explored and were found to be limited. A web-site was created and information was loaded with a view to helping paediatricians in training. Trainees are often quite capable of handling and manoeuvring the probe and need help to obtain the necessary views. Details included machine set-up, images required and common pathologies. Trainees were consulted throughout the process and their feedback was used to help with design. The website is accessible via smart-phone. A workbook has been developed with tips for technique, updated learning objectives for ST1/2, ST3/4 and neonatal grid trainees. There is a sign-off sheet to monitor progress.

Results. Early feedback has proved very positive. Trainees have limited time and resources for training and the resources have proved popular.

Conclusion. Clinicians need accessible resources to support high-quality clinical and radiological practice. This project has explored how non-radiologists view resources for ultrasound.

p156 **A retrospective study in the United Kingdom to establish the prevalence of spinal fractures on skeletal survey in suspected inflicted injury, the radiation dose associated with the lateral spine and the necessity of this projection for initial and follow up imaging**

Jenna Tugwell-Allsup; Walid Al-Deeb

Betsi Cadwaladr University Health Board, Wales

Background: The number of spinal fractures detected on skeletal survey (SS) for suspected inflicted injury varies within literature causing debate as to the necessity of lateral spinal projection/s within the protocol. This study aims to strengthen evidence as to the prevalence of spinal fractures in these cases at a UK paediatric hospital by exploring both initial and follow up surveys and the associated radiation.

Method: A retrospective study of SS performed for suspected inflicted injury in children younger than 24 months from 1st June, 2007 - December 31st, 2013. Data was collected from the Radiology Information System where reports were analysed for definite versus equivocal fractures. Follow-up imaging was also considered and reviewed. Dose area product (DAP) was recorded for each SS and individually for the lateral spine.

Results: Of all 179 SS identified, no definitive spinal fracture was reported. Two equivocal cases were identified with suspicion of vertebral body fracture on initial SS, but both were confirmed to be normal variants on subsequent spinal MRI scan. The average DAP for all SS was 43.8 cGycm², (24.3 SD) with lateral spine contributing to 18% of the total DAP of the entire SS.

Conclusion: Although no spinal fractures were identified for this study, strong evidence still exists to the inclusion of the lateral spine radiograph(s) for the initial SS. Consideration should however be given to its exclusion from follow-up SS. Also, MRI scan is suggested if there is a positive spinal fracture identified on initial survey in order to confirm diagnosis.

IMAGING TECHNOLOGIES & INFORMATICS

P157 **An audit on errors in voice recognition generated radiology reports**

Abul Haque; Moustafa El-Badawy; Sardar Qasim

Burton Hospitals NHS Foundation Trust

Background Voice Recognition Software (VRS) has been available to the medical profession for over three decades¹. However, the widespread use of VRS in Radiology was delayed until more recent advances in technology such as PACS². Studies have shown the use of VRS significantly reduces the Radiology report turnaround time³. However, it is not a flawless system. Through an audit we aimed to look at the error rate of VRS-generated reports by Consultant Radiologists at our Hospital.

Method We made use of the Royal College of Radiologists (RCR) guidelines as our standard and classified errors into three groups - Minor, Moderate and Major⁴. Overall error rate should be <5% and Major errors 0%. We looked at reports over a four-month period and from four different modalities - Plain film, Ultrasound, CT and MRI. For each Consultant we randomly selected 12 reports per modality (3 per month) making a total of 48 reports per Consultant. A total of 336 reports were analysed and classified into one of the three groups.