



Observations: Peer review encompasses a wealth of practices, with collaborative working being central to this. Peer review is a supportive process through which learning and development are encouraged to improve standards, facilitated through dedicated reporting radiographer L&D meetings.

Conclusion: Peer review acts as a valid and effective estimate of reporting radiographer performance. The process also serves as a continuing education tool, supporting the growth and development of the team.

A sample of current references include: Harvey, H.B. et al. (2016) Key performance indicators in Radiology: You can't manage what you can't measure. *Current problems in Diagnostic Radiology*, 45(2):115-121. Harvey, H.B. et al. (2016) Radiologist peer review by group consensus. *Journal of the American College of Radiology*, 13(6): 656-662. Stephenson, P. et al. (2012) An evidence based protocol for peer review of radiographer musculoskeletal plain film reporting. *Radiography*, 18(3):172-178. The Royal College of Radiologists. Quality assurance in radiology reporting: peer feedback 2014

P060 Sonographers' experiences of work-related musculoskeletal disorder: The everyday consequences of physiological stress and injury in contemporary ultrasound

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Background: By 2013, the UK government's Migration Advisory Committee had listed sonography as an official 'shortage specialty'^[3,6]. As a consequence of the working stresses allied to this shortage, British sonographers have increasingly been reducing hours or leaving clinical practice entirely^[7]. Moreover, among those who remain, incidences of reported chronic pain and active injury are also on the increase within a profession that was already synonymous with high rates of work-related musculoskeletal disorder (WRMSD)^[2]. While contemporary research has described the rates of WRMSD among ultrasound practitioners^[1], none has to date extensively explored its personal and professional impacts.

Methods: Using a model of Interpretative Phenomenological Analysis with proven facility in medical imaging research^[4,5], extended semi-structured interviews with N=10 experienced sonographers were analysed. **Results:** Participants routinely reported a sensation of guilt and depleted self-efficacy that not only permeated any working absence resultant of their own WRMSD, but also to taking legitimate leave when colleagues were suffering from WRMSD. An upshot of this was to recurrently "take one for the team" and work through excessive pain, even when this would likely result in greater prospective physical damage. While the basic shortage of sonographers was the core attribution for such behaviours, participants also cited (a) increasingly obese patients, (b) increasingly unhelpful (i.e. profiteering) equipment manufacturers, and (c) their own paternalism regarding healthcare.

Conclusions: The present situation in ultrasound mirrors a culture of potentially dangerous pain acceptance that been noted in the psychology of sport for some time^[8], albeit for largely altruistic, rather than egotistic, reasons.

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HEAD & NECK/NEURO

P061 Skull lesions on CT head

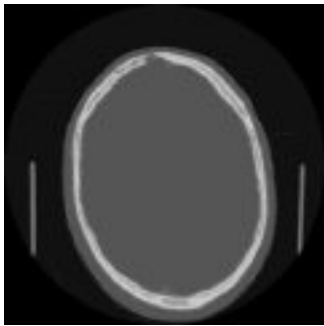
Thomas Peachey; Taymoor Asghar; Michael Paddock; Daniel Connolly; Matthew Bull

Sheffield Teaching Hospitals NHS Trust

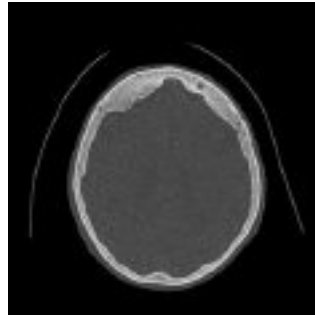
Background: The skull should be reviewed on bone windows for every CT head to look for potential skeletal abnormalities. 300 consecutive CT head scans were reviewed to evaluate the prevalence of skeletal lesions in an elderly population. We present common and important skull lesions with which every reporter of CT heads should be aware, with case examples.

Purpose: We present the frequency of skeletal findings on CT heads in an elderly population, alongside a pictorial review of important and common bony lesions, including benign and malignant lesions.

Summary: 13/300 cases (4%) had a suspicious lesion on CT head. On clinical review of these 13 cases, 4 were found to have definite myeloma, 3 had possible myeloma, and myeloma could not be excluded in the remaining 6 cases. We summarise that the referring clinician should be alerted to suspicious lesions seen on CT heads. We also include a pictorial review of common and important lesions, including: venous lakes, vascular channels, arachnoid granulations, myeloma lesions, lytic metastatic lesions, and sclerotic metastatic lesions.



Venous lake



Myeloma

P062 Spinal tuberculosis mimicking malignancy

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Introduction: This case illustrates the atypical appearances by which spinal tuberculosis (TB) can present, despite MRI having high sensitivity and specificity. In mimicking haematological malignancy, this patient was given radiotherapy inappropriately, and appropriate treatment interrupted.

Case: A 29-year-old African gentleman developed gait disturbance after a year long history of back pain with no past medical history. MRI whole spine and CT Chest Abdomen Pelvis were strongly suggestive of multiple spinal and bony metastases secondary to haematological malignancy. Impending cord compression at T10 was seen. TB treatment was started, but with the imaging appearances, and initial microscopy of biopsies from rib lesions consistent with myeloma, these were stopped. He was given radiotherapy and dexamethasone. Histopathology later showed necrotizing granulomata and further biopsies from different sites confirmed the diagnosis of fully sensitive TB. He required extensive neurosurgery for spinal cord compression.



Discussion: Drivers for the diagnosis of malignancy were the involvement of multiple (12 in total) non-contiguous spinal levels including cervical and sacral regions, and intact intervertebral disks and endplates. In spinal TB, non-contiguous spread is present in 16.3%^[1]. More than 5 spinal levels are involved in just 5%. Cervical and sacral segment involvement is also a rarity^[2,3,4]. Involvement of endplates and intervertebral disks are very sensitive and specific signs^[4] but are absent here despite the extensive disease.

Lessons:

1. TB should be considered as a cause of multiple spinal lesions and may present with atypical MRI appearances.
2. Multiple biopsies from different sites may be needed for definitive diagnosis.

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P063 MRI protocol and surveillance in multiple sclerosis (MS) patients receiving Tysabri

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Background: We assessed compliance with European Medicines Association (EMA) guidance on MRI screening for progressive multifocal leukoencephalopathy (PML) in patients receiving Natalizumab for multiple sclerosis (MS). Natalizumab is used to treat highly active MS. PML is a potentially fatal brain infection. Risk of developing PML is increased in patients on Natalizumab. MRI can detect asymptomatic PML, reducing time to diagnosis and improving prognosis. The EMA states all patients with MS treated with Tysabri require:



1. Baseline MRI within 3 months before starting treatment;
2. Annual surveillance scans;
3. Surveillance scans should include FLAIR, PD/T2, DWI, T1 pre and post gadolinium.

These 3 factors formed our audit standards and indicators. The target was 100% compliance.

Method: Patients with MS receiving Tysabri were identified from neurology patient records. Data was collected on the standards using the Computerised Radiology Information System (CRIS), the Picture and Archiving Communication System (PACS) and electronic notes and collected and processed in MS Excel.

Results: 46 patients were identified. 67% received a timely baseline scan. 87% of patients had at least annual follow-up scans on PACS. Of 97 annual surveillance MRI performed, 44% were obtained in a timely manner (within a 2 month window of the annual treatment 'anniversary'). 48% of scans included all recommended sequences.

Conclusion: Our audit targets were not met. Reasons for this included lack of knowledge regarding guidance and departmental and workflows. Actions planned include education of the team members who request, protocol, book and perform the studies and consideration of a dedicated MRI protocol.

P064 A case presentation of a woman with Hirayama disease in the UK

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Background: Hirayama Disease, a rare cause of cervical myelopathy with male preponderance is mainly reported from Asia. We present the clinical and radiological findings of a woman with Hirayama Disease in the UK.

Case study: A 29-year-old female presented with headache and neck pain since the age of 11. At 22, she noticed right-hand weakness, prominently in her right thumb. This worsened over the years and she reported some twitching, affecting her right hand and later her left hand. Examination showed reduced power in right elbow extension, right finger abduction/adduction and weak pincer grip. The right thenar eminence was atrophic. Gait, lower limbs and sensory examination were normal. Initial MRI showed an expanded central canal and myelomalacic cord. An EMG study showed denervation from the anterior horn region and prompted a request for flexion cervical MRI. This showed spinal cord atrophy at C5/6. Dynamic views demonstrated widening of the posterior epidural space during flexion and posterior filling of the extradural space with venous blood. Clinical and radiological features lead to a diagnosis of Hirayama Disease.

Purpose:

- Highlight that a MRI flexion study is essential in patients with suspected Hirayama disease and should be considered in young patients presenting with focal upper limb atrophy
- Demonstrate radiological features on neutral and flexion cervical MRI imaging
- This is important as early detection can allow for timely treatment and prevent disease progression

Content :

- Neuroradiological images including MRI in neutral and flexion
- Literature review and recommendations

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P065 Paranglioma: what the general radiologist should know

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Parangliomas have a varied clinical and radiological presentation. This poster is a pictorial review that will enable the general radiologist to better recognise their salient features. Parangliomas are neuroendocrine tumours that arise from chromaffin cells of the autonomic ganglia. Those of sympathetic origin can arise anywhere along the sympathetic chain, from the neck to bladder and commonly release catecholamine. However, those of parasympathetic origin are most commonly seen along the course of the vagus and glossopharyngeal nerves. A variety of imaging modalities including angiography along with urinary markers may be used prior to consideration for surgery to confirm the diagnosis. The characteristic salt and pepper appearance of parangliomas and their radiological manifestations in the thorax, neck, skull base and temporal bone will be illustrated in this pictorial review.

P066 A pictorial review of the cardinal signs of DESH

Stuart Baines; *Sian Ebdon*; *Shawn Halpin*; *Rhian Rhys*

Cwm Taf University Health Board

Disproportionately enlarged subarachnoid-space hydrocephalus (DESH) is an increasingly recognised variant of Normal Pressure Hydrocephalus (NPH) and can be easily recognised on routine CT and MRI scans. We describe the four cardinal signs of DESH

Gan, C.L et al (2017) Association of imaging abnormalities of the subcallosal septal area with Alzheimer's disease and mild cognitive impairment. *Clinical Radiology*; 72: 915-922



P067 Diagnostic yield of magnetic resonance imaging in the ophthalmology department at a district general hospital for suspected neuro-ophthalmological disorders

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Background: Imaging studies are frequently requested in ophthalmology clinics especially when investigating for suspected neuro-ophthalmological disorders, however there is little data demonstrating the diagnostic yield of these imaging studies. This study investigated the diagnostic yield of magnetic resonance imaging requested by a single ophthalmology department.

Method: This retrospective study reviewed all patients who had magnetic resonance imaging as part of their diagnostic work-up in ophthalmology clinics over a one year period at a district general hospital for suspected neuro-ophthalmological disorders. Significant abnormal imaging studies were identified if they related to the patient's neuro-ophthalmic presentation and/or examination findings or if they elicited a significant change to the patient's management. These significant abnormal imaging studies were also further analysed according to the patient's predominant complaint or examination finding to see which had the highest diagnostic yield.

Results: One hundred and thirty-three imaging studies were analysed of which 14% had significant findings. When patients were subsequently classified by their chief clinical complaint or examination finding; imaging obtained for optic disc swelling and cranial nerve palsies had higher diagnostic yields than imaging studies performed for other clinical reasons with yields of 23% and 21% respectively.

Conclusion: This study showed that the diagnostic yield of imaging in our ophthalmology department was lower when compared with other similar studies, however certain clinical indications provided a higher yield than others.

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P068 The rate of acute intracranial haemorrhage in patients identified as being treated with either warfarin or novel oral anticoagulant agents (NOAC); a review of 1206 emergency CT head studies

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Norfolk and Norwich University Hospital

Background: Several prospective studies have demonstrated lower intracranial haemorrhage (ICH) rates of NOACs compared to warfarin^[1,2,3,4]. There is however limited evidence comparing ICH rates of anticoagulated patients from a radiology service perspective. We aim to determine and compare the rates of acute ICH in emergency head CT studies performed on patients treated with either warfarin or a NOAC.

Method: A retrospective automated search was undertaken via the hospital's radiology information system (RIS) for inpatient or emergency department CT head studies performed over a one year period where the clinical details indicated treatment with warfarin or a NOAC. The search terms included generic and proprietary drug names. The report of each scan was reviewed for the presence of unequivocal ICH. Duplicate and follow up scans were excluded. Other parameters (trauma history time of scan, GCS) were also reviewed.

Results: Following exclusions 1206 cases were eligible for analysis. 901 patients were treated with warfarin and 305 treated with NOACs. Patients' age ranged from 21 to 101 years old with a median age of 83 years old. 48 CT heads, of which 45 were treated with warfarin and 3 treated with NOACs, were positive for various types of ICH. The positive rate for 'warfarin group' was 5% (NNT: 20) and 1% for 'NOACs group' (NNT: 100).

Conclusion: Even in the acute setting, the rate of ICH in anticoagulated patients is low. This is particularly true in patients on NOAC drugs where the incidence of haemorrhage was one-fifth that of the warfarin group.

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P069 In dementia, the cingulate sulcus is your friend!

Sian Ebdon; Stuart Baines; Rhian Rhys; Shawn Halpin
Cwm Taf University Health Board

We describe the normal and pathological appearances of the cingulate sulcus, concentrating on the sagittal plane and how assessment of the cingulate sulcus can help distinguish between common causes of dementia including Alzheimer's disease (AD) and disproportionately enlarged subarachnoid-space hydrocephalus (DESH).

Gan, C.L et al (2017) Association of imaging abnormalities of the subcallosal septal area with Alzheimer's disease and mild cognitive impairment. *Clinical Radiology*; 72: 915-922

P071 Effective methods to immobilise patients with head and neck cancer during external beam radiotherapy

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Purpose: Radiotherapy for H&N cancers is delivered using an immobilisation device, usually a thermoplastic mask to ensure accurate targeting and avoidance of OARs. A systematic literature review was undertaken to identify effective methods of head and neck immobilisation currently being used and the accuracy of each.

Methods: The review was conducted and reported according to PRISMA. Search terms: radiotherapy immobilisation, head and neck cancer, comfort, set-up error, reproducibility, thermoplastic mask. The characteristic data derived from the different methods of immobilisation was tabulated and reviewed as per TIDieR guidelines. Expected outcomes:

1. A description of the method
2. A description of the rationale and goal
3. The reproducibility of immobilisation method (systematic and random errors)
4. Requirements and challenges of using the immobilisation at radiotherapy treatment delivery.

Results: In all studies patients were immobilised supine with or without wearing a plastic mask and using ancillary equipment.

Methods identified were:

1. Plastic mask
 - a. Full head and neck/shoulders
 - b. Head only
 - c. Open face
 - d. With modified head rest
 - e. With modified mouth-bite
2. No mask
 - a. Surface tracking + vacuum bag head rest
 - b. Robotic technology + surface tracking + fixation device

Masks: systematic and random errors ranged from 1.3 to 6.4mm and 1.2 to 1.8mm respectively in all directions.

No mask: systematic and random errors ranged from 0.8 to 6.3mm and 0.9 to 2.4mm respectively in all directions.

Larger errors were observed in the lower neck for both. Greater requirements and challenges were observed when not using a mask.

Conclusion: There was little difference in systematic or random errors between plastic mask and no mask systems. The lower neck immobilisation needs further development to reduce population errors.

P073 Imaging and management of vascular invasion in head and neck cancers

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Background: In 2002 the AJCC has introduced the unresectable T4b stage. However, in the last decades some authors demonstrated some improvements in terms of overall survival in those patients who underwent an aggressive surgical approach. Therefore, the purpose of this review was the collection of the present knowledge about the radiological findings and management of carotid artery involvement by head and neck tumors.

Method: Several works were reviewed in literature using Google Scholar and PubMed as database. Different features are used to evaluate the involvement of this vessel: the encasement of the circumference of the vessel, obliteration of the fat between the metastases and the carotid artery or deformity of it.

Results: In accordance with the literature, the correct identification of vascular invasion is challenging for radiologists, and intraoperative findings are still considered the gold standard in the diagnosis of vascular involvement. The correct choice of treatment in advanced head and neck tumors is debated.

Conclusion: The diagnosis of this lesion is actually based on clinical evaluation, radiological imaging and operative findings. Unfortunately, the data in the literature are still controversial and further studies are necessary to improve the radiologist's ability in the identification of vascular involvement at early stages that can allow a safer surgical intervention in order to achieve a better loco-regional control and a better long-time survival. Although in literature are reported higher disease-free survival rates, the choice between surgical or not-surgical treatment in case of T4b head and neck tumor remains a surgeon's decision.

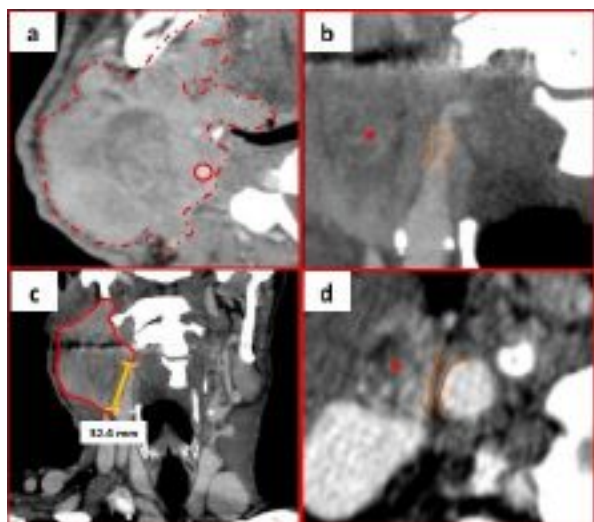


Fig.3

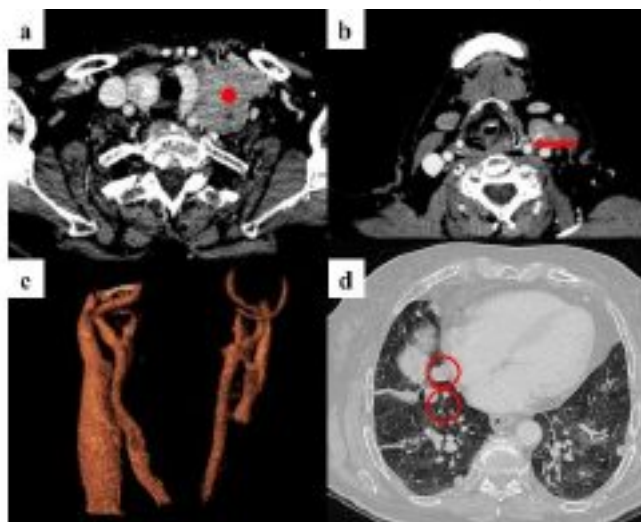


Fig. 5

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BREAST

P074 Managing fears of recurrence in a breast cancer patient population - preliminary findings from an innovative group intervention led by therapeutic radiography and clinical psychology

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Background: Fear of cancer recurrence (FCR) is defined as the fear or worry that cancer will return, progress or metastasise. FCR is one of the most commonly reported problems and one of the most prevalent areas of unmet need for cancer survivors and their families (Simard et al., 2013). Some patients can develop severe, long-term and debilitating levels of anxiety and stress. For this group of patients, FCR can have a significant impact on quality of life (Llewellyn, 2008) and can be implicated in treatment non-adherence, an inability to plan for the future (Hart et al, 2008), hyper-vigilance for symptom recurrence and the over-utilisation of medical and nursing resource. Therapeutic Radiography and Clinical Psychology have been delivering a 6 week group intervention for breast cancer patients to help equip them with practical and psychological techniques for managing fears of recurrence.

Methods: Assessed in terms of its feasibility, acceptability and effectiveness. Pre and post outcome measures are completed with all participants as well as follow up at twelve weeks.

Results: 7 group programmes have been completed since February 2017. Data collected so far suggests that although the fears of cancer recurrence have not significantly decreased at a statistical level, participants are reporting being less anxious about these concerns and being better able to live alongside them.

Conclusions: Overall, group participants have described benefitting from the programme in helping them adjust emotionally after their active cancer treatment finished. The pilot project can inform how we deliver psychological support to breast patients.

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P075 Vacuum assisted biopsy: applications in breast radiology

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Aims: To increase awareness of vacuum assisted breast biopsy, modalities used and diagnostic and therapeutic applications.

Purpose: This is a pictorial review of the indications for radiological breast interventions using vacuum assisted biopsy. This includes an educational commentary briefly outlining the principles and procedure of vacuum assisted breast biopsy using