https://www.nice.org.uk/guidance/ng101/chapter/Recommendations#referral-diagnosis-and-preoperative-assessment [Accessed 1 December 2021]. [7] Breast Cancer.org. Tests for diagnosing ILC. Available from: https://www.breastcancer.org/symptoms/types/ilc/tests/diagnosing [Accessed 1 December 2021]. [8] NHS. Biopsy. Available from: https://www.nhs.uk/conditions/biopsy/ [Accessed 1 December 2021]. [9] Radiopaedia. Sensitivity and Specificity. Available from: https://radiopaedia.org/articles/sensitivity-and-specificity?lang=gb [Accessed 1 December 2021]. [10] Chae, H, Cha, E,S, Lee, J,E, Kim, J,H, Kim, B,S, Chung, J. Invasive Lobular Carcinoma: Detection and Multiplicity with Multimodalities. The EWHA Medical Journal. 2018; 41 (2): 27-34. Available from: doi.org/10.12771/emj.2018.41.2.27. [11] Barker, S, J, Anderson, E, Mullen, R. Magnetic resonance imaging for invasive lobular carcinoma: is it worth it? Gland Surg. 2019; 8 (3): 237-241. Available from: doi: 10.21037/gs.2018.10.04. [12] Patel, M, S. Invasive lobular carcinoma of the breast. Available from: https://radiopaedia.org/cases/invasive-lobular-carcinoma-of-the-breast-3?lang=gb [Accessed 1 December 2021]. [13] Riffel, P, Kaiser, C. Invasive Lobular Carcinoma. Available from: http://clinical-mri.com/invasive-lobular-carcinoma-2/ [Accessed 1 December 2021].

P066 Planning technique evaluation for breast patients: Forward and inverse Intensity Modulated Radiotherapy and Volumetric Modulated Arc Therapy

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Background: Currently small and medium breast patients are planned 6/10MV Field in Field (FiF) and larger patients with Intensity Modulated Radiotherapy (IMRT). The aim was to introduce/evaluate 6MV IMRT on small/medium patients and Volumetric Modulated Arc Therapy (VMAT) on larger patients; and to ensure the techniques were comparable and robust. Previous studies (1,2) looked at planning technique but not in terms of breast size and plan robustness.

Methods: Twenty-seven patients were included in the study. Plans were compared using relevant PTV and organ-at-risk dose statistics, and total monitor units (MU). IMRT and VMAT plans were re-calculated with shifts of +/-1cm along each axis to assess robustness. Gamma analysis was performed using portal dosimetry.

Results: On the small/medium cohorts (FiF vs IMRT): lung and PTV doses were within 1-3%. IMRT plans had better coverage on the sup/post border and some plans showed better anterior tumour coverage. IMRT plans have higher MU and more complex fluences but portal dosimetry was within departmental tolerances. On the large cohort (VMAT vs IMRT): The plan uncertainty evaluation showed PTV D90% & D2% were within 1-2Gy. On VMAT plans the ipsilateral lung doses V17Gy (%Vol) was 7% lower and the mean heart doses and contralateral breast/lung is higher by approximately 0.5-2Gy.

Conclusion: Our results suggest FiF and IMRT plans had comparable lung and PTV doses; VMAT and IMRT plans demonstrate similar levels of robustness. After this study, the most complex breast patients can be planned using both VMAT and IMRT. We are introducing IMRT for some smaller/medium breast patients.

1. Yong, Y., Jinhu C., Tao S., Changsheng Ma., Jie Lu., Tonghai L., Ruozheng W. (2012) Dosimetric research on intensity-modulated arc radiotherapy planning for left breast cancer after breast-preservation surgery. Med Dosim. 37(3), 287-92. 2. Daniel k., Mazen S. , Martin M., Gerhard G. (2019) Left breast irradiation with tangential intensity modulated radiotherapy (t-IMRT) versus tangential volumetric modulated arc therapy (t-VMAT): trade-offs between secondary cancer induction risk and optimal target coverage. Radiat Oncol 14(1),156.

DENTAL / HEAD & NECK / NEURO POSTER PRESENTATIONS

P069 Enhanced 3D anatomical information - application to 3rd molars

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Background: Third molar also known as the wisdom tooth sometimes can be impacted. It is because they don't have enough room to emerge and to develop normally. Those impacted third molars can lead to gum disease, tooth decay, inflammation and pain if left untreated. To determine the precise location of the wisdom tooth when intra-oral or panoramic images are not conclusively showing a safe margin with the dental nerve, advanced Cone Beam CT (CBCT) is used prior to any treatments or extraction to avoid injury.

Method: Radiographers associated to dental imaging aim to investigate the position of lower third molar to the relationship of the inferior alveolar nerve (IDC), the roots of mandibular wisdom teeth and neighbouring teeth. The CBCT scan will provide a clear 3D visualisation for the clinician with a field of view as small as 40 x 40 from 85-micron thickness slices and interval.

Conclusion: Initial panoramic and periapical x-ray can view an impacted tooth, however in cases of intimate 3D relationship of the wisdom tooth with the nerve, adjacent structures and pathology, CBCT will then be the best examination we can offer to the patients. CBCT has become sufficient, and it is rare to use conventional CT-scan for further investigation to demonstrate the structures further. Aside from the major disadvantage of the conventional CT-scan which produce higher radiation that patient can receive compared to the CBCT and 2D radiography.

P070 Head and neck cancer patients' experience of MRI radiotherapy planning scan with an immobilisation mask

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Background: Modern radiation therapies of head and neck cancer require precisely delineated target areas in order to deliver high tumour doses whilst sparing surrounding healthy tissue and functional anatomy. The advantages of MRI in the radiotherapy treatment pathway of head and neck patients are axiomatic. An immobilisation device is utilised to allow replication of patient position at subsequent treatment sessions. This study investigates the experience of head and neck cancer patients undergoing an MRI scan whilst immobilised in a thermoplastic mask.

Methods: A purposively selected sample of eight head and neck cancer patients took part in semi-structured interviews. Reflexive thematic analysis based on a process described by Braun and Clark (2019) was used to allow themes to emerge from the data.

Results: Participants described their experience of the MRI in their mask. Pre-scan preparation was discussed, alongside feelings of confusion and mistrust of online media. Participants' loss of control during the scan was highlighted, and coping strategies employed in order to complete the scan were shared. Feelings of restriction, powerlessness and removal of choice were identified leading to resignation and acceptance of discomfort. Significant trust in medical professionals was displayed with confidence in the treatment pathway prescribed.

Conclusion: This study proposes strategies to minimise patient refusal in the known claustrophobic environment of MRI plus the restrictive thermoplastic mask. All participants in this study were able to tolerate the MRI due to confidence in skilled staff and endured any discomfort as a means to achieving the goal of becoming cancer free.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. Qualitative Research in Sport, Exercise and Health, 11(4), 589-597.

P071 Local audit of u-scoring on ultrasound thyroid reports and the appropriateness of subsequent fine needle aspiration

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Background: Thyroid nodules are extremely common, but only a small percentage (3-7%) are found to be malignant (1). Accurate assessment to identify benign and malignant features is vital to guide management. British Thyroid Association (BTA) produced guidelines in 2014 advising all ultrasound thyroid reports should provide a U-score (which states whether the nodule is considered benign, indeterminate, suspicious or malignant) (2). This provides clarity of the operator's nodule assessment and allows decisions to be made on the appropriateness of subsequent fine needle aspiration (FNA): U1-2 do not require FNA unless there are clinically worrying features; U3-5 require FNA unless adequate clinical reasoning is given (2).

Purpose: Retrospective audit assessing whether U-scores were provided on 100 ultrasound thyroid reports (between 03/03/21 - 30/07/21) and if FNA was either performed or not performed appropriately as per BTA guidelines. This allowed specific areas of weakness to be identified and appropriate recommendations made.

Summary: The poster will display the audit background (including educational images on U-scoring), aims, method, standards, results and discussion. Briefly, the appropriateness of FNA was 100% however the provision of U-score was 76%. Therefore, specific actions were identified to improve the latter including educating sonographers and radiologists, providing handouts of the U-scoring system in ultrasound rooms and introducing report templates with a specific section for the U-score. Re-audit in 6 months to assess for subsequent improvement was recommended. The poster will also display data on FNA results and their correlation to U-scores.

1. Xie, C., Cox, P., Taylor, N. et al. Ultrasonography of thyroid nodules: a pictorial review. Insights Imaging 7, 77-86 (2016). https://doi.org/10.1007/s13244-015-0446-5.

2. Perros, P., Boelaert, K., Colley, S., Evans, C., Evans, R.M., Gerrard BA, G., Gilbert, J., Harrison, B., Johnson, S.J., Giles, T.E., Moss, L., Lewington, V., Newbold, K., Taylor, J.., Thakker, R.V.., Watkinson, J. and Williams, G.R. (2014), Guidelines for the management of thyroid cancer. Clin Endocrinol, 81: 1-122. https://doi.org/10.1111/cen.12515

P072 Imaging Horner's syndrome - pearls and pitfalls for the general radiologist

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Background: Horner's syndrome encompasses a clinical syndrome of ipsilateral enopthalmos, ptosis, pupillary miosis and facial anihydrosis due to a lesion of the oculosympathetic pathway. It represents challenges to the radiologist due to the variety of underlying causes spread over several anatomical regions including central, preganglionic and post ganglionic segments. The central segment involves the first order neurones from the level of the hypothalamus travelling through the brainstem to the cervical spinal cord. The preganglionic segment involves the 2nd order neurones from the brainstem which synapse in the superior cervical ganglion within the neck. The post ganglionic segment involves the 3rd order neurones which travel alongside the carotid artery, with fibres accompanying the internal carotid artery entering the cavernous sinus with the Ophthalmic division of the Trigeminal nerve. (Lee et al., 2007) Imaging is guided by clinical history and examination. An acute onset of symptoms should prompt consideration of a vascular aetiology such as carotid dissection. Presentation with brain stem signs, spinal signs or Pancoast syndrome will also help guide the modality and region to be imaged.

Purpose: To review the relevant anatomy of the oculosympathetic pathway and provide a pictorial review of some of the major pathologies in the central, preganglionic and post ganglionic regions through a variety of imaging modalities.

Summary: Following a pictorial review of the relevant anatomy, cases of the major causes of Horner's syndrome will be presented, with a view to providing a template for imaging Horner's syndrome and improving confidence of the general radiologist in assessing this.

1. Lee JH, Lee HK, Lee DH, Choi CG, Kim SJ and Suh DC. (2007) Neuroimaging strategies for three types of Horner syndrome with emphasis on anatomic location. AJR Am J Roentgenol;188 (1): W74-81.

P073 Characterisation of bone lesions on CT head scans

Amy Vosper

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Background: To assess the potential need for additional training within the CT head reporting cohort, the author of this poster issued a survey to CT head reporting radiographers in the Southwest. The aim of the survey was to establish if there were any areas within their practice where they would benefit from additional training in the form of a study day. Of the 16 respondents, 94% stated that a study session focused on bone lesions would assist them to identify specific bone lesions more accurately on a CT head scan.

Purpose: The purpose of the poster is to deliver a pictorial guide to aid reporting radiographers to recognise different bone lesions within CT head imaging and to assist them in being able to accurately describe and report on these lesions.

Summary: The poster gives a pictorial review of common bone lesions seen on CT head imaging as a quick references guide for reporting radiographers who are reviewing CT head scans. The aim is to enable the reporting radiographer to accurately describe and diagnose these lesions with confidence. The poster will demonstrate a variety of common bone lesion, both benign and malignant, as well as describing the imaging features of each lesion. The review will also discuss whether any further imaging or referral is advised or required.

P074 The added value of MRI brain for patients presenting with headache who have a normal unenhanced CT, a single centre experience

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Background: Headache is a common presenting complaint. Normal neurological examination indicates a decreased likelihood of a significant cerebral lesion (1). Despite normal CT and clinical examination, MRI brain is often performed. The aim of our project was to assess the added value of MRI in patients presenting with headache who have no significant findings on neurological examination and on unenhanced CT.
Method: All patients attending our accident and emergency department over a 12-month period because of headache and investigated with an unenhanced CT followed by MRI brain for the same clinical indication were included. MRI brain was requested as no radiological cause was identified on CT. Reports and clinical documentation were analysed to establish whether MRI provided additional clinically relevant information and changed management. Patients who presented with focal neurological deficit, reduced GCS or seizure were excluded.
Results: 64 patients met the above described criteria. 4/64 MRIs revealed acute pathology; in 2/4 it changed immediate management. One of these patients had acute subarachnoid haemorrhage and the second patient had an acute pontine ischaemic stroke. The other 2/4 patients MRI showed an incidental left petrous apex lesion and changes secondary to possible migraine for which the patient was already being treated for.
Conclusion: The added diagnostic value of MRI in our cohort presenting with headache and normal CT was ~7%. Triaging patients to the correct imaging pathway is a challenge. Diligent clinical examination and communication with the radiologist may help to choose the correct modality or avoid unnecessary scans.

1. Holle, D., & Obermann, M. (2013). The role of neuroimaging in the diagnosis of headache disorders. Therapeutic advances in neurological disorders, 6(6), 369–374. https://doi.org/10.1177/1756285613489765.

P075 A pictorial review of the EXODEVA approach to CT head interpretation of suspected acute ischaemic stroke for non-radiologist physicians

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In patients with a suspected stroke, a non-contrast computed tomographic (CT) head scan is the first-line radiological investigation in order to establish an infarct and exclude an intracranial haemorrhage and other stroke mimics (e.g. a space-occupying lesion). Most stroke presentations are first brought to emergency departments and decisions on treatment of ischaemic stroke including thrombolysis and mechanical thrombectomy are based on the requesting physician's clinical acumen and interpretation of the scan, without waiting for a formal report provided by radiologists. Thus, time-critical treatment can be initiated without delay, avoiding irreversible damage to the brain. This pictorial review describes a systemic approach to interpreting early and important signs of an acute infarct on CT scans for acute care physicians who may not have received formal radiology training. The EXODEVA approach consists of 6 key aspects of CT interpretation in suspected strokes, which begins with 1) EXcluding a haemorrhage, followed by identifying early signs of infarct including 2) focal parenchymal HypOdensity (including the insular ribbon sign and obscuration of lentiform nucleus in MCA infarcts), 3) hyperDense artery sign, and 4) cerebral oEdema with ventricular and sulcal effacement and loss of cortical grey-white matter differentiation. This is followed by establishing 5) pre-existent Vascular burden (e.g. small vessel disease and old infarcts), and lastly calculating the Alberta stroke programme early CT score in patients with middle cerebral artery and posterior circulation stroke to predict functional and treatment outcomes. The EXODEVA approach provides a user-friendly, mnemonic-driven, stepwise approach to identifying cerebrovascular infarcts in CT head scans.

1. Doan, V., Nguyen, T., Hoang, M. and Vo, T., 2014. Early Prediction of Acute Ischaemic Stroke Outcome by Using Alberta Stroke Programme Early CT Score (ASPECTS). Journal of Medicine and Pharmacy, pp.168-176. 2. Mainali, S., Wahba, M. and Elijovich, L., 2014. Detection of Early Ischemic Changes in Noncontrast CT Head Improved with "Stroke Windows". ISRN Neuroscience, 2014, pp.1-4. 3. Wechsler, L., 2010. Imaging Evaluation of Acute Ischemic Stroke. Stroke, 42(1, Supplement 1), pp.S12-S15.

P076 RCVS - A common cause of thunderclap headache!

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Reversible Cerebral Vasoconstriction Syndrome (RCVS) is a common but often overlooked cause of thunderclap headache and stroke in younger patients. RCVS can cause acute cerebral haemorrhage and brain infarction and is associated with characteristic vascular imaging findings. We describe the clinical presentation, pathophysiology and range of findings in RCVS. We emphasise the utility of 3D volume rendered CT Angiography to enable reporter to consider the diagnosis of RCVS in the right clinical context.

Miller,T. R., Shivashankar, R., Mossa-Basha, M. and Gandhi, D. (2015) Reversible Cerebral Vasoconstriction Syndrome, Part 1: Epidemiology, Pathogenesis, and Clinical Course. American Journal of Neuroradiology. 36 (8), pp1392-1399. Singhal, A. B., Topcuoglu, M. A., Fok, J. W., Kursan, O., Nogueira, R. G., Frosch, M. P. and Caviness, V. S. (2016) Reversible cerebral vasoconstriction syndromes and primary angiitis of the central nervous system: clinical, imaging, and angiographic comparison. Annals of Neurology. 79(6), pp 882-894.

P077 Neuroimaging of Parkinson's disease

Denise Bishop

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Parkinson’s Disease (PD) is a neurological disorder that can be difficult to diagnose on clinical examination without specialist imaging. To explore the efficacy of diagnostic imaging, it is helpful to acknowledge: the pathophysiology of PD, the imaging modalities involved, and the latest research on advanced imaging techniques.

1 Magrinelli F, Picelli A, Tocco P, Federico A, Roncari L, Smania N, Zanette G, Tamburin S. Pathophysiology of Motor Dysfunction in Parkinson's Disease as the Rationale for Drug Treatment and Rehabilitation. Parkinsons Disease. 2016 Jun 6; 2016:9832839. Available from: https://doi.org/10.1155/2016/9832839 [Accessed 15th December 2021]. 2 National Institute for Health and Care Excellence. Parkinson’s Disease: Background Information. Available from: https://cks.nice.org.uk/topics/parkinsons-disease/background-information [Accessed 15th December 2021]. 3 Reeve A, Simcox E, Turnbull D. Ageing and Parkinson’s disease: Why is Advancing Age the Biggest Risk Factor? Ageing Research Reviews 2014 Mar; 14(100) 19-30. Available from: https://doi.org/10.1016/j.arr.2014.01.004 [Accessed 15th December 2021]. 4 National Institute for Health and Care Excellence. NICE Guideline NG71. Parkinson’s Disease in Adults: Diagnosis and Management. Full Guideline. London: NICE; 2017. Available from: https://www.nice.org.uk/guidance/ng71/evidence/full-guideline-pdf-4538466253 [Accessed 15th December 2021]. 5 Parkinson’s UK. Poll Finds a Quarter of People with Parkinson’s are Wrongly Diagnosed. 2020. Available from: https://www.parkinsons.org.uk/news/poll-finds-quarter-people-parkinsons-are-wrongly-diagnosed [Accessed 16th December 2021]. 6 Tran J, Anastacio H, Bardy C. Genetic predispositions of Parkinson’s Disease Revealed in Patient-Derived Brain Cells. Nature Partner Journals Parkinsons Disease 2020 Apr 24; 6(8). Available from: https://doi.org/10.1038/s41531-020-0110-8 [Accessed 16th December 2021]. 7 Sweeney P, Park H, Baumann M, Dunlop J, Frydman J, Kopito R, McCampbell A, Leblanc G, Venkateswaran A, Nurmi A, Hodgson R. Protein Misfolding in Neurodegenerative Diseases: Implications and Strategies. Translational Neurodegeneration 2017 Mar 13; 6(1) 6. Available from: https://doi.org/10.1186/s40035-017-0077-5 [Accessed 15th December 2021]. 8 Bernal-Conde LD, Ramos-Acevedo R, Reyes-Hernández MA, Balbuena-Olvera AJ, Morales-Moreno ID, Argüero-Sánche R, Schüle B, Guerra-Crespo M. Alpha-Synuclein Physiology and Pathology: A Perspective on Cellular Structures and Organelles. Frontiers In Neuroscience 2020 Jan 23; 13:1399. Available from: https://doi.org/10.3389/fnins.2019.01399 [Accessed 16th December 2021]. 9 Harris JP, Burrell JC, Struzyna L, Chen HI, Serruya MD, Wolf JA, Duda JE and Kullen DA. Emerging Regenerative Medicine and Tissue Engineering Strategies for Parkinson’s Disease. Nature Partner Journals Parkinsons Disease 2020 Jan 8; 6(4). https://doi.org/10.1038/s41531-019-0105-5 [Accessed 11th January 2022]. 10 Rees RN, Acharya AP, Schrag A, Noyce AJ. An Early Diagnosis is Not the Same as a Timely Diagnosis of Parkinson's Disease [version 1; peer review: 2 approved]. F1000Research 2018 Jul 18; 7(F1000 Faculty Rev) 1106. Available from: https://doi.org/10.12688/f1000research.14528.1 [Accessed 15th December 2021]. 11 Wang L, Zhang Q, Li H, Zhang H. SPECT Molecular Imaging in Parkinson's Disease. Biomed Research International. 2012 Mar 24. Available from: https://doi.org/10.1155/2012/412486 [Accessed 7th January 2022]. 12 Varrone A, Halldin C. Molecular Imaging of the Dopamine Transporter. Journal of Nuclear Medicine. 2010 Sept1; 51(9) 1331-1334. Available from: https://doi.org/10.2967/jnumed.109.065656 [Accessed 11th January 2022]. 13 Deng XY, Wang L, Yang TT, Li R, Yu G. A Meta-Analysis of Diffusion Tensor Imaging of Substantia Nigra in Patients with Parkinson’s Disease. Scientific Reports. 2018 Feb 13; 8: 2941. Available from: https://doi.org/10.1038/s41598-018-20076-y [Accessed 7th January 2022]. 14 Mitchell T, Lehéricy S, Chiu SY, Strafella AP, Stoessl AJ, Vaillancourt DE. Emerging Neuroimaging Biomarkers Across Disease Stage in Parkinson Disease: A Review. JAMA Neurology. 2021 Oct 1; 78(10)1262-1272. Available from: https://doi.org/10.1001/jamaneurol.2021.1312 [Accessed 7th January 2022]. 15 Lorio S, Sambataro F, Bertolino A, Draganski B, Dukart J. The Combination of DAT-SPECT, Structural and Diffusion MRI Predicts Clinical Progression in Parkinson's Disease. Frontiers in Aging Neuroscience. 2019 Mar 15; 11:57. Available from: https://doi.org/10.3389/fnagi.2019.00057 [Accessed 11th January 2022]. 16 National Institute for Health and Care Excellence. Levodopa with Carbidopa and Entacapone. British National Formulary. 2022. Available from: https://bnf.nice.org.uk/drug/levodopa-with-carbidopa-and-entacapone.html#indicationsAndDoses [Accessed 11th January 2022]. 17 Lee PS, Richardson RM. Interventional MRI-Guided Deep Brain Stimulation Lead Implantation. Neurosurgery Clinics. 2017 Oct 4; 28(4) 535-544. Available from: https://doi.org/10.1016/j.nec.2017.05.007 [Accessed 11th January 2022].

P078 Neurological imaging of acute ischaemic stroke

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Objective: A review of the strengths and weaknesses of different imaging modalities in the detection of acute ischaemic stroke

Conclusion: In conclusion CT is an essential imaging modality for the detection of acute ischaemic stroke and useful for differentiating between haemorrhagic and ischaemic. MRI diffusion weighted image could offer more information if CT appears normal, and in some trusts where MRI is more accessible MRI might be used more but the delay in using MRI compared to CT could affect the patients success rates in treatment and eligibility for endovascular thrombectomy. Therefore non-enhanced CT followed by a CTA and / or perfusion CT is more widely used.

1. Chung DYF, Dipanjali Mondal, Holmes EJ, Rakesh Misra. Emergency Cross-sectional Radiology. Cambridge University Press; 2012. 2. Hočevar A, Ješe R, Tomšič M, Rotar Ž. Risk factors for severe cranial ischaemic complications in giant cell arteritis. Rheumatology. 2020 Mar 3; https://pubmed.ncbi.nlm.nih.gov/32125431/ [Accessed on: 07/01/2022] 3. Monthly mortality analysis, England and Wales - Office for National Statistics [Internet]. www.ons.gov.uk. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/may2021 [Accessed on: 07/01/2022] 4. Barber PA. Imaging of the brain in acute ischaemic stroke: comparison of computed tomography and magnetic resonance diffusion-weighted imaging. Journal of Neurology, Neurosurgery & Psychiatry [Internet]. 2005 Nov 1 [cited 2019 Nov 27];76(11):1528–33. Available from: https://jnnp.bmj.com/content/76/11/1528.short [Accessed on: 07/01/2022] 5. Smith AG, Rowland Hill C. Imaging assessment of acute ischaemic stroke: a review of radiological methods. The British Journal of Radiology. 2017 Dec 11;20170573. Available from: https://pubmed.ncbi.nlm.nih.gov/29144166/ [Accessed on: 07/01/2022] 6. Birenbaum D, Bancroft LW, Felsberg GJ. Imaging in acute stroke. The western journal of emergency medicine [Internet]. 2011;12(1):67–76. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088377/ [Accessed on: 07/01/2022] 7. NICE. Recommendations | Stroke and transient ischaemic attack in over 16s: diagnosis and initial management | Guidance | NICE [Internet]. Nice.org.uk. NICE; 2019. Available from: https://www.nice.org.uk/guidance/ng128/chapter/Recommendations#initial-management-of-suspected-and-confirmed-tia [Accessed on: 07/01/2022] 8. Morgan MA. Right MCA infarction with thrombectomy | Image | Radiopaedia.org [Internet]. Radiopaedia. [cited 2021 Dec 1]. Available from: https://radiopaedia.org/images/30828669?case_id=53899 [Accessed on: 07/01/2022] 9. Bhuta S. Diffusion weighted MRI in acute stroke | Radiology Reference Article | Radiopaedia.org [Internet]. Radiopaedia. [cited 2022 Jan 7]. Available from: https://radiopaedia.org/articles/13401 [Accessed on: 07/01/2022] 10. Nael K. Detection of Acute Infarction on Non–Contrast-enhanced CT: Closing the Gap with MRI via Machine Learning. Radiology. 2020 Mar;294(3):645–6. Available at: https://pubs.rsna.org/doi/full/10.1148/radiol.2020192703 [Accessed on: 07/01/2022] 11. Excellence in stroke prevention and Early management [Internet]. strokeforum.com. Available from: https://www.strokeforum.com/acute-stroke-management/imaging-in-stroke [Accessed on: 07/01/2022] 12. Hoyer C, Szabo K. Pitfalls in the Diagnosis of Posterior Circulation Stroke in the Emergency Setting. Frontiers in Neurology. 2021 Jul 14;12. 13. Unnikrishnan D, Yada S, Gilson N. A case of large right MCA stroke with hyperdense MCA sign in CT imaging. Case Reports [Internet]. 2017 Nov 22 [cited 2020 Sep 16];2017:bcr. Available from: https://casereports.bmj.com/content/2017/bcr-2017-222529 [Accessed on: 07/01/2022]

P079 The clinical factors most likely to result in an abnormal CT head - a UK trauma centre experience

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Background: Demand for medical imaging has significantly increased in the UK with Computed Tomography (CT) becoming the main modality used in the assessment of suspected head injuries. We looked at all such CT Heads performed in our Trust over the course of one month and analysed those that were abnormal to assess for specific links with the clinical factors provided in the history.

Method: A retrospective audit was performed looking at all inpatient CT Heads performed over the course of one month between 15th October -- 15th November 2021. We then analysed the reports for the presence of intracranial and/or extracranial injuries and tried to identify commonly related clinical findings.

Results: 535 CT Heads were analysed of which 13.3% (n=71) were abnormal. Almost half of patients (45% n=242) were on some form of anticoagulation and this was found to be the most common indication for requesting a CT Head. Of the abnormal scans, bruising around the ears/eyes and retrograde amnesia were the two most common clinical factors in the history provided -- demonstrated in almost 30% of patients. 25% of patients found to have an abnormal CT were on some form of anticoagulation.

Conclusion: Within our Trust, being on anticoagulation is by far the most common indication for a CT Head overall. However, facial bruising and retrograde amnesia were found to be the most common clinical factors resulting in an abnormal CT Head.

P080 Compliance with NICE guidelines 2014 for traumatic head injury in regard to CT (Re-audit)

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Background: Traumatic head injury is one of the most common causes of mortality and morbidity in the UK for the adult and paediatric population with a 1.4 million emergency attendance annually and 200,000 admissions (1). CT head is the key primary imaging modality for prompt detection. An audit is performed based on the revised 2014 NICE guidelines for traumatic head injury to assess local practice.

Method: Retrospective analysis of the data of the same month in two consecutive years (Sep 2019 and Sep 2020) of all A&E patients with CT head and traumatic head injury was performed at a tertiary teaching hospital. The time taken for an emergency patient to be scanned, the time taken for a provisional CT head radiology report to be completed and the details of the CT head request were collected from PACS and RIS.

Results: Data of 353 cases and 330 cases of trauma CT head scans in Sep 2019 and 2020 were collected respectively. 81% (2019) and 76% (2020) of patients had CT head scans within 1 hour or 8 hours of risk factors identified. 66% (2019) and 68% (2020) of CT head reports were authorised within 1 hour of the scan being performed.

Conclusion: The results highlighted longer request-to-scan time which could be due to staffing and Covid-19-related factors. This audit also showed that more CT heads were reported in a shorter timeframe which could be due to the implementation of registrar-to-registrar referral during out-of-hours resulting in less disruptions during reporting.

1. National Institute for Health and Clinical Excellence. (2014) CG176. Head Injury: assessment and early management. London. https://www.nice.org.uk/guidance/cg176.

2. irefer. The Royal College of Radiologists. (2017) Making the best use of clinical radiology services 8th edition. https://www.rcr.ac.uk/sso/irefer/v8.

DOSE / RADIATION PROTECTION / IMAGING TECHNOLOGIES POSTER PRESENTATIONS

P082 Paediatric unenhanced CT head dose audit: Comparing our single-photon emission computed tomography (SPECT) scanner in the 16 slice standard CT acquisition mode against our standard 64 slice CT scanner

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Sheffield Children's Hospital NHS Foundation Trust

Background: At our tertiary referral paediatric specialist trust we use a single General Electric (GE) 64 slice scanner, the Lightspeed VCT 64, for our CT scanning. The most frequently performed CT study in our trust is an unenhanced CT head. There are occasions where due to routine maintenance, quality assurance testing or unexpected faults that the CT scanner is not available for use. On these occasions, where clinical need dictates that imaging cannot be delayed, we use the CT scanning capabilities of our single-photon emission computed tomography (SPECT) scanner in the standard CT acquisition mode - installed in 2019. Whilst standard quality assurance processes are undertaken on both the CT and SPECT scanner in accordance with the Ionising Radiation Regulations 20171, a comparison of the doses from our SPECT scanner in CT mode and our standard CT scanner has not previously been made.

Purpose: To audit the dose from the SPECT scanner against our reference standard, the doses from our standard CT scanner

Methods: A retrospective, single centre audit evaluated 94 unenhanced CT heads between May 2019 and June 2021. Only studies acquired in a single acquisition were included.

Results: A one-way analysis of covariance (ANCOVA) test showed no significant difference ($p>0.05$) in the mean dose for an unenhanced CT head on the CT scanner vs the SPECT scanner when adjusted for age at event. Subjectively there was no difference I image quality. We will continue to use the SPECT scanner as a backup to perform standard CT acquisitions when adjusted for age at event.

1. Ionising Radiations Regulations 2017. Available at https://www.legislation.gov.uk/uksi/2017/1075/pdfs/uksi_20171075_en.pdf (accessed 15/12/2021)