through “user groups”, supported by a senior Clinical Scientist to troubleshoot, aid the process and share best practice. Reports were submitted quarterly to the Trust Radiation Protection Committee and Safe Care Group.

Results: Previously, compliance against statutory regulations was not clear. The RPC received reports containing subjective evidence reliant on the Radiation Protection Service, little contribution from clinical directorates, providing inadequate assurance to the Trust Board. The changed arrangements provided robust, good quality evidence. Quarterly audits suggested overall compliance to be well-monitored and improving. At the end of Quarter 3 the RPC received a summary of the previous year’s compliance, and recommendations were made to Clinical Directors. The changed arrangements will allow future comparative audits of compliance to be undertaken.

Relevance: Due to legislation, trusts require robust assurance of safety and quality, especially under CQC regulations and foundation requirements. Trusts should ensure that they can demonstrate compliance and assure regulators of continually improving care. This process allows assessment of compliance and will monitor improvement.

General

P-165 Establishing an MR lymphography service for patients with chronic lymphoedema

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NHS Tayside

Purpose: Chronic Lymphoedema (CL) of the lower extremities is a debilitating condition, and conventional imaging is often inadequate for diagnosis and clinical management. Magnetic Resonance Lymphography (MRL) is a useful non-invasive technique for evaluating CL. The purpose of this work is to provide a pictorial review of our initial experience in performing MRL within the context of establishing a clinical MRL service.

Methods: Twelve patients with known CL were referred for MRL. Imaging was performed on Siemens scanners (1.5T Avanto, 3.0T Trio) using body, spine and peripheral angio coils. Pre-contrast Fast Low Angle Shot (FLASH) coronal images were acquired at three stations - abdomen, upper legs and lower legs. Subsequently a gadolinium contrast agent with Lignocaine was injected between the toes, and post-contrast data were acquired at each station at 0, 10, 20, 30, 40 and 50 minutes. Pre- and post-contrast images were subtracted and maximum intensity projection (MIP) images derived.

Results: In all cases the main lymphatic vessels in the leg and thigh were clearly demonstrated. Two were radiologically normal (no pathology detected), but the other ten contained some degree of pathology at one or more station. Deep vessel obstruction, dilated vessels and collateral lymphatic vessels were all well visualised.

Conclusions: MRL can provide detailed anatomical information of the lymphatic system and soft tissues in patients with CL of the lower extremities. This enables a more accurate diagnosis and is now the modality of choice for the investigation of CL at our centre.

P-167 Role of nanotechnology in medical imaging

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Like many other applications of nanotechnology in the field of science and technology this technology is also attracting researchers in diagnosis and treatment of diseases. Man-made nanoparticles, of the order of 100 nm, can be used for imaging and diagnosis of diseases at initial stages. A number of nanomaterials are under development for their applications in diagnosis and treatment of diseases. This technology is not only proving to be capable to enhance diagnosis capability of the traditional imaging modalities like MRI but also introducing other methods of detecting abnormalities in patients. This review indicating that in future it may one of the most promising techniques for imaging abnormalities.

P-168 ‘The waves of sound’ - A short history of evolution of ultrasonography for medical imaging

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Objectives:

1.We will provide a glimpse of history and evolution of development of ultrasound.

2. Briefly discuss about recent developments and possible future applications of US.

Description: Ultrasound is one of the most commonly used imaging modality in our daily imaging practice. The journey that led to the invention and use of ultrasound for medical imaging has been long and it can be traced back to as far as 6th century BC when Greek philosopher Pythagoras performed experiments on the properties of vibrating strings. In 1942, Karl Dussik (Vienna) started its use for medical purposes in brain imaging followed by its use in Musculoskeletal imaging in 1958. Professor Ian Donald (Glasgow), used it for gynaecological purposes in 1955 followed by first B-mode scan in 1972 by McDonald and Leopold. After this ultrasound has become an integral part for diagnostic and therapeutic use in different specialities including obstetrics, cardiology (ECHO), anaesthesia, neonatology, ophthalmology, urology etc. The list of contributors in this process is endless and there were interesting observations and experiments which all eventually evolved into the existing technology.

Conclusion: We hope to present in this poster a vivid account of all interesting facts and historical events, which led to the invention of ultrasound and its application in diagnostic radiology. We will also cover the recent advancements such as microbubble, 4D ultrasound, elastography and fusion imaging and many other future possible applications.

P-169 An amazing journey of evolution of Xrays: Revolution of medical diagnosis

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Plymouth Hospitals NHS Trust; Leeds Teaching Hospitals NHS Trust; Hull and East Yorkshire Hospitals NHS Trust

Objectives:

1. We will look at the history and evolution of Xrays for medical use.

2. Briefly discuss all the related investigations and possible future applications.

Description: X-rays are part of the electromagnetic spectrum, an ionizing radiation with wavelengths shorter than ultraviolet light. X-rays are used to view a non-uniformly composed material in form of an image, which can be developed in order to display areas of different density and composition. Plain xrays are the most commonly used day to day examination worldwide (as in 2010, 5 billion medical imaging studies were performed).

X-rays have been used for medical imaging, since German physicist Wilhelm Röntgen discovered them in 1895. In the same year, Thomas Edison investigated materials' ability to fluoresce when exposed to X-rays. The other important early researchers in X-rays were Ivan Pulyui, William Crookes, Johann Wilhelm Hittorf, Eugen Goldstein, Heinrich Hertz, Philipp Lenard, Hermann von Helmholtz, Charles Glover Barkla, Nikola Tesla and Max von Laue. The use of X-rays for medical purposes (which developed into the field of radiation therapy) was pioneered by John Hall-Edwards in Birmingham, England in 1908.

Conclusion: Tomography, fluoroscopy, digital radiography and CT scanning are various topics related to Xrays, which we will cover in our review. CT uses multiple xrays by clever reconstruction techniques to generate a 3D representation of the scanned object/patient. We aim to display all the historical aspects of xrays with a clear time line and also discuss various uses, advantages, futures advances and challenges.

Student radiography

P-170 Dose audit of adult chest radiographs

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Background: As required by the Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R) dose to patients should be kept as low as reasonably practicable (ALARP) and dose audits for selected diagnostic examinations are performed to optimise patient radiation dose. The chest radiograph is one of the most frequently performed radiographic examinations. About 1 million of chest x-rays were performed in the UK during 2008 which accounted