

primary cardiac tumours, metastases from testicular tumours, squamous carcinoma and myeloma and tumours growing down veins into the heart from bronchial carcinoma, hepatoma and renal cell carcinoma.

Relevance/impact: Cardiac masses are relatively uncommon but general radiologists using MDCT now recognise more cardiac abnormalities. This pictorial review of cardiac masses illustrates some of these.

Outcomes: To raise awareness of the differential diagnoses of cardiac filling defects.

Discussion: The most common cause of a cardiac filling defect is thrombus. However, there are other diagnoses which have similar appearances on MDCT which are important to consider.

Metastatic cardiac tumours are 20 – 40 times more common than primary neoplasms. Of primary cardiac tumours, 75% are benign (half of which are myxomas) and 25% are malignant.

P-012 **NICE guidance for recent onset chest pain: time to be broken?**

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In our institution we perform coronary calcium scoring and subsequent CT coronary angiogram (CTCA), on all patients referred for investigation of coronary arteries. In current NICE guidance for investigation of suspected coronary artery disease, patients with high Agatston scores are advised to undergo invasive angiography without CTCA, due to perceived inaccuracy from calcification. We use new generation high-definition HDCT scanners for cardiac imaging which increase diagnostic accuracy. We proposed that many patients with high calcium levels, but HDCT-proven stenoses are treated without further diagnostic procedures, thereby reducing both cost and time to treat.

Methods: Departmental computer systems were interrogated to identify patients with Agatston scores over 400 scanned using our HDCT scanner during 2010. CTCA findings of these patients were compiled from radiology reports, plus information regarding further investigations and management were obtained from cardiology departmental records.

Results: 59 patients were retrospectively identified with high Agatston scores proceeding to HDCTCA. 24 (41%) patients underwent subsequent diagnostic invasive angiography within 6 months.

The remaining 35 patients did not undergo additional invasive angiogram. Of these, 3/35 (8%) had no CT-detected stenosis, 6/35(17%) had mild and 28/35(80%) had moderate/severe stenoses.

Conclusions: Treating solely on CTCA results saved 35 invasive angiograms during 2010. From the national tariff, the overall cost of an invasive angiogram is £995, therefore during 2010 a total £34825 has been saved. We conclude that HDCTCA alone is sufficient to guide treatment in a majority of patients with coronary artery disease, even in the presence of extensive coronary artery calcification.

Clinical: Vascular

P-013 **Congenital and acquired variants of the left brachiocephalic vein and its branches – implications for cardiac and radiological interventions**

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Aims: To delineate by MDCT variants of the left brachiocephalic vein relevant to venous vascular interventions.

Content: A series of cases of venous anomalies of the left brachiocephalic vein with actual or potential difficulties in transvenous interventions are shown. These include left SVC, double SVC, left vertical vein, left vertical vein with partial anomalous pulmonary venous drainage, left subaortic brachiocephalic vein and rarer connections with the azygous system. Multiplanar reformatting helps in delineating the precise anatomy.

Outcome: An explanation of anomalous anatomy which may complicate venous vascular interventions and thus reduction of risk to patients.

Relevance: An estimated 200,000 procedures are performed annually in the UK requiring central venous access, including placing lines for secure access, large volume exchange, transvenous

pressure measurement and pacing. As fluoroscopic guidance is not always used unsuspected venous anomalies can complicate these procedures.

Discussion: Anomalous vessels may present incidentally to all CT radiologists and be mistaken for other structures. Detection is important clinically, as the population undergoing thoracic scanning has a greater chance of undergoing procedures involving central venous catheterisation.

P-014 CT findings of rupture, impending rupture, and contained rupture of abdominal aortic aneurysm: the common, the uncommon, and the rare

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Introduction: AAA affects 5-10% of men aged 65-79, with incidence increasing as a consequence of the aging population. Rupture is the most common and devastating complication of aortic aneurysm and is responsible for 7,000 deaths each year in the UK. Although the imaging findings of abdominal aortic aneurysm rupture are usually obvious, contained and impending ruptures can be subtle. Careful examination of the morphology of the aneurysm and familiarity with uncommon and rare presentation are essential skills for reporting radiologists.

Method: Retrospective study. All patients who had open repair or endovascular repair of rAAA over last 5 years were traced from the vascular department database. All imaging were reviewed. Data collected from operative, medical notes and clinic letters. Retrospective review of the CT imaging of (86) patients with mean age of 65 years and 85% were men.

Results: We present a series of imaging examples with explanation and comments. We also explain the reason for decision to whether open repair or EVAR was performed. Examples includes; rupture, Aortocaval and Aortovisceral fistula, subtle impending rupture and others with explanation.

Conclusion: Prompt detection of abdominal aortic aneurysm rupture is critical because survival is improved by emergent surgery. Identification of impending or contained rupture is equally important because these patients are at risk for frank rupture but can generally benefit from a more thorough preoperative assessment. Interpreters of these studies should be familiar with the common, uncommon and rare

P-015 Imaging in large vessel vasculitis: a case series

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Introduction: Large vessel vasculitis, including Takayasu's arteritis, is uncommon in the UK. Clinical presentation is frequently nonspecific and laboratory tests non-discriminatory, therefore imaging has a central role in diagnosis and disease monitoring, involving several modalities including CT and MRI (with angiography), FDG-PET and ultrasound.

Methods: A case series of five patients with large vessel vasculitis is presented with relevant imaging studies. The patients were assessed between 2001 and 2011.

Results: 4 females and 1 male aged between 40 and 63 years at diagnosis are included, 3 with Takayasu's arteritis and 2 with inflammatory aortitis. The time from symptom onset to diagnosis varied from 6 weeks to 28 months. The imaging modalities used for diagnosis in each case were: MRI, MR angiography, contrast CT, CT angiography and arterial Doppler ultrasound. In 2 cases the diagnosis of large vessel vasculitis was suspected clinically; in 3 cases imaging studies suggested the diagnosis. One case with Takayasu's arteritis had a negative contrast CT despite positive clinical features and raised inflammatory response; MR angiography 7 months later made the diagnosis. Another case showed evidence of aortitis on contrast CT, but not on MR angiography performed after 5 days of prednisolone treatment. In the case diagnosed with CT angiography, the optimum delay post contrast to show vessel wall enhancement was found to be 6 minutes. FDG-PET was not used.

Discussion: Our experience supports the view that a multimodality approach is required in the imaging of large vessel vasculitis. CT angiography is able to show vessel wall changes in early lesions;

delayed images may also be useful to assess disease activity. MRI angiography avoids radiation exposure but may be limited in its ability to define disease activity. FDG-PET has the highest sensitivity and can show disease extent and treatment response, however is less specific and availability is limited. Our series demonstrates that changes are not always identified using CT or MRI alone and that they are best used in combination if one shows a negative result. We recommend using CT or MR angiography with delayed images at 6 minutes. FDG-PET is most sensitive for follow up if available, but CT or MR angiography can also be used for assessing response to treatment.

P-016 Segmental arterial mediolysis- endovascular management

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Segmental Arterial Mediolysis is an important cause of abdominal haemorrhage, which has characteristic clinical and radiographic features. A series of 5 cases is presented, which were managed successfully by endovascular coil occlusion. The pathophysiology and incidence of SAM will be discussed, with a brief review of the literature.

P-017 Combined axillary-femoral approach for recanalization and stenting of aorto-iliac occlusions: technique, outcome and complications

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Aim: We share our experience of a combine axillary-femoral approach to treat complex aorto-iliac occlusions in five patients.

Content: Step-by-step diagrammatic description of technique

Case presentation

Tips and discussion of alternative approaches

Relevance/impact: Recanalization of occluded aorta and iliac arteries is technically demanding. Recent BSIR Iliac Angioplasty and Stenting (BIAS) III Registry reported failure to cross lesion in 1.9% of segments. We believe the combined axillary-femoral approach is a safe and efficacious method to treat occlusions that cannot be transversed by an ipsilateral retrograde or contralateral crossover approach, although in one case there is mild long term procedure related morbidity.

Outcome: Bilateral critical ischaemia – distal aorta and bilateral common iliac occlusion – right iliac stent and crossover graft – symptom free survival for 6 months – none

Bilateral claudication – bilateral common iliac occlusion – bilateral iliac stents– symptom free r over 5 years – none

Left critical ischaemia (previous right amputation) – infra-renal aorta and bilateral common and external iliac occlusion – left aorta and iliac stents – symptom free over 2 years – none

Bilateral iliac claudication – bilateral common iliac and left external iliac occlusion – bilateral iliac stents – both stents and aorta occluded after 6 months – none

Bilateral claudication – bilateral common iliac occlusion – bilateral iliac stents – symptom free over 2 years – left median nerve palsy

Discussion: Even very long aorto-iliac occlusion can be successfully treated by this method, but patients should be specifically warned about the risk of brachial plexus injury.

P-018 WHO safety checklist audit

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Aims/ Objectives: A preliminary evaluation of completion rates of WHO safety checklist.

Content: Analysis was conducted for completion of WHO checklist including sign in, sign out and time out. Furthermore completion of the locally designed pre-intervention checklist was audited.

Relevance/Impact: The WHO interventional radiology checklist is based on the recent surgical checklist. The principle is potential communication errors are eradicated reducing avoidable

complications. The checklist is new to radiology and deemed mandatory. It is critical to ensure uptake to avoid potential complications and comply with national objectives.

Outcomes: 100 cases analysed were analysed at a tertiary centre. The majority of which were angiogram/angioplasty and chemo-embolisation

The pre-intervention ward checklist was completed in 82%.

Sign in was performed in 83%, however sign out was only performed in 65%. When general anaesthetic was used only 50% had time out read.

Discussion: It is not easy to prove the checklist will prevent complications, however as a simple tool it provides reassurance and asserts value to members of the team. Perhaps the most dangerous part of the procedure (general anaesthetic) may be the worst completed (time out), maybe due to its infrequency. Furthermore the sign out is poorly completed, perhaps due to time pressures, but indicates the potential to omit critical details. Poor retrievability of data was a problem, along with poor completion of the checklist opens potential for litigation. Alteration of the checklist to create a user-friendly approach and place an onus on the interventionalist to become a named responsible individual.

P-019 **Efficacy of surveillance and radiological interventions in haemodialysis arterio-venous fistulae**

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Introduction: Haemodialysis(HD) access failure is a major cause of morbidity and hospitalisation in patients on haemodialysis and accounts for approximately 20% HD patient hospitalisations in the United States with a cost of 1 billion dollars annually. An access flow less than 500ml/min is associated with increased risk for access failure but evidence is lacking on the effectiveness of strict surveillance and timely intervention.

Aim: All arteriovenous fistula interventions over a 3 year period in a District General Hospital were studied to assess effectiveness of monitoring and timely intervention of renal vascular access sites in ensuring its long term patency . 70 interventions on 52 patients were carried out with a mean age of 69 years. The majority (66%) of interventions were on left arm fistulae. Above 80% of radiological corrective interventions were achieved in the first 2 weeks from diagnosis. Venoplasty predominated (67%) and the need for arterial interventions including thrombolysis were minimal. While 8% of fistulae failed within one year of the corrective procedure, vast majority (63%) were being used as primary access for haemodialysis at one year follow up and the rest were lost due to transplantation or death. The vascular access MDTs were a crucial factor in achieving standards recommended by Renal Association.

Conclusion: Monitoring and surveillance with subsequent pre-emptive radiological intervention improves outcomes in AV fistula survival with consequent reduction in patient morbidity, hospital admissions and cost of health care delivery. Access monitoring and multidisciplinary intervention should thus be integrated as part of routine dialysis care.

P-020 **Distinguishing complications from normal expected imaging appearances post transhepatic arterial chemoembolisation (TACE) – a pictorial review**

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Aims/ Objectives: To depict the normal imaging appearances of the liver post TACE and illustrate the recognised complications following this procedure.

Content: We present a brief description of the relevant hepatic anatomy and different TACE techniques. The normal imaging appearances of the liver seen on ultrasound, CT and MR imaging after TACE are depicted in a pictorial review and a concise explanation is provided. We also illustrate a few cases of recognised complications following TACE procedures at our tertiary hepatobiliary centre.

Relevance: Contrast enhanced CT, ultrasound and MR are now routinely widely used in the follow up of patients undergoing TACE to determine the extent of tumour necrosis and detect the presence of residual tumour, recurrence or complications like abscess formation, rupture or haemorrhage.

Outcome: In our experience, follow up imaging of patients undergoing TACE at our centre is often performed at the referring hospital. Awareness of normal imaging appearances following TACE and the early recognition of complications by radiologists enables them to guide clinicians to initiate appropriate treatment.

Discussion: TACE is increasingly becoming the mainstay for treatment of unresectable liver tumours. It has been shown to reduce tumour size, provide palliation and improve survival. The wide variety of TACE techniques contribute to different imaging appearances and consequently requires tailoring of appropriate follow up imaging modalities by the radiologist. Distinguishing normal imaging appearances from complications helps reduce unnecessary intervention and thus minimizes patient morbidity.

Clinical: GI

P-021 **The use of ultrasound scanning in the diagnosis of impalpable groin hernias**

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Purpose: Ultrasound scanning uses high frequency sound waves to create images of the body. It is non-invasive, does not involve ionising radiation, and is especially useful in the imaging of soft tissues. Hernias can present with persistent groin pain, but often clinical examination is normal or inconclusive. The aim of our study was to demonstrate the use of ultrasound in the diagnosis of impalpable groin hernias.

Methods: We looked at patients who presented to a single surgeon's outpatient clinic with a history suggestive of a groin hernia, but no palpable hernia found on clinical examination. Patients who presented between 1st January 2009 and 31st December 2009 were included in the study. All patients underwent ultrasound scan. Patients whose scan suggested a hernia were operated on, while those patients whose scans were normal were followed up at 6 months.

Results: Twenty nine patients underwent groin ultrasound during the study period. Sixteen of these were found to have scans suggestive of a hernia. Thirteen patients had negative scans. Of the 16 patients with positive scans, all 16 were found to have a hernia at operation. At 6 months, all patients with a negative scan were either symptom free or had an alternate diagnosis for their groin pain.

Conclusion: In the past, herniography and explorative surgery were used in the investigation of occult hernia. However this study has shown that ultrasound offers a cheap, non-invasive method of accurately diagnosing or ruling out impalpable hernias.

P-022 **The many faces of abdominal lymphomas : a pictorial review**

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Objective: To highlight the varied radiological appearances in abdominal lymphoma.

To discuss some of the atypical appearances and disease patterns of extra nodal disease.

Using illustrations, demonstrate some of the diagnostic challenges in this condition.

To emphasize the need for a multi-modality approach in investigating and monitoring this disease process.

Content: This pictorial essay is divided anatomically and each site of involvement is discussed separately. Using a wide range of ultrasound, MPR CT and MRI images, we demonstrate involvement of the hepatobiliary system, gastrointestinal and genitourinary tracts. We also describe some less common disease patterns including involvement of the peritoneum and anterior abdominal wall.