

Clinical: Chest

P-001 Erect positioning of patients for mobile chest-Xrays in the ICU setting

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Introduction: Our Intensive care unit (ICU) standard is that mobile Chest X-rays (MCXRs) should be performed with the patient erect/semi-erect, unless contraindicated, to facilitate interpretation.

Aims: The aim of this audit cycle was to improve compliance with this standard in a tertiary-referral mixed general and neuro-trauma ICU.

Content: This audit assessed:

- If 100 % of MCXRs had patient position labelled on the film
 - Of those labelled, how many were supine
 - Of those supine, how many had contra-indication to being erect
- If the overall compliance of erect-positioning for MCXR was 100%

Method:

Initial audit was done in July looking for the above information. After a review of the initial results, an action plan was determined at the departmental multidisciplinary meeting. Interventions included both intra/interdepartmental discussion and the introduction of educational posters. A repeat audit was taken to assess improvement.

Results:

	July	November
Labelling	92.86% (65/70)	93.42% (71/76)
Number of MCXRs taken supine	20/70	12/76
Supine CXRs (with contraindication to erect-positioning)	2/20 (both c-spine instability)	4/12 (all post c-spine fixation)
Overall compliance with erect-positioning	76.92% (50/65)	83.09% (59/71)

Discussion: The initial audit identified a significant gap in compliance with sitting patients erect for CXR where possible. The implementation of educational strategies, including a specific bedside poster, has made a significant improvement. A further review to identify why cases are not sat up is required to overcome any remaining barriers along with ongoing education to further improve compliance. The relevance of this audit could extend to other ICUs.

P-002 Fat in the chest - a pictorial review

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Aims/Objectives: To present a pictorial review of the different manifestations and appearances of fat in the chest.

Content of presentation: Fat can have many different manifestations in the chest. Unusual appearances on imaging can be a result of benign or malignant fat-containing processes as well as normal variance. Examples include normal cardiophrenic fat and mediastinal fat to neoplasms such as pulmonary lipomas and liposarcoma. This presentation describes these different processes and

Conclusion: Audit: 1 day standard: 40% imaged. 55% scanned within 3 days (from admission). 45% waited more than 5 days (up to 22 days)

Re-Audit:

1 day standard: 80% imaged which demonstrates 100% improvement
100% scanned within 3 days (from admission)

P-007 More than just a veil of groundglass: pneumocystis pneumonia unravelled

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Aims: 1. To review the epidemiology and microbiology, reiterating Pneumocystis jirovecii as the responsible pathogen.

2. Critical differences in clinical presentation of PneumoCystis Pneumonia (PCP) in AIDS and non-AIDS-immunosuppressed patients.

3. Typical and atypical HRCT manifestations of PCP.

4. HRCT findings in immune reconstitution inflammatory syndrome (IRIS)

Content: 1. Overview of the opportunistic infection PCP with a discussion of recent changes in nomenclature and changing epidemiological trends.

2. Pathophysiology of PCP infection using biopsy proven cases.

3. Pictorial review based on temporal evolution, with a discussion of acute, subacute and chronic PCP, including end-stage manifestations such as interstitial fibrosis and cystic lung disease.

4. Pathology and imaging of IRIS, which classically presents with an organizing pneumonia pattern on HRCT.

Discussion: "PCP" remains the term of choice amongst radiologists despite the re-classification of *P. carinii* to *P. jirovecii*. Whilst the incidence of PCP in AIDS decreases, in non-AIDS-immunocompromised patients it is on the rise, with significantly differing clinical presentations. This exhibit demonstrates the typical and more unusual findings of PCP on HRCT, with an emphasis on temporal evolution: acute, subacute and chronic appearances are reviewed. HRCT imaging of IRIS in PCP is also discussed.

P-008 Comparison of single source ECG gated versus dual source ungated flash CT scanning of the thoracic aorta

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Introduction: Cardiac motion degrades the images of the thoracic aorta on CT angiography. ECG gating prevents this, but is associated with a larger patient radiation dose. High pitch dual source CT scanning (Somatom Definition Flash, Siemens Healthcare) has a very high temporal resolution which might eliminate motion artefact without ECG gating. We compare image quality and radiation dose in single source ECG gated and dual source ungated Flash scanning of the thoracic aorta.

Methods: We analysed 13 consecutive ungated Flash CT scans and 13 consecutive ECG gated scans performed for possible aortic dissection. We assessed the scans for motion artefact and recorded the radiation dose and noise.

Results: All 26 scans were diagnostic. There was motion artefact on 1 out of 26 scans (an ECG gated scan). There was slightly more image noise on ungated Flash scans (21 HU v 16 HU). The radiation dose from the ungated Flash examination was only 40% of that delivered by the ECG gated examination - 8.6 v 21.6 mSv (P<0.001).

Discussion: Ungated Flash and ECG gated CT scans are equivalent in terms of scan quality and diagnostic accuracy but ungated Flash reduced the radiation dose by a factor of 2.5. We therefore advocate use of dual source ungated Flash CT for the assessment of the thoracic aorta in centres where this is available.

Patients treated with streptokinase had a successful treatment outcome in 8/12 cases that had ultrasound-guided chest drains compared to 4/8 who did not. The difference between the 2 groups was not statistically significant (p-value = 0.65)

Conclusion: Our experience suggests that ultrasound-guided chest drain insertion does not improve outcomes in patients with empyema treated with intrapleural streptokinase alone. Further work is required to characterise the role of ultrasound in the management of empyema treated with a combination of intrapleural streptokinase and DNase.

P-005 Recognising mesothelioma

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Purpose: Mesothelioma incidence rates have increased four-fold since the 1980s and are set to increase until 2020. Early diagnosis improves survival rates. Non specific signs and symptoms mean the condition is not readily diagnosed clinically. Imaging plays an important role in the detection of this condition.

Discussion: This pictorial essay provides examples of cases of mesothelioma on both CT and CXR. We include examples of cases in which imaging enabled an early diagnosis. Complications including invasion of the chest wall, mediastinum, vertebral column and lung are given. Metastatic mesothelioma, the pattern of lymph node spread and superior vena cava obstruction due to the condition are demonstrated.

Conclusion: Treatment for mesothelioma is often delayed until the disease is late in development as diagnosis is difficult in the earlier stages. Most patients are given a poor prognosis of only about a year to live. This poster serves to enable the audience to recognise the condition and it's complications in a timely fashion.

Jo Southgate

P-006 Delays in radiological imaging in patients with suspected pulmonary thrombo-embolism: a complete audit cycle

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Introduction & Aims: A retrospective audit:

1. assessment of suspected pulmonary thrombo-embolism (PTE) in acute medicine unit (AMU) setting.
2. Delays in radiological imaging within this treatment group.
3. Completion of audit cycle and re-evaluation of intervention strategies.

Method:

Audit: 20 patients referred to AMU with "suspected PE" in January 2010.

Re-Audit: 20 patients referred to AMU with "suspected PE" in May 2010, after interventions implemented.

Data on each admission was collected: time and date for request of imaging, whether requested as an inpatient or outpatient scan and finally the date of the examination. Other data also collated, such as, demographics.

Standard: patient's should be imaged within 1 day.

Interventions: "Click for Clots", intranet guidance which outlined safe patient pathway for patients with suspected PTE and 2 daily slots in radiology for imaging for patients from AMU. The audit cycle was then completed.

Results:

Audit: 9/20 waited more than 5 days for a scan; 8 were arranged as OP scans.

1 positive (waited 20 days) and 1 treated as had waited 22 days for scan

Re-audit: no-one waited longer than 3 days for a scan and no outpatient scans.

utilises examples from the different imaging modalities. There will be a particular emphasis on plain film interpretation.

Relevance/Impact: This educational presentation is hoped to be of relevance to radiologists, radiographers and anyone involved in imaging interpretation of the chest. Familiarity with certain typical appearances of common benign fatty processes will help reduce the number of unwarranted further investigations.

Outcomes: Multimodality pictorial review of fat-containing processes within the chest, with a particular emphasis on plain film imaging.

Discussion: As well as multiple imaging examples, relevant facts and clinical manifestations will be discussed.

P-003 **Imaging of asbestos related disease**

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Aims/Objectives: To familiarise the reader with the imaging features of benign and malignant asbestos related disease.

Content of Presentation: We will display the imaging findings of a range of asbestos-related pleural and pulmonary disease which includes benign pleural effusion, parietal pleural plaques, focal visceral pleural thickening, diffuse visceral pleural thickening, malignant mesothelioma, asbestosis and lung cancer. We will also describe the epidemiology and clinical features of these conditions.

Relevance/Impact: Asbestos-related disease continues to be an important clinical issue due to the long latent period between environmental or occupational exposure and clinical manifestation. In addition to the imaging findings we will discuss some of the difficulties and controversies in making a diagnosis and attributing causation.

Outcomes: To enable the radiologist to recognise the different patterns of disease and their significance in order to understand the aetiology and to direct appropriate management strategies.

Discussion: There is a spectrum of asbestos related diseases ranging from those which are common and asymptomatic to those which present as serious debilitating or malignant conditions. It is vital for a radiologist to be able to distinguish between these and aid clinical management effectively.

P-004 **Does ultrasound guided chest drain insertion improve clinical outcome in empyema treated with intrapleural fibrinolytics?**

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Introduction: The role of intrapleural fibrinolytic agents in the management of empyema remains controversial. Fibrinous bands are characteristic of empyema and make complete eradication of the collection by drain thoracostomy difficult in many cases. The second multicentre intrapleural sepsis trial (MIST2) demonstrated that streptokinase in combination with DNase improved outcomes in patients with empyema. We present our experience of ultrasound guided chest drains in the treatment of empyema treated with intrapleural streptokinase.

Methods: A retrospective review was performed of all patients who were diagnosed with empyema on ultrasound in our institution between June 2008 and June 2010. A review of all clinical records and imaging was performed for each patient. Successful clinical outcome was defined by improved radiological appearance, infection resolution and uncomplicated medical discharge. Results were analysed statistically using the Chi Squared Test.

Results: Overall 34 patients were identified of which 20 received intrapleural streptokinase. 12 had ultrasound-guided chest drains and 8 had non-ultrasound guided chest drains.