P575
Late-breaking abstract: Point-of-care chest sonography: A prospective observational study on 88 patients. Preliminary data
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Background: Bedside lung ultrasonography (BLU) is a technique performed and interpreted by the clinician who is in charge of the patient treatment. Even if recent studies show that BLU is theoretically useful in several diseases, the impact of this technique in clinical practice is still unknown. The primary aim of the present study was to analyze BLU indications in a respiratory medicine setting. The secondary aim was to describe the actual methodological application of BLU in the clinical practice.

Methods: Prospective observational analysis of consecutive BLU performed by pulmonologists at a University Hospital from April to May 2011. After each examination indication, methods and clinical consequences were recorded on a web-database.

Results: To date 88 exams on 88 patients (aged 42±34 years, mean±sd, 32 females, 32 pediatrics, 16 outpatients) were performed by 7 experienced operators. The quality of the examination was judged adequate in all patients. The most frequent indications were: lung consolidation (40%, of exams), pleural effusion (27%), guidance for thoracentesis (17%), acute respiratory failure (8%), and pneumothorax (3%). The mean duration of the exam was 10±4 minutes. As a result of BLU, in only 8% of the cases chest x-ray or CT were needed. Bedside clinician reported that in 73% of the cases BLU had a significant clinical impact on patient management.

Conclusions: Our preliminary results suggest that lung ultrasonography performed by pulmonologist is a feasible procedure, widely used in clinical practice for many indications. Further studies are needed to evaluate the impact of BLU on patients management.

P576
Incidental abnormalities found on CT pulmonary angiograms performed for suspected acute pulmonary embolism
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A CT pulmonary angiogram (CTPA) is performed commonly in the investigation of suspected pulmonary embolism (PE). Other lung, mediastinal and pleural pathologies of clinical importance may be found incidentally, not suspected from the chest X-ray (CXR). We studied 500 sequential CTPA scans done for suspected PE in a community hospital to assess the nature and frequency of any pulmonary pathology first suggested by the CTPA, with particular reference to pneumonia not diagnosed on the CXR. All CXR and scans were reviewed by a radiologist as well as the treating clinicians.

<table>
<thead>
<tr>
<th>CTPA</th>
<th>Pneumonia</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE +ve</td>
<td>123 (24.6%)</td>
<td>27 (5.4%)</td>
</tr>
<tr>
<td>PE -ve</td>
<td>377 (75.4%)</td>
<td>83 (16.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>110 (22%)</td>
</tr>
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</table>
PE was found in 123 of 500 (24.6%) scans. 110 of 500 (22%) scans showed evidence of pneumonia. Out of these 110 scans, 55 had no evidence of pneumonia on the CXR (of which 63% had been taken within 48 hours of the CTPA). Other pathologies were seen on 145 of 500 scans (29%).

Other pathologies seen on CTPA, (n=145):
- Nodules 8
- Scoliosis 1
- Atelectasis 48
- Post Op 5
- Consolidation 71
- Scarring 6
- Others 41 (28.27%)

As a result 15 had a PET scan of which 9 were FDG-avid and 7 proceeded to curative surgery (lobectomy/VATS), four patients to oncology (palliative radiotherapy). Three patients were referred for biopsy results and multidisciplinary team (MDT) database and patient case notes for the final clinical outcome.

Results: Of the 345 patients with an abnormal CXR that had a V/Q scan, 275 (80%) were reported as Low, 25 (7%) Moderate and 40 (12%) as High probability of PE. 5 patients scans were not formally reported. Of those in the Low Probability group, 9 had a subsequent CTPA with 1 (0.004%) being positive for PE, in the Moderate Probability group 20 had a subsequent CTPA with 5 (20%) being positive for PE and in the High Probability group 6 had a subsequent CTPA with 2 (5%) being positive for PE.

Discussion: One third of the patients that had a V/Q scan to investigate suspected PE had an abnormal CXR. Despite this, 275 (80%) of these patients had a low probability scan, 9 of these patients went on to have a CTPA and only 1 was positive for PE. A low probability V/Q scan may prevent unnecessary radiation exposure and adequately exclude PE, even in the presence of an abnormal CXR.
PS81  
Agreement between clinical and HRCT diagnoses in the evaluation of patients with respiratory diseases
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Aim: HRCT scans have been widely used in the diagnostic algorithm of respiratory diseases. In this study we aim to find out the agreement between clinical and HRCT diagnoses in such patients.

Methods: A retrospective study analysing 100 consecutive patients who had HRCT scans between July and September 2008. Data of scans and clinical information were obtained from electronic patients records.

Results: Total number of patients who had HRCT was 100. The average age of patients was 65.3. Males constituted 61%. 76% of referrals were made by respiratory physician (RP), the rest from other specialties. The commonest presenting symptom was SOB (61%). Overall 54% of HRCT diagnosis correlated with clinical diagnosis. 76% were made by RP of which 29 (38%) correlated with clinical diagnosis. A total of 38 patients had clinical sign on examination, 37 (97%) of these had HRCT findings consistent with clinical diagnosis but only 40 of the 62 patients (64%) with no clinical signs had clinicoanatomical correlation. 52 of the 56 patients (92%) who had prior chest X-ray abnormality which was later confirmed on a HRCT. The remaining 42 patients who had normal X-ray, only 20 (47%) had HRCT abnormality. The correlation increased to 96% when it was referred by a RP who had identified clinical signs and this further improved to a 100% when there was an associated CXR findings.

Conclusion: In this study only 54% of the patients had clinicoanatomical correlation. This correlation improved significantly to 100% when requested by RP who had prior identified clinical signs and chest X-ray abnormalities. Routine request for an HRCT scans are unyielding and should not be encouraged.

PS82  
Can D-dimer assay, together with clinical probability predict computed tomography pulmonary angiogram (CTPA) outcomes for pulmonary embolism (PE)?
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Introduction: Annual incidence of PE is estimated at 60-70/100 000. Current National Guidelines recommend patients presenting with suspected PE should be risk-assessed according to presenting symptoms, risk factors, clinical findings, and investigation results. Fear of missing potentially life-threatening PE likely results in over-investigation.

Aims: To assess if we are identifying patients correctly based upon pre-imaging risk scores and whether there is a D-dimer level most consistent with the diagnosis.

Method: A retrospective review of patients attending for CTPA in a one month period. Clinical indicators were documented and patients were divided into risk groups.

Results: 38 patients had a CTPA. 20 (52%) male. Age range 20-99years (median 62). 6 (15%) did not have a D-dimer. 22 (58%) had a major risk factor for PE, and 16 had a minor risk factor. 32 (84%) patients had a positive D-dimer (>200 ng/mL). In the high risk group 8/22 had a positive CTPA with median D-dimer of 1552ng/mL. 14/22 were negative for PE with median D-dimer of 345ng/mL. The remaining 16 patients who were low risk were all negative for PE on CTPA, median D-dimer 57ng/mL.

Conclusion: The results show that improvements can be made in investigating patients with suspected PE. A D-dimer level higher than that classed as positive in our hospital trust may be more appropriate from this small sample size. Further review with a larger number of patients is required. This may reduce the financial costs but more importantly will provide patients with appropriate directed care and reduced risk from radiological exposure.

PS83  
Early signs of hemoptysis, the advance CT approach
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Hemoptysis, the act of coughing up blood, is an important symptom since it frequently reflects serious underlying lung disease. If the hemoptysis is substan- tial, persistent, or recurrent then further evaluation is indicated, particularly since patients with chronic bronchitis related to smoking are at high risk for lung cancer. The aim of the study is to incorporate advance CT procedures in determining the right cause of hemoptysis and finding the right area of bleeding.

Material and methods: All patients were examined of 16 or 64 MDCT. We use standard lung procedure and all advanced MDCT methods, like 3D virtual bronchoscopy, nodule check, MDCT pulmonary angiography, very slow infusion injection of contrast agent, very fast bolus injection of contrast agent and wide specter of filters.

Results: We examined 1536 patients with coughing up blood and compared results on the most common causes with standard methods. Male patients were 917 and female 619, middle age of patients were 56.4 years. Our first aim was to find lung cancers in patients with recurrent hemoptysis where standard methods were insufficient. We found 18.76% more lung carcinomas in compare with standard procedures. Our second aim was to find right place of bleeding. In compare with standard methods we found the right place of bleeding in 21.54% more patients than with standard methods.

Conclusion: Improvements with advanced techniques are significant. It is important to notice that advanced techniques are not invasive and in any case danger to patients health.

Discussion: Regardless of whether the CXR report the preceding V/Q scan was suggestive of infection, effusion, congestion or “COPD”, the proportion of low probability V/Q scans was high (71-95%). This proportion is particularly high at 95% (and with no high probability scans) in those with CXRs suggestive of pulmonary oedema/congestion.

When used in the correct clinical context a V/Q scan can be used with a high degree of accuracy despite certain CXR abnormalities.

PS84  
Abnormal chest radiographs preceding V/Q scans: Does the type of abnormality matter?
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Introduction: Abnormal chest radiographs (CXR) have been considered to affect the interpretation of Ventilation/Perfusion scans (V/Q) for the investigation of suspected Pulmonary Embolism (PE). Recommendations suggest a V/Q scan only if a contemporaneous CXR is normal. Impact of individual CXR abnormalities on the outcome of V/Q scan has not been fully explored.

Aim: To study the impact of individual CXR abnormalities suggestive of a range of cardiopulmonary diseases on V/Q scan results for the investigation of suspected PE.

Method: All V/Q scan and preceding CXR reports from February ’08-January ’09 at our 960 bed teaching hospital were included in the study.

Results: Data for a total of 1041 subjects who had a CXR prior to V/Q was collected. Total number of V/Q done on those with abnormal CXR was 345. The CXR abnormalities were classified as per the underlying cardiopulmonary pathology suggested by the report.

Discussion: Regardless of whether the CXR report the preceding V/Q scan was suggestive of infection, effusion, congestion or “COPD”, the proportion of low probability V/Q scans was high (71-95%). This proportion is particularly high at 95% (and with no high probability scans) in those with CXRs suggestive of pulmonary oedema/congestion.

When used in the correct clinical context a V/Q scan can be used with a high degree of accuracy despite certain CXR abnormalities.

PS85  
Limits of normality of quantitative thoracic CT analysis
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Introduction: Quantitative CT scan analysis has been widely studied in ARDS patients, while, data on healthy population are scanty. Reference values, however, would be of clinical relevance when assessing, i.e., the excess lung weight or edema, or whatever change in CT anatomy/physiology induced by disease.

Methods: We retrospectively included patients who underwent a spiral CT scan for clinical reasons and whose images were considered normal by radiologists. Lungs were outlined on each CT image with a dedicated software; lung weight, volume and tissue fraction were computed with a dedicated software.

Results: We enrolled 52 patients (25 males), age 65±12 years, height 1.67±0.09 m, BMI 26.4±4.7 m². The table summarizes the main CT scan characteristics of patients, with CT taken at near total lung capacity.

While the gas volumes are dependent on inflation, the lung weight is not. Therefore, of particular note is the significant correlation between height and total lung CT scan characteristics.

<table>
<thead>
<tr>
<th>Whole population</th>
<th>Females</th>
<th>Males</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total lung weight (g)</td>
<td>921±174</td>
<td>833±157</td>
<td>1016±140</td>
</tr>
<tr>
<td>Total lung volume (mL)</td>
<td>4790±1413</td>
<td>4019±1037</td>
<td>5611±1314</td>
</tr>
<tr>
<td>Gas volume (mL)</td>
<td>3869±1312</td>
<td>3197±1006</td>
<td>4595±1225</td>
</tr>
<tr>
<td>Mean CT number (HU)</td>
<td>-792±61</td>
<td>-775±73</td>
<td>-811±38</td>
</tr>
<tr>
<td>Not inflating tissue (%)</td>
<td>9.6±</td>
<td>10.6±</td>
<td>8.8±</td>
</tr>
<tr>
<td>Poorly inflating tissue (%)</td>
<td>19.3±</td>
<td>16.3±</td>
<td>19.6±</td>
</tr>
<tr>
<td>Well inflating tissue (%)</td>
<td>61.9±</td>
<td>62±10</td>
<td>60.4±9</td>
</tr>
<tr>
<td>Over inflating tissue (%)</td>
<td>11.8±</td>
<td>9.6±</td>
<td>13.7±</td>
</tr>
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weight ($p<0.001$, $r^2=0.40$) according to the equation: total lung weight = -1268 + height$^*$1311. The correlation between height and total lung volume is statistically significant ($p<0.001$, $r^2=0.51$) according to the equation: total lung volume = -15220 + height$^*$12001.

**Conclusions:** Lung weight and volume are related to height in a healthy population.