Abstract P48 Figure 1 Graph showing total BAL volume yield from conventional and disposable procedures

P49 DOES VALSALVA MANOEUVRE REDUCE THE RISK OF COMPLICATIONS IN CT-GUIDED LUNG BIOPSIES?

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Introduction Multiple complications in CT-guided lung biopsy have been described with pneumothorax known to be the commonest.¹ This often leads to patients being admitted to hospital for observation or even drainage.

We hypothesised that increased intrathoracic pressure may reduce complications and a comparative retrospective cohort study was performed with the types and rates of complications recorded in patients instructed to perform a Valsalva manoeuvre versus those who were not.

Methods Patients who underwent CT-guided lung or pleural biopsies performed by multiple operators between January 2005 and December 2014 at Queens Hospital, Essex, UK, were retrospectively identified. Information from RIS reports and images from PACS were analysed. Patients were stratified into two groups, those who undertook Valsalva at time of biopsy and those who did not. Complication rates were assessed for haemoptysis, haemothorax and pneumothoraces including those requiring chest drain insertion. Statistical analysis was performed using Chi square test.

Results 791 procedures were performed over 10 years, 420 patients undertook Valsalva manoeuvre with mean ages 70.1 years $\pm$ SD 12.54: range 21–93. The other 371 patients did not undertake a Valsalva manoeuvre. Their mean ages were 71.1 years $\pm$ SD 11.52: range 27–91.

In total, 119 patients had complications post-procedure: 64 in the non-Valsalva group vs 55 in the Valsalva group (17.25% vs 13.10%, $p = 0.05$).

Rates of haemoptysis were significantly reduced with Valsalva (2.16% vs 0.24%, $p = 0.006$). Pneumothorax requiring chest drain (2.70% vs 1.43%, $p = 0.10$) and those managed conservatively (12.40% vs 11.19%, $p = 0.30$) were higher in the non-Valsalva group.

Rate of haemothorax (0.24% vs 0%, $p = 1$) was greater in the Valsalva group.

Conclusion Our study shows that Valsalva manoeuvre at the time of biopsy helps reduce the rate of complications, with a statistically significant decrease in rate of haemoptysis. Rates of pneumothoraces requiring chest drain insertion and other pneumothoraces were also reduced.

The differences could be explained by physiological changes in pulmonary wedge pressure and positive end expiratory pressure brought about by increased intrathoracic pressure following Valsalva manoeuvre.

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P50 CHANGING USE OF CT PULMONARY ANGIOGRAPHY IN A UK TERTIARY HOSPITAL OVER A 6-YEAR PERIOD

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Background CT pulmonary angiography (CTPA) is widely regarded as the gold standard test for suspected pulmonary embolism (PE) and is increasingly used as an all-inclusive diagnostic tool for patients with symptoms of acute cardio-respiratory pathology. This has led to an increase in the number of CTPA scans, but no clear reduction in mortality from pulmonary embolic disease. CTPA may be of benefit in making other clinically significant (non-PE) diagnoses, but increased use of CTPA has resource and ionising radiation implications.

Method We reviewed records of patients undergoing CTPA in our centre during the same 6-week reference period in each year from 2009 to 2014 to ascertain the number of scans positive for PE and/or other diagnoses. The clinical relevance of “other diagnoses” was evaluated, as well as whether “other diagnoses” were evident on earlier investigations such as chest X-ray.

Results Patient records associated with 1882 scans were reviewed. The use of CTPA increased by two-thirds over the 6-year study period, with the likelihood of acute PE being diagnosed remaining unchanged (Table 1). Other diagnoses were seen on more than 80% of scans; the majority were either not therapeutically relevant or potentially evident from previous investigations.

Conclusion Our evaluation of experience in a stable population has demonstrated increased use of CTPA scanning with no change in the diagnostic yield for acute PE. The percentage of patients with additional abnormalities has remained stable, implying the population under investigation is similar. It is uncertain if the increase in the incidence of PE is due to detection of previously undetected emboli, and whether increasing use has reduced mortality from PE. Findings also confirm significant use to screen for other causative pathology. Further work should assess the character of the emboli and the overall impact on morbidity and mortality from increasing CTPA use.

Abstract P50 Table 1 CTPA usage 2009–2014

Year	Annual total no. of CTPAs (% change from 2009)	No. of CTPAs in 6-week reference period (% of annual total)	No. of technically inadequate CTPAs (% of reference scans)	No. of scans positive for acute PE (% of technically adequate reference scans)	No. of scans negative for any diagnosis (% of all reference scans)
2009	1973 (n/a)	242 (12.3%)	19 (7.9%)	51 (22.9%)	39 (16.1%)
2010	2317 (+17.4%)	249 (10.7%)	11 (4.4%)	41 (17.2%)	42 (16.9%)
2011	2561 (+29.8%)	320 (12.5%)	20 (6.3%)	60 (20.0%)	42 (13.1%)
2012	2759 (+39.8%)	329 (11.9%)	25 (7.6%)	57 (18.8%)	43 (13.1%)
2013	3017 (+52.9%)	348 (11.5%)	18 (5.2%)	67 (20.3%)	52 (14.9%)
2014	3302 (+67.4%)	394 (11.9%)	20 (5.1%)	77 (20.6%)	55 (14.0%)

Clinical Studies in COPD

P51 CLINICAL EFFECTIVENESS OF PROCALCITONIN BASED PROTOCOLS TO GUIDE THE ADMINISTRATION OF ANTIBIOTICS IN PATIENTS PRESENTING WITH COPD EXACERBATIONS: SYSTEMATIC REVIEW AND META-ANALYSIS

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Background Different types of acute exacerbations of COPD (AECOPD) have been described, such as those driven by bacteria, viruses or by enhanced eosinophilic inflammation. Bacterial infections, where antibiotics are indicated, appear to account for approximately half of COPD exacerbations. However, challenges in differentiation of the aetiology of AECOPD have led to

significant overuse of antibiotics. Serum procalcitonin, released in response to bacterial but not viral infections or non-specific inflammation, could possibly identify AECOPD requiring antibiotics. In this meta-analysis we assessed safety and clinical effectiveness of procalcitonin-based protocols to initiate or discontinue antibiotics in patients presenting with AECOPD.

Methods Based on a prospectively registered protocol, we systematically reviewed the literature and selected randomised or quasi-randomised controlled trials comparing procalcitonin based protocols to initiate or discontinue antibiotics in patients presenting with AECOPD versus standard care. We followed Cochrane's and GRADEs guidance to assess risk of bias, quality of evidence and to perform meta-analyses.

Results Eight completed trials evaluating 1,062 patients with AECOPD met the inclusion criteria. Procalcitonin-based protocols used in all included trials were similar. Antibiotics were recommended for procalcitonin levels >0.25 µg/L and discouraged for lower levels. All studies were open-labelled or single blinded and the final decision to administer or withhold antibiotic was left to the responsible clinician, who could deviate from the protocol. Adherence to procalcitonin-based protocols ranged

Abstract P51 Table 1 Clinical effectiveness of procalcitonin-based protocols to initiate or discontinue antibiotics in patients presenting with acute exacerbations of COPD

Outcomes	No of participants (studies) Follow-up	Quality of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects	
				Risk with standard care	Risk difference with Procalcitonin-guided protocols
Treatment failure for the index exacerbation.	834 (5 RCTs)	⊕⊕○○ LOW ^{1,2}	RR 0.81 (0.62 to 1.06)	206 per 1,000	39 fewer failures per 1,000 (78 fewer to 12 more)
Length of hospital stay for the index exacerbation	1062 (8 RCTs)	⊕⊕⊕○ MODERATE ¹	MD -0.76 (-1.95 to 0.43)	Mean length of hospital stay was 8.55 days	MD 0.76 days lower (1.95 lower to 0.43 higher)
Proportion of patients who were prescribed antibiotics on admission	984 (7 RCTs)	⊕⊕⊕○ MODERATE ¹	RR 0.56 (0.43 to 0.73)	791 per 1,000	348 fewer prescriptions per 1,000 (451 fewer to 214 fewer)
Mean duration of the course of antibiotics	776 (6 RCTs)	⊕⊕○○ LOW ^{1,2}	MD -3.83 (-4.32 to -3.35)	Mean duration of course of antibiotics was 8.27 days	MD 3.83 days lower (4.32 lower to 3.35 lower)
Exacerbation recurrence rate at longest follow-up	496 (3 RCTs)	⊕⊕○○ LOW ^{1,2}	RR 0.96 (0.69 to 1.35)	205 per 1,000	8 fewer recurrences per 1,000 (63 fewer to 72 more)
Re-hospitalisation rate at longest follow-up	398 (3 RCTs)	⊕⊕○○ LOW ^{1,2}	RR 1.45 (0.92 to 2.29)	116 per 1,000	52 more admissions per 1,000 (9 fewer to 150 more)
Rate of re-hospitalisation due to an exacerbation at longest follow up	298 (2 RCTs)	⊕⊕○○ LOW ^{1,2}	RR 1.22 (0.71 to 2.09)	135 per 1,000	30 more admissions per 1,000 (39 fewer to 147 more)
Overall mortality at longest follow up	1062 (8 RCTs)	⊕⊕○○ LOW ^{1,2}	RR 0.99 (0.57 to 1.70)	41 per 1,000	0 fewer deaths per 1,000 (18 fewer to 29 more)

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI). CI: Confidence interval; RR: Risk ratio; MD: Mean difference.