Abstract P63 Table 1 Diagnostic accuracy of serum and pleural fluid procalcitonin for complicated parapneumonic effusion in sub-groups

Sub-group	Sample type	Number of patients	AUC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)
Pleural fluid pH ≤7.2	Serum	n=20	0.81 (0.61 to 1.00)	91% (59 to 100%)	67% (30 to 93%)	77% (46 to 95%)	86% (42 to 100%)
	Pleural fluid	n=20	0.60 (0.34 to 0.86)	82% (48 to 97%)	56% (21 to 86%)	69% (39 to 91%)	72% (29 to 96%)
Excluding inpatient stay >48 h	Serum	n=98	0.83 (0.69 to 0.97)	78% (49 to 95%)	85% (75 to 92%)	46% (25 to 67%)	96% (88 to 99%)
	Pleural fluid	n=89	0.86 (0.78 to 0.99)	92% (64 to 100%)	84% (74 to 92%)	50% (29 to 71%)	98% (92 to 100%)
Excluding antibiotics for >48 h	Serum	n=81	0.98 (0.94 to 1.00)	100% (48 to 100%)	86% (67 to 93%)	31% (11 to 59%)	100% (95 to 100%)
	Pleural fluid	n=77	0.89 (0.79 to 1.00)	80% (28 to 99%)	81% (70 to 89%)	22% (6 to 48%)	98% (90 to 99%)

there were no specimens or cultures were negative were analyzed in detail.

Results Most disease was pulmonary (n=69). Other disease sites included lymph node (n=34), ocular (n=12) and pleura (n=10). 128 (82%) patients had samples sent for microbiology. 92 (59%) patients were culture positive and 36 (23%) were culture negative. 28 (18%) patients had no specimens sent for culture. Factors which were associated with whether samples were sent for culture included site of disease (p<0.0001), with ocular disease being the least likely to be sampled, and age of patients (p=0.002). 45% patients <17 years did not have samples sent compared with 12.5 % patients 17–64. Ethnicity did not influence the frequency of sampling. A negative culture result was related to the specimen type (p<0.0001) and patient's age (p=0.019), with fewer paediatric samples positive. Site of disease or ethnicity did not affect culture results. In 25/28 cases with no microbiological specimens it was considered reasonable that specimens were not sent, as most of these were either ocular (n=12) or paediatric (n=9). In 3/28 (11%) samples could have been sent and all involved adult patients not born in the UK who had procedures whereby specimens were sent only for histology. 32/36 culture negative cases were considered to have been managed appropriately. 4/36 (11%) culture negative cases were potential missed opportunities for further sampling and were all due to patients with pleural TB not having pleural biopsies.

Conclusion In our centre, despite a microbiology negative rate of 41%, reasonable opportunities to obtain a microbiological diagnosis are seldom missed.

Investigating pleural disease

P63 A PROSPECTIVE OBSERVATIONAL TRIAL EXAMINING THE DIAGNOSTIC UTILITY OF SERUM AND PLEURAL FLUID PROCALCITONIN IN THE INITIAL INVESTIGATION OF UNILATERAL PLEURAL EFFUSIONS

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Differentiation of pleural infection from other causes of pleural effusion, particularly pleural malignancy can be difficult. Clinical features and readily available tests are non-specific resulting in early over-diagnosis of pleural infection. Procalcitonin (PCT) is produced in response to acute bacterial infection and its measurement in serum has shown promise in directing and shortening antibiotic courses in lower respiratory tract infections. We prospectively examined the diagnostic accuracy of PCT in the investigation of unilateral pleural effusions.

Methods Consecutive patients with a unilateral pleural effusion, referred to a UK teaching hospital were included. Baseline serum and pleural fluid PCT was measured by enzyme-linked-fluorescent-assay (Vidas BRAHMS PCT—BioMerieux) and results compared to final diagnosis. Clinical data were collected prospectively and the ultimate diagnosis agreed against established criteria by two respiratory consultants, blind to the PCT result. Patients were followed up to histological or microbiological diagnosis, radiographic resolution or for 12 months.

Results 145 patients, median age 72 (31–96). 71 inpatients, 75 outpatients. Effusion diagnoses: Complicated parapneumonic (CPE) 26/145, Simple parapneumonic (SPE) 7/145, Malignant 73/145, Idiopathic pleuritis 4/145, TB 1/145, other benign cause 34/145. Four patients with symptomatic non-thoracic bacterial infection and four with frank empyema were excluded from analysis. The Receiver operating characteristic (ROC) curve for serum PCT distinguishing CPE from non-infective diagnoses gave an AUC of 0.779 (95% CI 0.658 to 0.899) and at an optimum cut-off of 0.09 ng/ml had sensitivity 73%, specificity 81%, PPV 44% and NPV 94%. The ROC curve for pleural PCT gave an AUC of 0.809 (95% CI 0.709 to 0.908) and at an optimum cut-off of 0.1 ng/ml had sensitivity 81%, specificity 78%, PPV 45% and NPV 95%. Sub-group analysis excluding patients with >48 h in patient stay or >48 h antibiotics further improved diagnostic accuracy. In patients with pleural fluid pH ≤7.2 serum PCT distinguished CPE from other effusions with an AUC of 0.808 (0.613–1.000).

Conclusion Serum and pleural fluid procalcitonin have promising diagnostic characteristics in distinguishing complicated parapneumonic effusions (Abstract P63 Table 1) from unilateral effusions of non-infective origin, having particularly high negative predictive values. Procalcitonin could help the clinician to decide optimal management pathways for individual patients.

P64 COURSE AND VARIATION OF THE INTERCOSTAL ARTERY BY COMPUTED TOMOGRAPHY

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Background The intercostal artery is thought to be shielded in the groove of the superior rib; however, the course and variability of the intercostal artery, and factors which may influence these, have not been described in vivo. Describing these variables in vivo has potentially important implications for avoiding complications during common pleural procedures.

Methods Maximum intensity projection (MIP) reformats in the coronal plane were produced from CT pulmonary angiograms, to identify the posterolateral course of the contrast opacified intercostal artery. A novel semi-automated computer segmentation algorithm was used to identify and measure distances between the lower border of the superior rib, the upper border of the inferior rib and the position of the intercostal artery when exposed in the intercostal space, and manually verified by a radiologist. Position and