

diagnosis of malignant and benign lesions. Sampling is done with either 21-gauge (21G) or 22-gauge (22G) needles. There are only two published (non-UK) studies which have evaluated the effect of EBUS-TBNA needle gauge on diagnosis.<sup>1,2</sup> Neither study demonstrated a difference in diagnostic yield but one study suggested better preservation of histological structure with the 21G needle.<sup>1</sup> The aim of this retrospective UK study was to evaluate the diagnostic utility of 21G versus 22G EBUS-TBNA needles. Our hypothesis was that the 21G needle would allow greater histological characterisation of non-small cell lung cancer (NSCLC) and benign mediastinal lesions.

**Methods** A retrospective analysis was performed from 185 patients referred for EBUS-TBNA between 2011 to 2012. EBUS-TBNA was performed as previously described under conscious sedation.<sup>3</sup> 21G or 22G (Olympus ViziShot, NA-201SX-4021 and NA-201SX-4022) was used at the discretion of the operator. Pathologists were blinded to needle gauge. Contingency table statistical analysis was performed (GraphPad Prism version 5) to compare diagnostic utility of 21G and 22G EBUS-TBNA needles and ability to subcharacterise NSCLC and benign lesions.

**Results** Performance data (table 1) showed non-inferior diagnostic utility for 21G and 22G needles. Subgroup analysis of benign 21G tissue samples revealed superior characterisation (especially for sarcoidosis) compared to 22G samples (30/37, 81%, versus 17/33, 52%,  $p=0.008$ ). Similarly, characterisation of NSCLC was superior in 21G samples versus 22G samples (28/33, 85%, versus 25/41, 61%,  $p=0.02$ ).

**Conclusion** This UK single centre retrospective study suggests 21G EBUS-TBNA needles are superior in characterising benign lesions (especially sarcoidosis) and NSCLC. Making a positive benign diagnosis avoids the need to perform mediastinoscopy; additionally, identification of lung adenocarcinoma allows appropriate epidermal growth factor receptor mutation testing and targeted oncological therapy.

#### References

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### ROLE OF TRANSOESOPHAGEAL FINE-NEEDLE ASPIRATION USING AN ULTRASOUND BRONCHOSCOPE IN MEDIASTINAL STAGING AND DIAGNOSIS OF LUNG CANCER

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#### Abstract S22 Table 1

EBUS-TBNA Needle	Sensitivity (%)	Specificity (%)	Positive Predictive value (%)	Negative Predictive Value (%)	Prevalence (%)	Accuracy (%)
21G n=88 (48%)	90	100	100	88	58	94
22G n=97 (52%)	91	100	100	85	66	94
Combined n=185	90	100	100	86	62	94

**Objective** To evaluate the role of transoesophageal fine-needle aspiration using an ultrasound bronchoscope (EUS-B-FNA) as an alternative means of diagnosing and staging lung cancer.

**Methods** This was a retrospective analysis of 132 cases of EUS-B-FNA between July 2008 and March 2012 in a large tertiary centre for respiratory medicine. EUS-B-FNA was performed with an OLYMPUS linear ultrasonic bronchoscope (BF-UM40) using a 21 Gauge needle. Samples were deposited into Cytolyte for cytological examination.

**Results** Of the 132 patients, 76 were male and 56 were female. The mean age was 69 years (range 40–86 years). No patients had a tissue diagnosis of malignancy prior to the procedure. 86 patients had a peripheral mass on CT, 43 had a mediastinal mass, and 3 patients had a new pleural effusion on CXR and mediastinal lymphadenopathy on CT scanning. EUS-B was used to sample subcarinal (n=100), L4 (n=46), R8 (n=4), R4 (n=2), R2 (n=2), L8 (n=1), L9 (n=1) and paragastric (n=1) lymph node stations. It was also used to sample RLL (n=4), RUL (n=3), LUL (n=3), LLL (n=1), paraoesophageal (n=2) and anterior mediastinal (n=1) masses. A left adrenal mass was sampled in 1 patient. EUS-B was used as a first line procedure in patients with enlarged lower mediastinal lymph nodes, reduced oxygen saturations ( $SpO_2 < 90\%$ ) or FEV1 ( $< 1.0L$ ), and those with a poor performance status. It was also used as a second line procedure in patients who could not tolerate bronchoscopy or EBUS procedures, and those with normal bronchoscopy or EBUS procedure. There were no complications and the procedure was well tolerated. Of the 132 cases, a tissue diagnosis was obtained in 100 patients. Samples revealed no malignant cells in 22 patients. Samples were insufficient for diagnosis in only 2 cases. Of the 22 negative samples, 11 patients were referred to Thoracic Surgery, all of these patients also had a negative staging mediastinoscopy and so underwent surgical resection. 6 patients went on to have a CT guided biopsy which provided a tissue diagnosis. 3 patients were not fit for further investigation and so were treated on the basis of a radiological diagnosis of lung cancer.

**Conclusion** EUS-B-FNA should be considered as a safe and effective investigation in the diagnostic and staging algorithm in lung cancer. It allows sampling of stations L4, 7 and 8, and is effective as a first line procedure in patients with reduced oxygen saturations or FEV1, and a poor performance status.

## Clinical studies in COPD

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### PROFILE OF THE AIRWAY MICROBIOME IN COPD USING MALDI-TOF

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**Introduction** Bacterial infections are well known to have an association with chronic obstructive pulmonary disease (COPD), with *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* often seen at exacerbation. Many microbiome studies