

LETTERS

Endobronchial ultrasound guided transbronchial needle aspiration of mediastinal lymph nodes for lung cancer staging: a projected cost analysis

Endobronchial ultrasound guided-transbronchial needle aspiration (EBUS-TBNA) of mediastinal lymph nodes provides a safe alternative to mediastinoscopy for staging patients with lung cancer.¹⁻⁵ Performing TBNA under real time ultrasound visualisation has been shown to significantly improve the yield of TBNA compared with conventional TBNA performed without visualisation.⁶ In addition to the clinical benefits of this procedure, EBUS-TBNA is likely to offer ongoing cost savings by avoiding the need for mediastinoscopy procedures and positron emission tomography (PET) scans in some patients.

At Leeds Teaching Hospitals NHS Trust (LTHT), conventional TBNA is used to assess large subcarinal nodes, but the Trust does not currently offer an EBUS-TBNA service. By reviewing mediastinoscopies performed as staging procedures for lung cancer in LTHT during 2006, we estimated the financial implications of establishing an EBUS-TBNA service.

METHODS

We hypothesised that patients found to have N2/N3 disease by EBUS-TBNA at initial bronchoscopy would then not require further investigation with PET imaging and mediastinoscopy. To estimate the number of EBUS-TBNA investigations that would demonstrate mediastinal malignant disease, we determined the proportion of staging mediastinoscopies positive for malignancy, and the sensitivity of EBUS-TBNA for malignancy according to published series.

The capital costs for EBUS-TBNA were determined. The UK NHS tariffs for mediastinoscopy, PET and EBUS-TBNA bronchoscopy were determined. In addition, the actual unit based costs to the hospital for providing mediastinoscopy and EBUS-TBNA (projected) were calculated for LTHT. The annual cost implications of establishing an EBUS-TBNA service were estimated for the local NHS economy as a whole, primary care trusts (purchasers of secondary care) and LTHT (local provider of secondary care).

RESULTS

Forty-seven patients underwent mediastinoscopy as a staging procedure for lung cancer in LTHT in 2006. Twenty-eight patients were shown to have malignant disease in N2 or N3 nodes, of which 27 were deemed accessible to EBUS-TBNA (all had mediastinal lymphadenopathy on initial CT scan). Mean EBUS-TBNA sensitivity for malignancy in recently

published series was 92.3%.¹⁻⁵ We therefore projected that 25 patients would have had mediastinal malignancy demonstrated by EBUS-TBNA and would therefore not have undergone CT-PET and mediastinoscopy.

Capital costs for EBUS-TBNA were £104 465 over 5 years. The national tariff for mediastinoscopy was £2157, and the actual unit based cost for the hospital was £2000. The national tariff for PET was £975; PET is provided by an independent contractor and thus is cost neutral for LTHT. The tariff cost for standard fiberoptic bronchoscopy was £575. EBUS bronchoscopy does not currently attract an additional payment above the standard tariff. The projected unit based cost to the hospital for EBUS-TBNA was £484, rising to £675 if combined with endobronchial biopsy. These costs increase to £929 and £1120, respectively, if capital costs (distributed over 5 years) were included.

We calculated that the introduction of an EBUS-TBNA service would save the local NHS economy £32 631 per year (including capital costs). Taking into account the current tariff for EBUS-TBNA and referral routes of patients to LTHT, introduction of a service would save the local primary care trusts £58 750 per annum, but would cost LTHT an additional £26 119 per annum.

DISCUSSION

Our study identifies potential cost savings for the NHS as a result of the introduction of EBUS-TBNA. The limitations of this analysis are as follows. The sensitivities quoted in published series refer to all TBNA accessible nodes. At LTHT, large subcarinal nodes are already assessed by conventional TBNA and, if malignant disease is detected, do not undergo mediastinoscopy (and thus would not feature in this analysis). The sensitivity figures quoted may therefore represent an overestimate for the purposes of this analysis. In addition, our analysis makes no allowance for a learning curve with the procedure. However, even with a reduced sensitivity of 80%, the annual local NHS saving would be £22 516.

EBUS-TBNA offers significant time reductions between referral and treatment for some patients with lung cancer. It may also reduce hospital admissions and minimise morbidity associated with mediastinal staging. This cost minimisation analysis has identified potential savings for the NHS as a whole, but the current national tariff structure acts as a disincentive for UK hospitals to establish such a service. The introduction of an additional tariff for EBUS-TBNA would encourage greater uptake of this technique.

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Effect of CPAP on insulin resistance in patients with obstructive sleep apnoea and type 2 diabetes

West *et al* are to be commended for the laborious study of the impact of continuous positive airway pressure (CPAP) on insulin resistance and glycaemic control in males with obstructive sleep apnoea syndrome (OSAS) and type 2 diabetes (*Thorax* 2007;**62**:969-74). The authors did not demonstrate an improvement in insulin sensitivity and glycaemic control in obese patients after 3 months of therapeutic CPAP compared with placebo CPAP. The presentation of the apnoea-hypopnoea index (AHI) results (shown as mean (SD, 0-100% range)) suggests some patients had a relatively low AHI. It is noteworthy that the impact of the severity of OSAS on insulin resistance and a possible therapeutic approach by CPAP remains to be clarified. The effect of chronic glucose toxicity in patients with poor glycaemic control has to be considered. The HbA1c between 8.5% and 8.4% remained unchanged and accounts for mean blood glucose levels of about 190 mg/dl.

We could not demonstrate changes in insulin sensitivity in our study in 40 non-diabetic OSAS patients (AHI 43.1 (SD11.4)), in the subgroup with a body mass index (BMI) ≥ 30 kg/m²,¹ and also no early effect in nine well controlled diabetic patients with OSAS (BMI 37.3 (SD5.6) kg/m²).² These findings underline the enormous impact of obesity on insulin resistance in OSAS patients, whether or not they have diabetes.