

determine whether the test had affected the diagnostic outcome directly, indirectly or not at all. 78 (81%) of the tests resulted in direct outcomes, 12 (13%) resulted in indirect outcomes and 6 (6%) had no impact on further investigation or diagnosis. A significant proportion (27%) of patients undergoing CPET for UD responded normally to exercise and were discharged with reassurance. 15% were diagnosed with dysfunctional breathing and referred to a specialist physiotherapist for breathing retraining. 57 (38%) patients were diagnosed as having an exclusively normal or dysfunctional breathing response to exercise. Of these, many had undergone investigation prior to CPET including 19 ECG, 14 V/Q scans, nine CT scans, six coronary angiograms, four cardiac treadmill tests, two nuclear medicine stress tests and one cardiac MRI.

**Conclusions** By introducing CPET at an earlier stage in the diagnostic algorithm for UD, many invasive and expensive investigations could have been avoided. CPET resulted in direct outcomes for 81% of the patients, highlighting the diagnostic importance of CPET in the investigation of UD.

**P190 LONG-TERM OUTCOME OF BRONCHIAL ARTERY EMBOLISATION (BAE) FOR MASSIVE HAEMOPTYSIS**

doi:10.1136/thoraxjnl-2011-201054c.190

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**Background** BAE for massive haemoptysis is potentially life-saving with low short-to-medium term failure rates in previous studies. We aimed to characterise patients referred for BAE, to examine long-term treatment success and identify risk factors for requiring repeat BAE.

**Methods** We retrospectively identified all patients undergoing BAE from 1994 to 2007. We collated data from hospital databases and primary care on demographics, respiratory diagnoses and procedure with follow-up of up to 16 years. Outcomes were all-cause mortality and recurrence of haemoptysis requiring repeat BAE.

**Results** 158 patients were embolised on 208 occasions. 85 (54%) patients were male and median age was 54 (IQR: 41–67) y. The most common underlying diagnoses were aspergilloma (n=38; 24% of patients), bronchiectasis (n=24; 15%), unidentified cause (n=17; 11%) chronic tuberculosis (n=14; 9%), active tuberculosis (n=12; 8%) and cystic fibrosis (n=11; 7%). All-cause mortality at 1 month and 3 years was 5.3% and 29.7%, and need for repeat BAE was 4.7% and 30.7% respectively. Repeat BAE at 3 years was most common with aspergilloma (50%) and least common with active TB (0%). 3-year mortality was highest in cystic fibrosis (40%) and least with unknown cause (7.7%). Neither number nor location of vessels embolised predicted mortality or need for repeat BAE. No major procedural complications were noted.

**Conclusions** BAE by experienced operators is a safe, minimally invasive procedure for massive haemoptysis with excellent short-term success. It does not prevent late recurrence of haemoptysis nor obviate the need for repeat BAE, the risk of which is related to the underlying disease rather than to technical aspects of the procedure.

**Lung cancer: clinical studies**

**P191 A META-ANALYSIS OF ADJUSTED AND UNADJUSTED OBSERVATIONAL STUDIES OF SLEEVE LOBECTOMY VS PNEUMONECTOMY FOR NON-SMALL CELL LUNG CANCER**

doi:10.1136/thoraxjnl-2011-201054c.191

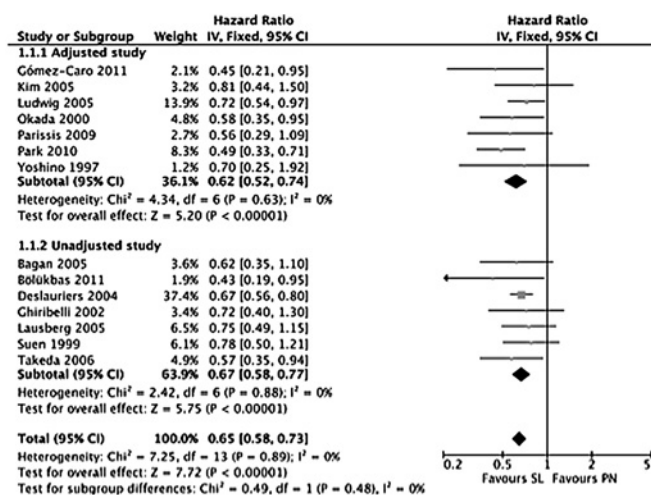
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**Introduction and Objectives** A previous (published in 2007) meta-analysis of unadjusted results from observational studies suggested that sleeve lobectomy offered better long-term survival than did pneumonectomy for non-small cell lung cancer (NSCLC). Since the

meta-analysis was conducted, a number of studies, which included ones providing adjusted mortality data, have been published to date. We performed an updated meta-analysis of sleeve lobectomy vs pneumonectomy for long-term mortality in NSCLC, combining separately adjusted and unadjusted results.

**Methods** The MEDLINE and EMBASE databases and the Cochrane Library and Central Register of Controlled Trials were searched using PubMed and OVID. Studies considered for inclusion met the following criteria: the design was a study comparing sleeve lobectomy vs pneumonectomy; the study population was patients with NSCLC; and main outcomes included long-term all-cause mortality. From each individual study, hazard ratios (HRs) for mortality and 95% CIs were abstracted. Study-specific estimates were combined using inverse variance-weighted averages of logarithmic HRs.

**Results** Our search identified no randomised trials and 14 observational comparative studies that included 7 ones providing adjusted mortality data. Adjustment methods included matching (with propensity score or tumour location and invasion) and multivariate Cox proportional hazard regression. Separately pooled analysis of seven adjusted (1013 patients) and seven unadjusted studies (2278 patients) demonstrated respectively a statistically significant lower all-cause mortality by 36% and 33% associated with sleeve lobectomy relative to pneumonectomy in fixed effects models (adjusted HR, 0.64; 95% CI 0.53 to 0.77;  $p < 0.00001$ ; unadjusted HR, 0.67; 95% CI 0.58 to 0.77;  $p < 0.00001$ ; Abstract P191 figure 1). There was minimal study heterogeneity and accordingly little difference in the pooled result from random-effects modelling. When data from all the 14 studies (3291 patients) were pooled using a fixed-effects model, sleeve lobectomy was associated with lower all-cause mortality by 34% relative to pneumonectomy that remained statistically significant (HR, 0.66; 95% CI 0.59 to 0.74;  $p < 0.00001$ ).



Abstract P191 Figure 1 Long term all-cause mortality patients with non-small cell lung cancer assigned to sleeve lobectomy (SL) vs pneumonectomy (PN).

**Conclusions** Sleeve lobectomy is likely to have a benefit for long-term all-cause mortality over pneumonectomy in NSCLC. Sleeve lobectomy rather than pneumonectomy should be considered for anatomically suited NSCLC.

**P192 SHORT-TERM OUTCOME OF ATTEMPTED CURATIVE RESECTION FOR LUNG CANCER IN ELDERLY PATIENTS**

doi:10.1136/thoraxjnl-2011-201054c.192

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**Background** Although resection offers the best chance of cure for most solid tumours, including the lung, <2% of elderly patients

(>80 age years) undergo this treatment often because of their perceived frailty and complication rates. Since lung cancer is a disease of the elderly, with up to 30% occurring in this age group, we were interested to review the results of attempted curative resection in older patients referred to our tertiary thoracic surgical unit.

**Methods** We reviewed the medical records of all 1481 patients aged 60 or older who had undergone single or bi-lobectomy with curative intent from 2001 to 2008, and divided them into age groups 60–79 (1360 cases, 663 female) and 80+ (121, 41). We looked at their clinical parameters, and then compared the results of surgery in terms of short-term mortality, complication rates, and length of stay.

**Results** The older patients had smoked less (median 30 pack years [IQR 20–50] vs 40 [20–54],  $p < 0.5$ ), and had better lung function (FEV<sub>1</sub> 88% [73–103] vs 81% [66–93],  $p < 0.001$ ), but had more heart disease (41% vs 29%,  $p < 0.001$ ). Postoperative results are given in the Abstract P192 table 1.

Abstract P192 Table 1

Outcome	Under 80 (n=1360)	80 or over (n=121)	p Value
Respiratory complication	292 (22%)	39 (32%)	0.01
Cardiac complication	165 (13%)	26 (22%)	0.004
Wound complication	20 (2%)	4 (3%)	0.13
ITU readmission	90 (7%)	16 (13%)	0.01
Return to theatre	103 (8%)	12 (10%)	0.36
Post-op length of stay	8 (6–10)	10 (7–13)	<0.0001
In-hospital mortality	27 (2%)	7 (6%)	0.02

**Conclusion** Although the older patients had more postoperative complications, 94% survived the procedure, indicating that surgical resection with curative intent is a viable proposition in selected cases of lung cancer in the elderly. Thus, age should not be a bar to surgical treatment in the older age group, and this study reiterates the need to consider potentially curative surgery for all age groups with this life threatening disease.

**P193 ASSESSMENT OF PERFORMANCE STATUS IN LUNG CANCER: DO ONCOLOGISTS AND RESPIRATORY PHYSICIANS AGREE?**

doi:10.1136/thoraxjnl-2011-201054c.193

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**Introduction and Objectives** Performance status assessment in lung cancer patients is essential to assess prognosis and plan management. Inter observer variability has been documented between oncologists, their patients and other professionals (Blagden *et al* 2003). No study has previously examined whether this variability also exists between respiratory physicians and oncologists. We hypothesised that performance status assessment would vary between respiratory physicians and oncologists. We also questioned whether frequency of outpatient contact with lung cancer patients or stage of training affected assessment.

**Methods** 8 case vignettes were sent to respiratory physicians, oncologists and speciality trainees using an online survey tool. The speciality, seniority and frequency of outpatient contact were recorded. The Eastern Co-operative Oncology Group Score (ECOG) was used due to greater familiarity and increased inter-observer reliability in previous studies.

**Results** 119 respondents completed the survey—62% were oncologists. 85% of respondents were consultants and 62% reviewed patients frequently (weekly) in outpatients. 20% saw lung cancer patients rarely or never. Individual assessments were broad, with seven case vignettes receiving 3 or more performance status (PS) ratings. 6 cases crossed the therapeutic boundary between PS 2 and PS 3. In one case assessment ranged from PS 0 to PS 4. However,

Krippendorfs  $\alpha$  assessment (K  $\alpha$ ) (Hayes and Krippendorf, 2007) showed overall agreement at 0.59. This confirmed wide individual variation but closer group agreement. There was no difference in assessment between oncologists and respiratory physicians—K  $\alpha$  0.61 and 0.63 respectively. Equal K  $\alpha$  values of 0.62 between Speciality trainees and Consultants showed stage of training had no impact. Frequency of review did not affect level of agreement with K  $\alpha$  values of 0.62 and 0.64 for frequent reviewers vs non-frequent.

**Conclusions** Rating of performance status varies widely between individuals. This may negatively affect patients if only individual assessment is performed. However, respiratory physicians and oncologists exhibit statistically significant agreement in their assessments. This is not affected by stage of training or frequency of outpatient contact. This study highlights that review of performance status across specialities or by multiple assessors (The MDT) is likely to lead to more consistent assessment.

**P194 WHY DO LUNG CANCER PATIENTS STILL DIE IN HOSPITAL?**

doi:10.1136/thoraxjnl-2011-201054c.194

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**Aims** The Department of Health proposes “to offer all adult patients, regardless of their diagnosis ... access to high quality palliative care so that they can choose ... to die at home.” We, therefore, studied those with lung cancer patients who died in our institution during 2010.

**Results** 41 patients (33% of our annual notifications) died in hospital; 26 case records were retrieved complete (all had previously been diagnosed with lung cancer); mean age 70.6 years (53–85). 25 lived in their own dwelling (5 alone; 2 of these with only social care support) and 1 in a nursing home. 5 had been in receipt of radical treatments; 21 were in receipt of palliative interventions and the nursing home resident had no active treatment. Mean time from diagnosis to final admission was 296 (188 for those without radical treatments) days. 13 patients admitted via GP; six through A&E seven from Oncology or Palliative Care outpatients. 12 had acute medical problems (eg, pneumonia, CCF); one had intestinal obstruction; 11 had progressive disease-related symptoms (eg, progressive brain metastases); two had social issues precipitating admission. No clear documentation of preferred place of death was identified at admission; during this final admission 14 indicated their preferred place of death—10 for home; four were too unwell for discharge; one had unaddressed social issues; three families couldn't cope and two were re-admitted by their GP within 24 h of discharge. All patients were in receipt of specialist palliative care during the admission and 15 died on the Liverpool Care Pathway.

**Conclusion** 50% of these lung cancer patients (representing 16% of our annual cases) were admitted with acute medical problems. Those identified as wishing to die at home were unable to be discharged. To prevent the remaining 50% of this population being admitted to hospital will require a significant change in practice by both primary and secondary care teams and an investment in community palliative care services. In-hospital palliative care is of a very high standard.

**P195 OUTCOMES IN EMERGENCY ADMISSIONS WITH LUNG CANCER: A 1-YEAR PERSPECTIVE FROM A TEACHING HOSPITAL**

doi:10.1136/thoraxjnl-2011-201054c.195

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**Introduction** Nationally it is known that 23% of all cancers present as emergencies.<sup>1</sup> Baseline data for all cancer-related admissions for 2008/