HMG-B1 than culture negative samples. Due to the confounding effect of infection, our analysis excluded 90 BAL samples with positive cultures. Concentrations of IL-1a were significantly higher in culture negative BAL from BOS patients (median 2.411, range [AJF1] 0.073–19.078 pg/ml) than from Non-BOS patients (median 1.424, range [AJF2] 1.159–17.41 pg/ml; p=0.001). No significant difference in HMG-B1 concentrations between the two groups was observed (BOS median 58.906, range 0–197.5; Non-BOS median 76.25, range 0–211.563 ng/ml; p=0.2378). Longitudinal measurements of IL-1a in BOS patients showed significantly higher levels 3 months before or after BOS diagnosis (median 3.935, range 1.122–13.544 pg/ml), compared to >3 months before BOS diagnosis (median 2.015, range 0.073–14.669 pg/ml; p=0.0153). There was no such difference in HMG-B1 concentrations (p=0.9164).

Conclusions An increase in the alarmin IL-1a, but not HMG-B1, is associated with BOS development. The cellular source of IL-1a requires further evaluation but may be a marker of airway epithelial injury and/or play a mechanistic role in BOS development *via* its secretion by other cell types.

S54 POLYMERS OF Z α1-ANTITRYPSIN ARE ASSOCIATED WITH PULMONARY INFECTION POST LUNG TRANSPLANTATION

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Z antitrypsin (Z-AT) polymerises in the liver and is associated with early onset emphysema. Polymers of Z-AT are not only inactivate as antiproteinases, but also act as a pro-inflammatory stimulus. We studied patients with emphysema post lung transplantation, with and without AT deficiency, to examine the relationship between polymers and the presence of infection and inflammation. Bronchoalveolar Lavage Fluid (BALF) was obtained at scheduled surveillance, and when clinically indicated to assess for infection, rejection and airway injury. BALF was assessed by ELISA and immunoblot using a monoclonal antibody to polymeric AT (ATZII). BALF cell pellets were lysed, and HLE activity was used as a measure of BALF neutrophil numbers. 16 patients post-transplant were evaluated, 6 Z-AT patients (15 samples); 9 infective tracheobronchitis, 3 airway stenosis, 1 reflux, 2 normal, and 10 M-AT patients (20 samples); 7 infective tracheobronchitis, 8 rejection, 5 normal. All samples apart from one in the Z-AT group contained polymers; median (IQR) 292 (430–40.2) ng/ml. In one patient BALF was initially negative for polymers, but subsequent samples were positive. Polymers were present in association bacterial infection, colonisation, airway injury and surveillance bronchoscopy of asymptomatic patients. Airway stenosis/inflammation and bacterial tracheobronchitis was associated with a higher amount of polymers (347.35 (SEM±57 ng/ml) than Z-AT with normal findings (142±101 ng/ml). Immunoblot confirmed the classical ladders of polymers in Z-AT group, but not in M-AT group. BALF of Z-AT group had a higher free HLE than M-AT; 139(226.5–102.75) ng/ml vs 74(105.25–46) ng/ml, respectively; p≤0.001. Free HLE in Z-AT was correlated with polymer concentrations in BALF; r^2=0.63. Total neutrophil numbers were higher in Z-AT compared with M-AT; OD405, 0.57±0.07 vs 0.37±0.04, respectively; p=0.033. BALF neutrophil numbers were significantly higher in the infected Z-AT (0.54±0.1) vs infected M-AT (0.31±0.1), p=0.026. We have shown that polymers of Z-AT are present in BALF of transplanted individuals. Furthermore, this was associated with excess neutrophils, and closely correlated with free HLE. The production of polymers results in further reduction of the anti-proteinase and anti-inflammatory protection in the lung and leads to neutrophil influx. This may to predispose Z-AT individuals to exaggerated lung destruction and a worse outcome after lung transplantation.

Clinical and mechanistic studies in thoracic malignancy

S55 COST-EFFECTIVENESS AND QUALITY OF LIFE RESULTS FROM THE ASTER STUDY: ENDOBRONCHIAL AND ENDOSCOPIC ULTRASOUND VS SURGICAL STAGING IN POTENTIALLY RESECTABLE LUNG CANCER

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Background We recently published clinical results of ASTER, a randomised controlled trial in which endosonography, a strategy of combined endoscopic (EUS) and endobronchial (EBUS) ultrasound (followed by surgical staging if these tests were negative for malignancy), had significantly higher sensitivity and negative predictive value than surgical staging alone for mediastinal staging in NSCLC. Here we present ASTER quality of life (QoL) and cost-effectiveness outcomes.

Methods EuroQoL EQ-5D questionnaire was performed at baseline, end of staging, 2 and 6 months post randomisation. The UK EQ-5D social tariff was applied to calculate utility values. Quality-adjusted survival was estimated using the area under the utility curve. Full resource use information was recorded for all patients and NHS 2008–2009 Reference Costs were applied. Total expected costs over 6 months were estimated by summing the resource use multiplied by its unit cost and taking the sample average for each group.

Results Of 241 randomised patients, 144 (60%) provided EQ-5D data at baseline; of these 139 (97%) were followed up at the end of staging, 132 (92%) at 2 months and 124 (86%) at 6 months. At the end of staging, those randomised to endosonography had significantly better QoL than those randomised to surgical staging (utility difference=0.11, 95%CI 0.02 to 0.19). At all other time points, there was little difference between the groups, so that quality adjusted survival over the 6 months was similar (4.1 vs 4.0 months respectively). Complete resource use data were available for 172/214 (71%) patients. Other than the number of thoracotomies performed (66% of patients in the surgical staging arm and 53% in the endosonography arm) resource use did not differ between the two groups. The endosonography group had a non-significant cost saving of £746 per patient compared to the surgical staging group.

Conclusions Given that (a) the sensitivity of endosonography was significantly higher than that of the surgical staging arm; (b) QoL post-staging was higher in the endosonography arm and (c) there is no difference in cost between the two strategies, mediastinal staging should commence with endosonography proceeding to surgical staging if there is no evidence of malignancy.

S56 EBUS-TBNA PREVENTS MEDIASTINOSCOPIES IN PATIENTS WITH ISOLATED MEDIASTINAL LYMPHADENOPATHY: A PROSPECTIVE CLINICAL TRIAL AND COST MINIMISATION ANALYSIS

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Introduction Isolated mediastinal lymphadenopathy (IML) is a common presentation to respiratory physicians and