LETTERS TO THE EDITOR

Bronchoscopy with bronchoalveolar lavage: determinants of yield and impact on management in immunosuppressed patients

Fibreoptic bronchoscopy with bronchoalveolar lavage (FOB/BAL) is a common modality for the evaluation of pulmonary infiltrates.[1 2] We recognised there are limitations of comparison between subgroups of immunosuppressed patients, non-uniform definitions of a positive yield, suboptimal description of the impact of concurrent antimicrobial use at the time of the bronchoscopy and sometimes insufficient assessment of management decisions surrounding FOB/BAL.[3–5] To address these issues, we performed a retrospective analysis of 190 immunosuppressed patients who underwent FOB/BAL for a pulmonary abnormality (clinical or radiographic) at the University of Rochester Medical Center from 2005 to 2008. A positive yield was defined as one of the following: (1) positive culture—bacterial, viral or fungal (not including *Candida albicans* alone); (2) positive finding on cytopathology or fungal stain; or (3) diffuse alveolar haemorrhage. Antimicrobial and corticosteroid treatment changes were assessed 7 days after the bronchoscopy. Bivariate χ^2 analyses were performed using SAS statistical software (SAS Institute, Cary, North Carolina, USA) to determine significance between variables.

A total of 106/190 (55.8%) FOB/BALs had a positive yield. No difference in yield was found on the basis of baseline demographics, type or severity of immunosuppression, severity of illness or positive blood or urine cultures. A positive sputum culture, however, was predictive of a positive yield (p=0.002). A total of 37/118 sputum cultures were positive. Twenty-three were concordant with FOB/BAL; however, 35 identified organisms not found on FOB/BAL. Bacteria, fungi and/or viruses were isolated in 4.7, 4.7 and 12.6% of patients who were not on corresponding antimicrobials. Bacteria, fungi and/or viruses that were resistant to concurrent antimicrobials were isolated in 3.6, 2.1 and 10% of patients, respectively.

The duration of treatment doses of antibiotics and the presence of consolidation on chest CT were negatively associated with yield (p<0.021 and p< 0.03); however, consolidation on CT was not associated with a longer duration of antimicrobial treatment (p=0.252). If FOB/BAL was performed within 3 days of starting treatment dose antibiotics, the overall yield was 63.4%, but was reduced to 57.6% and 34.4% when performed within 3–14 days or after 14 days, respectively. The use and/or duration of prophylactic antibiotics, antifungals and/or antivirals did not negatively impact yield.

Seventy-five per cent of patients had treatment altered after FOB/BAL. Overall, 41.5% of patients had antibiotic treatment discontinued or narrowed. Antibiotic coverage was more likely to be narrowed when bacterial cultures were negative (p=0.003) and more likely to be broadened if bacterial cultures were positive (p<0.0001). Antiviral and antifungal coverages were also more likely to be broadened if viral or fungal cultures were positive (p=0.008 and p=0.003). The all cause 30-day mortality after FOB/BAL was 16.8%. A positive yield on FOB/BAL did not impact mortality. Furthermore, changes in treatment made on the basis of the bronchoscopy did not significantly impact 30-day mortality.

We found a similar overall yield to previous studies (up to 65%), and we demonstrated that positive sputum cultures were associated with a positive yield on bronchoscopy. It is unclear whether the additional organisms found in the sputum represent upper airway contamination. Furthermore, duration of treatment dose antibiotics for >2 weeks prior to the FOB/BAL and consolidation on CT were important negative predictors of yield. While a positive yield on FOB/BAL was statistically associated with a change in medical management, neither the presence of a positive yield nor changes in treatment were predictive of 30-day mortality.

Ultimately, FOB/BAL is a relatively safe method of obtaining lower respiratory specimens. There were no significant complications directly attributable to the bronchoscopy in our study. While routine bronchoscopy for immunosuppressed patients with pulmonary disease cannot be definitively endorsed on the basis of this study alone, we would suggest FOB/BAL would most optimally be performed within 3 days of the initiation of broad-spectrum antibiotics.

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Funding Buswell Medicine Fellowship-Department of Medicine, University of Rochester, Rochester, NY; HL-075432; HL-66988; HL 088325; T32 HL066988; NIEHS Center Grant P30ES01247.

Competing interests None.

Ethics approval This study was conducted with the approval of the University of Rochester Medical Center research subjects review board/institutional review board, approval number 22041.

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 16 July 2010
Published Online First 13 September 2010

Thorax 2011;**66**:823. doi:10.1136/thx.2010.145540

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British Thoracic Society survey of knowledge of healthcare professionals managing patients with acute hypercapnic exacerbation of chronic obstructive pulmonary disease requiring non-invasive ventilation

The use of non-invasive ventilation (NIV) in acute hypercapnic exacerbations of chronic obstructive pulmonary disease (COPD) is the subject of published guidance from the Royal College of Physicians, the British Thoracic Society (BTS) and the Intensive Care Society, as well as international consensus statements.[1–3] Although these guidelines have been updated, data from the UK COPD audit detailing admissions to UK hospitals have shown that compliance with this guidance is less than satisfactory.[4] In part, it has been suggested that the reason for poor implementation of the guidelines is lack of knowledge of indications, technical and practical aspects of delivering NIV by those healthcare professionals assessing, initiating and managing patients. We performed a BTS staff knowledge survey in

Control Group (119) vs.	n	Indications (total 8)	Technical (total 7)	Practical (total 11)	Published Evidence (total 5)
Junior R&CC Nurse	37	-0.6	-0.1	-0.5	-0.4
Senior R&CC Nurse	39	0.2	0.2	0.5	0.0
Senior 2 R&CC Physiotherapist	29	1.1*	3.7*	2.4*	0.9*
Senior 1 R&CC Physiotherapist	28	1.6*	3.1*	2.5*	1.1*
R&CC FY1-2	12	0.8	-0.4	0.6	0.6
R&CC ST1-2	30	1.1*	2.1*	1.8*	0.7*
R&CC ST3/SpR	47	2.0*	3.1*	2.8*	1.1*
R&CC Consultant	53	2.2*	2.8*	3.0*	1.2*

*Mean difference between control group (n=118) and other groups surveyed; *(shaded) = p<0.05; R&CC = Respiratory & Critical Care; FY= Foundation Year; ST = Specialist Trainee; SpR = Specialist Registrar*

nine acute trusts in the UK. All hospitals (eight teaching hospitals and one district general hospital) had an acute NIV service and a local coordinating clinician was recruited through the BTS Respiratory Critical Care Specialist Advisory Group. Questionnaires and data collection guidelines were distributed by e-mail to the local lead who was responsible for distributing, collecting and marking the questionnaires. Three hundred and ninety-four completed questionnaires were returned and scored with weighting given towards clinical relevance and current evidence base. To generate comparative analysis the groups were compared with a 'control' group, which consisted of 119 medical consultants and trainees, nurses and physiotherapists working on general medical wards but not in critical care or specialist respiratory medicine. Respiratory and critical care physicians were combined for the purposes of data analysis as there was no difference between these groups.

In comparison with the 'control' group, knowledge varied considerably between the different groups. The respiratory and critical care consultants, physiotherapists, ST3/SpR and critical care ST1/2 doctors achieved significantly higher scores. This probably reflects the effect of targeted teaching during induction programmes and during clinical work. Furthermore, the scores increased with increasing seniority in each group, which adds to the validity of this questionnaire. It was noteworthy that the physiotherapists performed well and had the highest scores for technical knowledge, reflecting their involvement in the initiation of NIV in all the trusts surveyed. The respiratory and critical care nurses showed equivalence to the control group across all the areas examined, which highlights this as an important group for further education. Following further validation, the use of this, or a similar questionnaire, could be incorporated into training and competency assessment to monitor educational needs.

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Competing interests None.

Contributors This survey was performed by the authors on behalf of the British Thoracic Society Respiratory Critical Care Specialist Advisory Group.

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 26 August 2010
Published Online First 11 October 2010

Thorax 2011;**66**:823–824.
doi:10.1136/thx.2010.143669

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Efficacy of omalizumab in the treatment of nasal polyps

Omalizumab, a humanised monoclonal anti-immunoglobulin E (IgE) antibody, is indicated as adjuvant treatment in refractory allergic severe asthma.[1] In both chronic rhinosinusitis (CRS) with nasal polyps (NP) and allergic rhinitis, IgE is increased in mucosal tissue and frequently in serum. The role of omalizumab has been clearly established in allergic asthma and rhinitis, but remains to be elucidated in NP.[2] The only evidence for the potential efficacy of omalizumab in NP relies on case reports and small series of patients which suggest that, when NP and asthma coexist, the anti-IgE may have therapeutic value on NP.[3 4]

We describe the evolution of NP in 19 patients who were treated with omalizumab for severe asthma and who also had CRS with NP (age 49±9.5 years, 58% women). The baseline serum IgE level was 257 KU/l (range 115–328). The subcutaneous dosage of omalizumab was based on weight and baseline serum IgE, and treatment follow-up was 16 months (range 15–28). Thirteen patients (68%) with CRS with NP had undergone at least one endoscopic sinus surgery (2 (range 1–3)), with a mean elapsed time of 29 months (range 18–39) between surgery and the start of omalizumab treatment. All patients with CRS with NP were examined at baseline and every 3 months by an ENT specialist. Using nasal endoscopy, the size of NP was scored in both nasal cavities as 0 (no polyp); 1 (polyps restricted to the middle meatus); 2 (polyps in the middle meatus but not reaching the upper edge of the inferior turbinate); 3 (polyps between the upper and lower edges of the inferior turbinate); and 4 (large polyps reaching the floor of the nasal fossa), with a bilateral total score ranging from 0 to 8. The use of intranasal corticosteroids was also recorded both at baseline and during treatment. Data are presented as median (25–75th interquartiles) and the non-parametric Wilcoxon test was used for statistical comparisons ($p<0.05$ was considered statistically significant).

NP size was significantly reduced at the end of follow-up compared with baseline (1 (0–2) vs 2 (0–4), p=0.035). None of the patients needed additional surgery during omalizumab treatment. Furthermore, there was a clear reduction in the proportion of patients using intranasal corticosteroids between baseline and the end of the follow-up period (95% vs 42%, p=0.002).

These observations show that omalizumab is effective in improving, or at least stabilising, the natural course of CRS with NP in patients treated for refractory severe asthma, in accordance with previous findings.[3 4] In the surgical group, the long time between surgery and the start of omalizumab treatment (29 months (range 18–39)) is in agreement with the EP^{3}OS definition[5] of NP recurrence and in keeping with an improvement in NP due to omalizumab rather than to surgery. In addition to its effect on severe asthma, this analysis supports the potential benefit of omalizumab in NP by reducing NP size and the need for further medical and surgical treatment, and strongly suggests the potential role of IgE in the pathophysiology of NP. However, larger prospective studies are needed to confirm our preliminary results.