

BTS Winter Meeting 2005

British Thoracic Society Winter Meeting 2005

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An overview of some of the key topics presented at the BTS Winter Meeting held in London in December 2005

The annual winter British Thoracic Society (BTS) meeting held in London on 7–9 December 2005 combined a fascinating retrospective of past achievements in respiratory medicine while looking forward to the challenges that lie ahead. The meeting provided, as usual, a vital platform for clinicians to share best practice and to keep abreast of the rapidly advancing speciality. A highlight was the celebration of the 20th anniversary of British Lung Foundation, with a review of the major advances in respiratory medical research made in recent years.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

The priority given to chronic obstructive pulmonary disease (COPD) at this meeting reflected both the clinical burden of disease and the current interest in terms of clinical and basic research in this field. In a lively “pro-con” debate, some of the more controversial issues in disease management were addressed. Arguments included the new BTS President Professor Peter Calverley’s persuasive case that COPD was indeed a useful diagnostic term, as well as lively debate on the evidence for the use of inhaled corticosteroids. With the radical reforms to the provision of home oxygen imminent, a number of sessions concentrated on the new service and the potential impact on patients and providers alike. A presentation highlighted the increase in service provision required to support home oxygen assessments,¹ while posters highlighted the benefits of developing a register of COPD patients suitable for long term oxygen therapy (LTOT)² and the efficacy of ambulatory oxygen in pulmonary rehabilitation.³

The pathogenesis of airways obstruction and exacerbations were the focus for presentations on the role of infection and inflammation in COPD. Highlighting the recent advances in our understanding of this condition, presentations ranged from the findings of a study of antibiotic therapy which reduced airway inflammation,⁴ evidence for the role of

respiratory syncytial virus (RSV) in airway inflammation and disease progression in stable COPD,⁵ to description of in vitro models of the airway for studying innate immune responses.⁶ Current thinking on the provision of services for COPD patients was addressed on the final day, underlining the role multidisciplinary community based teams may play in reducing hospital admissions and improving outcomes.⁷

PULMONARY REHABILITATION

The posters on pulmonary rehabilitation provided useful insights into developments in the application of this treatment. Reassuringly, two studies^{8,9} indicated that obese patients with COPD do benefit from pulmonary rehabilitation, while admission to hospital for exacerbations can be reduced in severe disease by physiotherapy led community disease management.¹⁰

Findings were presented suggesting that occupational therapy focusing on activity management improves both health status¹¹ and patient satisfaction.¹² While anxiety and depression were identified as risk factors for failure to complete rehabilitation,^{13,14} targeted interventions such as anxiety management may improve outcomes in this area.¹⁵

ASTHMA

One of the meeting’s first sessions highlighted the continued advances made by UK researchers in the understanding of airway inflammation in asthma. Work on the inflammatory profile of a phenotype of steroid resistant non-eosinophilic asthma was presented,¹⁶ and the deleterious pro-inflammatory effects of inhaled pollutants were described using a novel 2 hour “real life” exposure on London’s Oxford Street.

The epidemiology of asthma continues to be an active area of research; a spoken session cast light on the pathogenesis of thunderstorm outbreaks of asthma,¹⁷ and the use of cluster analysis models to identify and predict prognosis in distinct asthma phenotypes.¹⁸ An optimistic tone was set by the session on “Looking towards new treatments for

asthma” with presentations on the possible future role of targeted anti-cytokine and anti-IgE therapy.

BASIC SCIENCE

Collaboration between the British Association for Lung Research (BALR) and the BTS produced a day long symposium focusing on the current state of the art in stem cell research and the possible future therapeutic indications and benefits in respiratory disease. Another symposium in the area of basic science covered work on the genetics of airways disease, and there were several presentations concentrating on mechanisms common to a number of lung diseases. This included work on the mechanisms of differentiation of fibroblasts to myofibroblasts,¹⁹ the role of glutathione S-transferase P1 (GSTP1) polymorphisms in controlling lung development and repair,²⁰ and the encouraging work on the role that retinoid therapy may play in alveolar repair.²¹

OCCUPATIONAL LUNG DISEASE

The symposium on occupational lung disease informed on how the Health and Safety Executive targets on reducing work related ill health will be met, suggested a model for providing excellence in service, and discussed limitations and practical approaches to the diagnosis of occupational lung diseases. The problem of under-diagnosis and under-reporting of occupational asthma was highlighted following a pilot surveillance scheme in Scotland,²² with concerns about variability in diagnostic standards revealing the need for better training.²³

RESPIRATORY MUSCLES AND NIV

Important developments in physiological assessment of respiratory diseases, with focus on the use of magnetic nerve stimulation and oesophageal electromyography were presented. The Moran Campbell Lecture was introduced by Professor John Gibson who gave an insight into the enthusiasm of the late Dr Campbell and reviewed his seminal work on the mechanics of breathing, sensation of dyspnoea, and the safe administration of oxygen therapy. This was followed by Dr Michael Polkey’s lecture on neuromuscular limitations in health and disease in which he explained the clinical relevance of cortical drive and muscle fatigue, and alluded to earlier spoken sessions on quadriceps muscle contractility²⁴ and endurance.²⁵

SLEEP DISORDERED BREATHING AND OBSTRUCTIVE SLEEP APNOEA

The increasingly recognised clinical problem of obstructive sleep apnoea (OSA)

was highlighted in a number of sessions. One study showed that the need for continuous positive airway pressure (CPAP) therapy cannot be predicted reliably by a clinical questionnaire for patients referred from primary care.²⁶ Other work described the effects of CPAP on attenuation of the cardiovascular response to arousal²⁷ and improving vasomotor tone,²⁸ and hence a role for this treatment in reducing cardiovascular risk in this patient group. Another study attributed the increase in cardiovascular mortality seen in OSA to findings of impaired cardiac metabolism and dysfunction.²⁹

ADULT RESPIRATORY DISTRESS SYNDROME (ARDS)

Presentations demonstrating advances in the understanding of the basic pathological mechanisms of ARDS from both in vitro and murine models explained the mechanism of stretch induced lung injury through the ERK1/2 pathway,^{30,31} and the importance of TNF receptor 1 signalling in stretch induced pulmonary inflammation.³² A potential role for vascular endothelial growth factor (VEGF) in the regenerative phase of ARDS was suggested by a presentation of its activity on primary lung epithelial cells.³³

PULMONARY EMBOLISM AND PULMONARY HYPERTENSION

Presentation of audits on the diagnosis of pulmonary embolism (PE) suggested that the BTS guidelines may be poorly implemented in the absence of local agreements within hospitals.³⁴⁻³⁷ Early discharge following anticoagulation was shown to be safe for selected patients diagnosed with PE,³⁸ and a prospective 1 year randomised study of 3 or 6 months' anticoagulation for uncomplicated PE showed no difference in recurrence, deaths, or major haemorrhage.³⁹ However, another study suggested that secondary pulmonary hypertension is a common problem even after 6 months' anticoagulation and deserves further consideration.⁴⁰

A comprehensive symposium on pulmonary arterial hypertension covered the spectrum of pathogenic causes for this condition, stressed the importance of molecular genetics, suggested novel therapies targeting multiple pathogenic pathways, and finally discussed the role of biomarkers and monitoring of outcomes.

MALIGNANT DISEASE

Lung cancer and mesothelioma were discussed in two well attended symposia. The first session was a multidisciplinary presentation addressing issues such as optimum services for investigation of patients with suspected lung

cancer, information given to patients during the diagnostic pathway, the crucial role of the lung cancer specialist nurse, and the role of palliative chemotherapy in patients with poor performance status. The second symposium reminded us of the rising incidence of mesothelioma and highlighted the key differences in the relationships between asbestos exposure and lung cancer and asbestos exposure and mesothelioma.

The yield of bronchoscopy for detecting lung cancer in smokers and ex-smokers aged over 50 presenting solely with pneumonia was presented,⁴¹ and the usefulness of targeted bronchial cytology in lung cancer patients with normal bronchoscopic findings was presented by another group.⁴² The benefits of implementing a "safety net" protocol and a coded radiographic reporting system for all chest radiographs were also presented.^{43,44} Several reports on changes in the organisation of lung cancer services described increases in the total number of CT scans, in the number of CT scans performed before bronchoscopy, and in the number of CT guided biopsies, with a parallel decline in the number of fiberoptic bronchoscopies.⁴⁵⁻⁴⁸ The surgical experience of patients deemed unfit for surgery according to the BTS guidelines,⁴⁹ as well as in patients with stage III non-small cell lung cancer undergoing surgical resection after neoadjuvant chemotherapy, was reviewed.⁵⁰

PLEURAL DISEASE

A session on pleural infection included a randomised trial comparing intrapleural urokinase with video assisted thoracoscopic surgery for the treatment of empyema in children,⁵¹ and data from the MRC/BTS MIST1 trial cohort on the survival significance of different bacterial classes in pleural infection.⁵² The finding that management of spontaneous pneumothorax in well selected patients could be safely achieved with the use of a thoracic vent device may alter practice.⁵³ The clinical usefulness of ultrasound in the detection of malignant pleural disease with a pleural effusion was presented,⁵⁴ and the role of "blind" trucut pleural biopsy in the investigation of pleural effusion was also described.⁵⁵

CYSTIC FIBROSIS (CF)

A debate on the best way to diagnose CF related diabetes followed data on the long term effects of diabetes and insulin treatment on clinical status and lung function.⁵⁶ The effects of air pollutants and seasonality on CF exacerbations⁵⁷ and a national survey on the management of CF exacerbations by paediatric and adult CF physicians were also presented.⁵⁸ The issue of systemic and

airway inflammation in stable state and at exacerbations of CF was addressed in several posters,⁵⁹⁻⁶² and the difficult issue of palliative care in CF was addressed in an interesting session.⁶³

PULMONARY INFECTION

Pulmonary infection held a prominent place again at the BTS winter meeting with symposia on tuberculosis (TB) and respiratory viruses as well as several spoken and poster discussion sessions.

Professor Stewart Cole delivered a fascinating Snell memorial lecture on the genomics of *Mycobacterium tuberculosis*. Spoken sessions on TB varied from a phase II trial looking at the safety of MVA85A vaccination in latent TB⁶⁴ to trends in the diagnosis of extrapulmonary TB⁶⁵ and an evaluation of the association of new diagnosis with immigration profiles.⁶⁶ The BTS Young Investigators Prize was awarded for research showing the importance of Oncostatin M in inducing matrix metalloproteinases (MMP) which drives matrix degradation and cavitation in TB.⁶⁷ A national survey on contact tracing was presented⁶⁸ and experience of contact tracing of farm workers who had been in contact with bovine TB discussed.⁶⁹ New diagnostic and treatment monitoring techniques were highlighted, including the use of the Elispot test in the detection of active⁷⁰ and latent⁷¹ TB and messenger RNA as a marker of treatment response in pulmonary TB.⁷²

AND FINALLY....

The British Lung Foundation's birthday was celebrated with an impressive review of important research findings over the last 50 years including the epidemiological studies that linked smoking with lung cancer, the development of the fiberoptic bronchoscope and more effective antituberculous therapy, and finally a look into the future potential for lung tissue regeneration. Congratulations are due to Drs Patel and O'Kane for their success in the Young Investigators prizes. Professor Malcom Green was awarded the BTS Honorary Medal for his notable contributions to respiratory physiological research and the establishment of the British Lung Foundation in 1985.

The new BTS President, Professor Peter Calverley, addressed the meeting and reflected on the achievements of the past. He went on to quote the poet Robert Frost:

"... and miles to go before I sleep"

and outlined his aspirations for the future direction of both clinical practice and research in respiratory medicine and the many challenges that lie ahead.

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LUNG ALERT

COPD in never smokers: a significant problem?

▲ Celli BR, Halbert RJ, Nordyke RJ, *et al*. Airway obstruction in never smokers: results from the Third National Health and Nutrition Examination Survey. *Am J Med* 2005;**118**:1364–72

Chronic obstructive pulmonary disease (COPD) is rarely considered in people who have never smoked. This paper reviews the results of a large US survey which involved a detailed questionnaire, physical examination, and spirometric testing. It looks particularly at airways obstruction in lifelong non-smokers.

A total of 10 276 people aged 30–80 years had spirometric evidence of airway obstruction in this cohort. The overall prevalence of obstructive airways disease was 165 per 1000. Never smokers made up 42% of the sampled group. The prevalence of airway obstruction in this group was 91 per 1000, 68.5% of whom reported no history of either asthma or COPD. The impact of other known risk factors for COPD such as occupational dust exposure, air pollution, and environmental tobacco smoke were assessed by multivariate analysis. None of these was associated with a significantly increased risk. A significantly increased risk was noted with increasing age, male sex, low body mass index, and a history of allergy.

These data can be extrapolated to suggest that there are 4.6 million lifelong non-smokers in the US with obstructive airways disease. Airways reversibility was not assessed, so an unquantified proportion of these patients could have asthma. Other known risk factors for COPD were not found to contribute in this study, although self-reporting of exposure may be inaccurate.

Further research into COPD in never smokers is warranted to clarify the aetiology, prognosis, and clinical significance of this poorly understood group of patients.

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LUNG ALERT

Inhaled hypertonic saline, mechanisms, and improved lung function in cystic fibrosis

▲ Donaldson SH, Bennett WD, Zeman KL, *et al*. Mucus clearance and lung function in cystic fibrosis with hypertonic saline. *N Engl J Med* 2006;**354**:241–50

This study compared the effect of inhaled hypertonic saline on 24 patients with cystic fibrosis over a 28 day period. Subjects were assigned to two groups receiving pretreatment with either amiloride or placebo before saline inhalation. One hour mucus clearance rates, lung function tests, and quality of life scores were used as outcome measures.

One hour mucus clearance rates were significantly increased compared with baseline levels in both groups. However, only the placebo pretreatment group showed a measurable increase over a sustained period of >8 hours (1 hour mucus clearance rate 14.0 (2.0)% in the placebo pretreatment group compared with 7.0 (1.5)% in the amiloride pretreatment group, $p = 0.02$). Lung function tests showed an improvement in forced vital capacity (FVC) between baseline and treatment in the placebo group ($p = 0.05$) but not in the amiloride pretreatment group ($p = 0.83$). Similar results were found for forced expiratory volume in 1 second (FEV₁), forced expiratory flow at 25–75% of FVC (FEF_{25–75}), and quality of life scores. In vitro experiments showed sustained hydration of airway surface liquid with hypertonic saline, a response inhibited by amiloride.

This study shows that inhalation of hypertonic saline produces a modest but sustainable increase in mucus clearance rates, lung function tests, and quality of life in patients with cystic fibrosis. This beneficial effect was negated by pretreatment with amiloride. Hydration of airway surface liquid may be an important underlying mechanism.

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