BTS Winter Meeting 2006

The birth and re-birth of respiratory medicine—notes from the British Thoracic Society Winter Meeting 2006

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The annual Winter British Thoracic Society (BTS) meeting in December 2006 provided us with yet another exciting forum for both scientists and clinicians to share advances in respiratory medicine. The meeting consisted of inspiring, novel and interesting work, presented by students and non-clinicians, as well as world renowned respiratory physicians. Professor Stephen Holgate, in his address as President of the BTS entitled ''The birth and re-birth of respiratory medicine'', spoke of changes and shared his visions for the future. Dr Alex Richter and Dr Clare Sander deserve congratulations for their success in the Young Investigator Prizes. In this review we highlight some of the important spoken and abstract sessions from the meeting.

COPD

Chronic obstructive pulmonary disease (COPD) was well represented at the meeting this year, with a stimulating symposium focusing on the science and impact of exacerbations. Spoken sessions on a novel in vivo model of human rhinovirus infection[1] and application of real-time quantitative polymerase chain reaction for the detection of bacteria[2] opened platforms for improved understanding of the infectious mechanisms of exacerbations. There was evidence to suggest that prolonged exacerbation in smokers may be related to impaired neutrophil activation.[3] Smoking cannabis was related to greater airflow obstruction than cigarettes,[4] re-enforcing the need to address all smoking cessation.

The consequences of depression in COPD, in particular the associations with mental and general fatigue,[5] relation to reduced time spent outdoors, health-related quality of life[6] and failure to complete pulmonary rehabilitation,[7] were discussed in several sessions. Randomised controlled trials are needed to investigate reports of benefit from pulmonary rehabilitation initiated during admission for acute exacerbation[8] and in maintenance of weekly supervised exercise sessions.[9] An assessment of the national availability, need, cost-effectiveness and outcome of pulmonary rehabilitation[10 11] may be facilitated by a national register.

BASIC SCIENCE

The importance of basic science was evident throughout the BTS meeting. Symposia on biomarkers in respiratory diseases looked at blood, induced sputum and exhaled nitric oxide as potential sources, rich in markers of respiratory disease but not yet fulfilling their potential. Metal ions such as zinc were proposed as potential biomarkers in suppurative lung disease.[12]

Application of basic science in lung transplantation covered topics ranging from acute rejection[13 14] to mechanisms of immunosuppression[15] and the importance of pulmonary vasculature in situations of infection.[16]

The role of transforming growth factor-beta (TGF-β) in lung disease was discussed in a number of sessions. In pulmonary fibrosis, activation of proteinase activated receptor-1 increased the release of TGF-β through thrombospondin-1.[17] Murine models of pulmonary hypertension showed the importance of TGF-β signalling through downregulation of the bone morphogenic protein type II receptor,[18] and a pathway for regulating vascular endothelial growth factor (VEGF) in pulmonary artery smooth muscle cells was demonstrated.[19]

ASTHMA

An abundance of basic science sessions gave thorough insight into the inflammatory pathways and cellular responses in asthma. This included mechanisms of respiratory syncytial virus infection through interactions with human monocyte-derived dendritic cells,[20] the role of Toll-like receptors in airway smooth muscle and epithelial cells,[21] and mechanisms of neutrophil activation in airways.[22] Asthmatic bronchoalveolar lavage factors were shown to stimulate fibroblastic collagen III,[23] suggesting a potential means for modulating airway remodelling. Evidence of increased IL-13 expression by smooth muscle mast cells in eosinophilic asthma compared with non-eosinophilic asthma[24] may explain differences in corticosteroid responsiveness.

TUBERCULOSIS AND PULMONARY INFECTION

The Snell memorial lecture, delivered by Professor Ormerod on the current treatment of tuberculosis (TB), provided a fantastic background to many of the posters displayed on diagnostic methods and treatment of TB. Spoken sessions focused on the epidemiology of TB and highlighted issues ranging from the increase in TB in England and Wales[25] in recent years to the difficulty in accessing treatment for TB in rural Zimbabwe.[26] Outcomes of the implementation on the NICE guidelines on immigration screening[27] were discussed, together with the importance of screening patients from areas of very high prevalence.

Spoken sessions on pulmonary infection indicated that C-reactive protein (CRP) is related to severity of community acquired pneumonia (CAP)[28] and can exclude CAP. However, a large national survey showed room for significant improvement in availability of sputum Gram staining and urinary antigen testing, particularly out-of-hours.[29] Inpatient studies showed that bacterial pneumonia and fluid overload were the commonest causes of respiratory complications in haematological inpatients.[30] Interestingly, visualisation of the bronchial tree was rarely helpful for infection in a broad range of diseases,[31] suggesting that sputum induction should be considered more often.

INTERSTITIAL LUNG DISEASE AND ACUTE LUNG INJURY

The underlying mechanisms of acute lung injury (ALI) were unravelled at different levels of the inflammatory cascade. Pulmonary fibrosis is thought to occur early in ALI/acute respiratory distress syndrome (ARDS), indicating that research concentrating on the early fibrotic response may be central in reshaping this disease.[32] Cellular studies showed that VEGF isoforms have differential effects on primary human lung microvascular endothelial cell proliferation[33] while, in mechanical stretch-related ALI, mitochondrial reactive oxygen species played a key role.[34] After cardiopulmonary bypass surgery the delay in apoptosis and development of severe inflammatory response syndrome may be due to the induction of neutrophil heme oxygenase-1.[35]

In systemic sclerosis, anti-topoisomerae antibody rather than extent of skin disease was shown to predict pulmonary fibrosis.[36] The coagulation cascade has been shown to be increasingly important in fibrotic lung disease and local production of factor X presented a potential target for blockade.[37]

PULMONARY HYPERTENSION AND OTHER PULMONARY VASCULAR DISORDERS

Basic science featured strongly in the spoken sessions on pulmonary hypertension. The importance of the interaction between Smad and activated protein kinase signalling was shown to play an important part in familial pulmonary arterial hypertension.[38] There were therapeutic implications for the role of prepro-ET-1 gene activation in human pulmonary arterial smooth cells,[39] and selective inhibition of the signalling pathway in hypoxia-induced pulmonary adventitial fibroblast proliferation by fluvastatin.[40]

One study suggested that pulmonary arteriovenous malformations (PAVM) are commonly complicated by ischaemic stroke and brain abscesses.[41] In these patients PAVM embolisation may be a therapeutic option.[42]

PAEDIATRIC LUNG DISEASE

The recognition of the importance of paediatric lung disease within the setting of the BTS Winter Meeting was apparent in the number of sessions devoted to this subject. Presentations ranged from topics focused on pneumonia and empyema[43] to cystic fibrosis[44] and pulmonary hypertension related to congenital diaphragmatic hernia.[45]

With the increase in incidence of obesity, physical activity in children was increasingly under scrutiny, even in asthma.[46] There was even acknowledgement that involvement of paediatric staff is important in parental smoking cessation if we are to improve the environment in which children grow up.[47]

PLEURAL DISEASE

Availability of image-guided pleural biopsy remains a difficult issue in many hospitals, and two studies showed evidence that blind pleural biopsy can be an effective alternative.[48 49] Poster presentations showed most chest specialists are interested in being trained to perform bedside transthoracic ultrasonography,[50] and the procedure is easily learned.[51] Reassuringly, there was less pain with guidewire drain insertion than with blunt dissection.[52]

MALIGNANT DISEASE

Time was devoted to presentations and posters on mesothelioma and lung cancer throughout the conference. Topics ranged from methods to improve diagnosis, to novel treatments, and survival figures. There was an abstract on early results from data collected for the national LUCADA database, amalgamating 10 920 cases of lung cancer diagnosed in England in 2005.[53]

Suggestions were made for improving the diagnostic yield from bronchoscopy. The use of newer videobronchoscopes, even without autofluorescence, were found in one hospital to be superior to the use of older scopes in detecting lung cancers.[54] Another presentation highlighted the benefit of blind bronchial brushings, biopsies, lavage and fine needle aspiration in patients with lesions visible on chest radiography but not on bronchoscopy.[55] There was a poster on the use of endobronchial ultrasound to guide transbronchial needle aspiration in allowing a more rapid and accurate diagnosis.[56] The incorporation of transbronchial needle aspiration into an integrated care pathway in two hospitals reduced the rate of mediastinoscopies by about 49%.[57]

Significant delay between detection of unilateral effusion and diagnosis of mesothelioma[58] may be tackled through improved referral pathways. In patients over the age of 65, decortication by video-assisted thoracic surgery may confer better survival than pleuropneumonectomy[59] and deserves further investigation. One group reported a decrease in the risk of death now compared with previously in patients with a diagnosis of non-small cell lung cancer.[60] Another group found shorter survival rates in patients undergoing surgical resection of lung cancer than in other countries, suggesting that survival in the UK is not as good as elsewhere.[61]

SLEEP DISORDERED BREATHING AND OBSTRUCTIVE SLEEP APNOEA

The increasingly important topic of obesity hypoventilation syndrome (OHS) was highlighted. The prevalence of OHS in the catchment area of one UK sleep clinic was found to be above 16%.[62] Both obstructive sleep apnoea (OSA) and OHS were found to be very common in patients undergoing assessment for bariatric surgery, with Epworth sleep score and symptoms of tiredness reported by patients being poor predictors of diagnosis.[63]

The increased recognition that OSA accompanies other systemic diseases was also discussed. One presentation highlighted the fact that patients with OSA tend to be more obese, more insulin resistant and have higher systolic blood pressures than patients without OSA, thus having higher cardiovascular risks. In these patients lower thresholds for statin use may be more appropriate.[64] Another presentation discussed the finding that continuous positive airway pressure does not improve glycaemic control in patients with insulin resistance or type 2 diabetes and OSA.[65]

OXYGEN AND VENTILATION

Support for the new home oxygen guidelines introduced in February 2006 was reinforced in a poster indicating that patients' oxygen requirements change within 6 weeks of discharge from hospital, hence the importance of follow-up assessment at this time.[66] Another poster recommended overnight stay for assessment of long-term oxygen treatment to prevent the development of iatrogenic hypercapnia.[67] However, the use of oxygen acutely was not reported to be without concern, with several posters highlighting the important issue of its overuse in patients with COPD[68] and suggestions for prevention of the use of high flow oxygen in the ambulance setting by the administration of oxygen alert cards.[69]

The role of non-invasive ventilation (NIV) was discussed in the context of a variety of topics. The use of NIV or intubation early in type 2 respiratory failure in patients with COPD was highlighted as a method for reducing in-hospital mortality.[70] In one poster presentation, delays in starting NIV were found in 25% of cases, suggesting the need for target times to reduce the risk of death, as with other diseases.[71] There was also a presentation on the uptake of home NIV, stressing that patients with OHS tolerate it best, whereas after thoracoplasty patients have a much lower probability of continuation.[72] It was also tolerated well in patients with COPD.[73]

AND LAST, BUT NOT LEAST ...

Thorax celebrated its 60th birthday in 2006 with a special December edition and a lunchtime meeting on the last day of the BTS Winter Meeting. This celebration included presentations by Dr Fiona Godlee, Editor of the *BMJ*, and Professor Anthony Seaton, Editor of *Thorax* from 1977 to 1982. They both gave very interesting insights into how *Thorax* has developed over the years and how the work of the editors has changed since the start of the journal in 1946. No doubt *Thorax* will continue to evolve over the next 60 years and we wish the journal every success.

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