IMPACT Conference
Conference Review

Making Education Easy

March 22–24, 2012; Singapore

In this review:

Independent commentary by Professor Carl Burgess

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Welcome to this review of the International Meeting on Changing Paradigms in Chest Medicine (IMPACT) 2012 conference.

This Review has been created to allow those with a keen interest in respiratory medicine, to access a summary of significant presentations at the conference. Review of the presentations has been carried out independently by Professor Carl Burgess MBChB, MD, MRCP (UK), FRACP, FRCP who attended the 2012 IMPACT conference on the latest developments in clinical respiratory medicine held in Singapore during March 22–24, 2012 along with 500 clinicians from over 25 countries.

We hope you find this Conference Review stimulating, and we look forward to your feedback.

Kind regards

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HOT TOPIC

The asthmatic sportsperson

Speaker: Louis-Philippe Boulet, MD FCCP FRCPC, Institute of Cardiology and Pulmonology, Laval University, Quebec

Summary: This presentation discussed the interactions between exercise and bronchoconstriction in athletes. Regular exercise is associated with many health benefits, and should be promoted in patients with asthma, including those with airway hyper-responsiveness to exercise (exercise-induced asthma [EIA]). EIA is believed to be due the release of mediators secondary to hyperpnoea-induced dehydration of the airways. Diagnoses of EIA should be documented by questionnaires and ideally through objective bronchoprovocation tests (e.g. methacholine challenge, exercise or eucapnic voluntary hyperpnoea). Other respiratory conditions that mimic asthma also need to be identified. While the effects of exercise are minimal in well-controlled asthma, current guidelines recommend preventative measures such as warming up, pre-exercise β-agonists and avoiding exercising in an environment likely to exacerbate the condition.

Comment: This was a review of the diagnosis of this condition in elite athletes. The incidence of airway hyper-responsiveness, symptoms and exercise-induced bronchoconstriction were discussed in different sports groups. Differing sports showed different frequencies of these factors.

SYMPOSIUM 1: PLEURA

Approach to unilateral pleural effusion

Speaker: Professor Gary Lee, University of Western Australia and Editor-in Chief for the journal Respirology

Summary: This presentation detailed approaches for the diagnosis of unilateral pleural effusions, which are common and often difficult to diagnose. The application of traditional approaches was questioned, with the newer approaches detailed in the 2010 British Thoracic Society guidelines discussed. It was concluded that diagnosis of most pleural effusions can be achieved with clinical assessment and pleural fluid analysis. Pleural fluid biomarkers, which are the subject of much active research, are likely to be the primary diagnostic tool in the future.

Comment: Gary Lee discussed the correct approach to the patient with a unilateral pleural effusion for which diagnosis may be difficult. The use of bedside ultrasound is recommended. He recommended a move away from the use of Light's criteria for diagnosing transudates and exudates to the use of new biomarkers such as pleural NT-pro-BNP level, as this is elevated in congestive cardiac failure but not in hydrothorax, and it can be useful where patients on concurrent diuretic therapy may put their effusion into the exudative range. Pleural fluid adenosine deaminase is useful in tuberculosis, and lastly pleural fluid mesothelin is approved for the diagnosis and monitoring of mesothelioma.

Pleural infection: changing the paradigm

Speaker: Professor Gary Lee

Summary: This presentation discussed recent studies for improved diagnosis of pleural infections, including more accurate pH fluid measurements and more sensitive culture analyses. In addition, guiding drainage procedures have improved with radiological advances, resulting in less need for surgery, although the optimal chest drain size is still a subject of ongoing debate. Despite no benefits seen with fibrinolytic monotherapy, nonsurgical treatment has been shown to be satisfactory in 95% of patients when combined with DNase, and this practice is being increasingly utilised.

Comment: In his second talk on pleural infections, Gary Lee noted the use of pleural fluid pH with a level <7.2 being indicative of infection; however, if there is air in the syringe, the pH will rise and lidocaine will decrease pH. He noted that there is still debate about the optimal size of chest drains in patients with pleural infections, particularly in those with empyema. Small bore tubes may be preferred initially, and ultrasound should be used routinely for siting of the tube. Surgery should be reserved for those that fail medical therapy. Fibrinolytics may help to breakdown adhesions.

Pleuroscopy and management of malignant pleural effusion

Speaker: Associate Professor Pyng Lee, M.D, Respiratory and Critical Care Medicine, National University Hospital Singapore

Summary: Data demonstrating the pros and cons of various methods for managing malignant pleural effusions were presented. As most effusions recur after thoracentesis, pleurodesis, which can be undertaken with a pleural catheter or chest tube, or applied during pleuroscopy, has become the standard of care. The use of talc as the most effective sclerosant was highlighted. Tunnelled pleural catheter achieves 40% spontaneous pleurodesis, and is now the preferred option in malignant pleural effusion due to trapped lung, which occurs in ≤20% of cases.

Comment: This involved the use of pleuroscopy. Data were shown that demonstrated that this technique could shorten patient stay and was safe. The use of semirigid pleuroscopy was recommended for use in diagnosis, placement of chest drains and pleurodesis.

SYMPOSIUM 2: CUTTING EDGE

Lung cancer: changing concepts that pulmonologists should know

Speaker: Associate Professor Douglas Arenberg, M.D, University of Michigan

Summary: Dr Arenberg's presentation on lung cancer focussed on four distinct topics. He outlined the pulmonologist's role in the multidisciplinary approach that many centres utilise for managing patients with lung cancer. The importance of understanding of lung cancer staging was addressed, along with its impact on prognosis. He also described the tools used to stage patients with lung cancer, as well as how to use them correctly. The evolving role of individualised therapy for these patients was also highlighted, and he described the role of pulmonologists in such regimens.

Comment: There was brief discussion of the use of screening in lung cancer. At present, the evidence that screening will reduce mortality does not exist. Gene analysis can predict response to agents such as erlotinib by analysis for the epidermal growth factor receptor (EGFR) and *RAS* mutations. This is an area for more research.

How modern imaging is changing pulmonary medicine practice

Speaker: Dr. Bhavin Jankharia, Head of Radiology at Piramal Diagnostics and Editor in chief, Indian Journal of Radiology and Imaging

Summary: The following examples of changes in pulmonary medicine due to imaging, particularly CT, were illustrated in this presentation: i) pulmonary thromboembolism can now be diagnosed by a junior resident using contrast-enhanced CT scanning; ii) simple CT-guided core biopsy is usually able to detect lung nodules and mediastinal nodes and masses; and iii) high-resolution CT has revolutionised the entire field of interstitial lung disease, including diagnosis, characterisation, identifying best site for biopsy, assessing treatment response, prognosis and follow-up. It was also noted that within a few years, the use of quantification, particularly in emphysema, could alter the way different phenotypes are managed according to preponderance of bronchial versus destructive disease and treatment response on follow-up.

Comment: Review of imaging techniques for diagnosis, for example, high-resolution CT, has redefined the criteria for interstitial lung disease and is also useful in idiopathic pulmonary fibrosis and hypersensitivity pneumonia. CT scanning has simplified the diagnosis of pulmonary nodules and mediastinal masses. This has enabled lung biopsy to be performed. PET scans together with CT scans can be used in detection of malignancy and recurrence and for staging.

SYMPOSIUM 3: INTERSTITIAL LUNG DISEASE

Establishing a diagnosis of IPF

Speaker: Professor Kevin K. Brown, MD, FCCP, Director, Clinical Interstitial Lung Disease Program, National Jewish Health, Denver Colorado

Summary: There have been a number of changes over the last 2 years in diagnosing interstitial lung diseases (ILDs). Patients presenting with dyspnoea, cough and an abnormal chest x-ray could have one of a large number of conditions. A practical and manageable approach can be facilitated by classifying ILDs by clinical context, pathological pattern and chest imaging pattern. Important points regarding evaluation, history, comorbidities, exposures, examination and laboratory investigations were detailed. Causes of diffuse parenchymal lung disease can be summarised into infections, genetic conditions, systemic disorders, exposures and, when the others are excluded, idiopathic disorders, which are mostly idiopathic interstitial pneumonias. The importance of the pathological patterns in the context of clinical features and imaging findings was described. The following diagnostic process for IPF (which is a diagnosis of exclusion) was outlined: i) define clinical context – if a cause/association can be identified, then not IPF; ii) diagnose IPF if there is a definitive pattern of usual idiopathic pneumonia on high-resolution CT; and, if not, iii) perform surgical lung biopsy to diagnose/exclude IPF. It was also noted that while interobserver variability among radiologists is not ideal for many ILDs, diagnostic agreement is improved with good multidisciplinary communication.

Comment: This talk noted that IPF is one of the ILDs, and diagnosis is greatly enhanced by high-resolution CT, but the classification includes the clinical context and pathological findings. The syndrome of exacerbation of IDP and its underlying causes were discussed. There is no curative treatment for this condition.

ILD in connective tissue disease

Speaker: Professor Kevin K. Brown

Summary: This presentation on ILD in the presence of connective tissue disease (CTD) discussed three types of patients. Firstly, chest disease in the presence of known CTD (particularly rheumatoid arthritis and scleroderma) was covered. Such patients have more respiratory symptoms, lower quality of life, worse functional status, greater healthcare utilisation and worse survival. Cause of death is mostly cardiovascular (CV), followed by cancer, then noninfectious and infectious (mostly pneumonia) pulmonary disorders. Infection and drug-induced disorders need to be considered in these patients. Secondly, patients with no symptoms but radiographic abnormalities were discussed. Most CT scans show CT abnormalities suggestive of a potential CTD regardless of the presence of symptoms. The suggested course of action in such patients is to determine clinical significance and extent of imaging abnormalities, measure resting lung physiology (FVC) and gas exchange, and follow-up. Thirdly, in patients with aches/pains and skin symptoms where an underlying autoimmune mechanism is suspected but cannot be diagnosed, certain clinical, laboratory and imaging findings might suggest a limited form of CTD. Rheumatologists increasingly believe that some autoimmune diseases (e.g. scleroderma) manifest in the lungs before typical symptoms are seen.

Comment: ILD can occur in a number of CTDs including systemic sclerosis (scleroderma), mixed connective tissue, rheumatoid arthritis, etc. There are a number of different mediators of fibrosis in these conditions, but much of the work has been done in systemic sclerosis. There is potential for a number of agents that could be used in these conditions, but there is a paucity of adequate clinical trials for any particular drug.

SYMPOSIUM 4: AIRWAY DISEASES

Phenotyping and biomarkers

Speaker: Professor Christopher Brightling, University of Leicester, UK

Summary: The challenges of phenotyping the heterogeneity of asthma and chronic obstructive pulmonary disease (COPD) were discussed in this presentation. Prof Brightling talked about advances in measurements of airway structure, function and noninvasive measures of airway inflammation that, together with factor and cluster statistical modelling, have improved our understanding of asthma and COPD phenotypes, thereby adding value to the current definitions of these diseases and facilitating the development of novel therapies targeted at subgroups of patients most likely to respond. The best example of this is probably anti-interleukin (IL)-5 therapy in refractory asthma, which benefits patients with eosinophilic inflammation and frequent exacerbations. Statistical models that can predict the future risk of developing frequent exacerbations, lung function decline or likelihood of treatment response have been made possible by integrating data from genome-wide association studies through to clinical trials. Biomarker panels for identifying 'fingerprints' of specific airway disease subphenotypes will be derived using various data reduction methods in the future. Clinicians and patients will be able to make more informed decisions with these approaches.

Comment: This was an interesting lecture outlining the description of different phenotypes in both asthma and COPD; the phenotypes were based on inflammatory markers, particularly sputum eosinophils, neutrophils and mixed patterns. These markers could drive therapeutic choice. In a small group of patients with severe eosinophilic asthma, anti-IL-5 therapy may result in better outcomes.

Small airways

Speaker: Dr Sundeep Salvi Director, Chest Research Foundation, Pune, India and Associate Editor Primary Care Respiratory Journal

Summary: Small airways (<2mm internal diameter) account for only 10% of total airflow resistance in the tracheobronchial tree, so many need to be damaged or destroyed before symptoms manifest or there is any worsening of conventional pulmonary function tests or total airway resistance measurements; thus, they are often referred to as the 'silent zone of the lungs'. There is emerging evidence that small airway dysfunction may be important in the management as well as diagnosis of a variety of pulmonary diseases. Mucosal inflammation and airway remodelling of small airways have been seen in early-stage asthma, especially in cases that progress to chronic asthma and fatal attacks. It has also been found that COPD starts with accelerated, progressive small airway loss that leads to destruction of the alveolar air spaces. While small airway dysfunction is difficult to measure with standard spirometry, obstruction can be identified using $FEF_{25–75\%}$ and FVC; FEV_1 and FEV_1 /FVC may remain normal. However, high resolution CT and impulse oscillometry have also recently been found to be useful noninvasive methods of measuring small airway obstruction. The presentation also discussed new evidence that small airways might be targeted by some steroid molecules and inhaler delivery devices.

Comment: This was an interesting lecture on small airway disease showing that it also might be involved in mucosal inflammation. Small airways can be involved in chronic asthma and COPD. The best method of measurement is $FEF_{25–75\%}$ and FVC. Diagnosis can be assisted by high-resolution CT, MRI and impulse oscillometry. Small airway disease may occur in nocturnal asthma, with eosinophils found in the early hours of the morning.

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Cipla

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