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EDITORIAL

Recent developments in pulmonary infections

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The idea is now behind us that infections, be they of the lung or any other part of the body, are a group of conditions that have been vanquished by advances in medical science. The threat from infection to the human host is undiminished and may even be increasing [1]. The lung with its interface to the outside world remains one of the main battlefields where this interaction between man and micro-organisms is being played out.

New human pathogens have either appeared for the first time or been newly recognized (*e.g.* hantaviruses [2] and *Burkholderia cepacia* [3]). Micro-organisms which are now able to overcome antimicrobial therapies through the many mechanisms of antimicrobial resistance are important causes of respiratory tract disease [4]. Infections are now known to be important in respiratory events which were previously unexplained (*e.g.* the role of viruses in airway diseases [5]) and new niches have been created within which previously nonpathogenic organisms can now cause disease (*e.g.* the many causes of immune compromise) [6]. These are all examples of the changing face of respiratory infection. In the face of these microbial advances, medical understanding of both clinical and basic mechanisms related to respiratory infection is increasing apace and more is now known than ever before about the role of prevention for some of these infections.

The nine articles which follow in the present series [7–15] are a personal selection of some topics related to infection and lung disease in which major changes have occurred and are continuing to occur in both the diseases and understanding and therapy of them. Space permits only a small number of topics to be covered and the series should not be taken to mean that there are not many other areas which might also have been included.

There are two articles about bacteria which might be considered new. In the first, in this issue of the *European Respiratory Journal*, *Chlamydia pneumoniae* is discussed by HAMMERSCHLAG [7]. Although it is now 14 yrs since this organism was first identified, there are still many questions regarding how its presence should be confirmed and what its clinical effects, both in the lung and elsewhere, really are. The second "new" organism, *Burkholderia cepacia*, is not really new at all but is fairly new as a pathogen to man as WEBB and coworkers [8] describe. The jump from plant pathogen to human pathogen has been facilitated by the emergence of a special niche, the lung in adult cystic fibrosis. Within this niche, the organism has devastating effects; thus the widespread agricultural use of this organism and its possible role in other lung diseases is alarming.

Two other situations in which a new environment has been artificially created within which micro-organisms can cause lung disease are the patient who is intubated and receiving mechanical ventilation and the one who is immunosuppressed following organ transplantation. Both situations have in common a diverse range of potential causative micro-organisms. In both, therefore, accurate microbial investigation can be important. TORRES and coworkers [9] discuss this in relation to ventilator-associated pneumonia. Controversy continues regarding the best approach to the investigation and management of such patients as these authors discuss. Fungal lung infection following transplantation has a very high mortality rate and so accurate diagnosis and appropriate therapy are, again, important. NICOD *et al.* [10] describe the various manifestations of fungal lung disease in this situation and the most appropriate investigations and therapies, including prophylaxis.

Two papers in the series contain important clinical messages based on new understanding arising from recent research. EWIG *et al.* [11] describe severity assessment in community-acquired pneumonia, which is one of the most critical steps to the direction of patient investigation and management. At first sight, the various severity prediction rules that have been described can appear confusing, but the place of the most recently described methodologies are clarified and what further work is needed is identified. The relationship between the bacteria found in airway secretions, airway pathology and clinical disease in patients with chronic obstructive pulmonary disease (COPD) has for a long time been controversial. WILSON [12] summarizes what is known of this relationship with respect to colonization, infection and pathogenesis. The author goes on to discuss the trials of antibiotic therapy which have been conducted in this situation and ends with the currently topical issue of guidelines for the management of COPD exacerbations.

The ideal approach to many of these infections must be to prevent their occurrence and this issue is a major component of three of the articles. ROOK *et al.* [13] describe in detail recent advances in the understanding of the immunology of tuberculosis, the role of old and new vaccines and the potential for immunotherapy. Influenza and pneumococcal disease share with tuberculosis in

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having had a major worldwide impact on human health and also the potential for prevention by vaccination. Although now increasingly an accepted part of clinical practice, pneumococcal polysaccharide vaccination remains controversial. As reviewed by ORTQVIST [14], although its role in the prevention of invasive disease appears to be clear, no such clarity exists regarding its ability to prevent pneumonia. The author describes progress with new conjugate vaccines and the future prospects of new vaccine formulations. NICHOLSON and STEPHENSON [15] describe both old and new influenza vaccines before going on to discuss the drugs that can be used to treat influenza, including the new neuraminidase inhibitors, drugs with great potential but some practical limitations.

At the end of this series, the authors hope that the reader will be impressed by this snapshot of some of the recent advances in knowledge in the field of lung infection and maybe even consider embarking on research in this area themselves.

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