Editorial

Spotlight on respiratory viruses 2012: introduction

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It has been five years since we published the first special Spotlight issue of Antiviral Therapy entirely devoted to respiratory viruses [1]. At that time, the SARS outbreak was still fresh in our memory and avian influenza A(H5N1) viruses had just spread from Asia into Europe and Africa, causing increasing global concerns about an imminent, potentially disastrous influenza pandemic. In the spirit of that time, the SARS coronavirus and other recently discovered coronaviruses, as well as avian and pandemic influenza were prominently featured in the 2007 Spotlight edition. Since then, we've been reminded how unpredictable the behaviour of some respiratory viruses, particularly influenza viruses, can be. Soon after the unanticipated emergence and rapid global spread of oseltamivir-resistant seasonal A(H1N1) influenza viruses in 2007–2008, and whilst still preparing for a devastating influenza H5N1 pandemic, the world was startled by the unexpected emergence of a novel swine-origin A(H1N1) virus that caused the first influenza pandemic of the 21st century. While, fortunately, less severe than anticipated, the pandemic afforded important opportunities to gain new knowledge on the pathogenesis and clinical management of severe influenza [2].

Now that the dust over these events seems to have settled, we thought it expedient to compile a second Spotlight issue on respiratory viruses, this time with a particular focus on respiratory viral infections in vulnerable patient populations, a topic that remains highly relevant irrespective of continuing threats of new viruses or pandemics.

In the first article, Hayden reviews the use of experimental influenza virus inoculation studies in human volunteers which, over nearly five decades, have provided valuable initial proof-of-concept data on the efficacy, tolerability and pharmacology of new antivirals, as well as contributions to our understanding of influenza pathogenesis and transmission. As experimental human influenza studies thus facilitate early clinical development of novel pharmacological interventions, he argues that the current lack of approved influenza virus challenge pools in the US and elsewhere hinders much needed development of vaccines and drugs, and urgently needs to be resolved.

Notwithstanding the value of knowledge gained by human challenge experiments and studies of uncomplicated influenza, much still needs to be learned about the pathogenesis of influenza and efficacy of treatment in vulnerable patient populations who are at greatest need of effective treatment. Lee and Ison provide a comprehensive review on the current knowledge concerning the diagnosis, management and outcomes of adults hospitalized with influenza, most of whom have underlying medical conditions. They conclude that, while available evidence supports the benefits of early antiviral treatment, controlled clinical trials are urgently needed in this patient population to address issues of timing, dosing and duration of current antiviral regimens, as well as the risk of resistance development. The recent global spread of oseltamivir-resistant seasonal A(H1N1) and adamantane-resistant A(H3N2) viruses illustrates the plasticity of influenza viruses and the continuing threat of emergence of viruses resistant to one or more antiviral agents [3]. The epidemiology, biology and genetic basis of neuraminidase inhibitor resistance are reviewed by Nguyen et al. In addition, they provide an overview of available laboratory methods and discuss testing strategies for much needed close monitoring of resistance emergence.

The next two articles in this Spotlight issue focus on patient populations at highest risk of severe disease and complications caused by infection with respiratory viruses. Renaud and Englund discuss the epidemiology and management strategies of respiratory viral infections in haematopoietic stem cell transplant recipients, while Ison does the same for lung transplant recipients. For some of these viruses, novel antiviral agents are in
development and may be available on compassionate use basis for current management in individual cases.

Human RSV remains the leading cause of lower respiratory tract infections and hospitalizations in infants and young children. While safe and effective vaccines are not yet available, the development of polyclonal and monoclonal antibodies has afforded significant progress in the effective protection against RSV infection in vulnerable populations at risk for severe disease. Geevarghese and Simões provide past, present and future perspectives on RSV immunoprophylaxis and treatment in children. RSV infection has also been the target for the first proof-of-concept clinical trial showing therapeutic activity of RNA interference (RNAi)-based therapy in humans. This exciting novel approach for treatment of RSV and other respiratory viral infections is discussed in a comprehensive review by DeVincenzo.

To complete this Spotlight issue on respiratory viruses, Welkers and colleagues provide a synopsis of the XIIth International Symposium on Respiratory Viral Infections, which was held in Taipei, Taiwan in March 2010, and which covers a wide range of topics relevant to the field. For those interested, summaries from other International Symposia on Respiratory Viral Infections have been recently published [4–6].

We hope that you will find this second Respiratory Virus Spotlight issue of Antiviral Therapy informative and welcome future submissions on these and related topics to the journal. We are very grateful to all authors for their valuable contributions and to the editorial staff for their help in compiling this second special supplement on respiratory viruses.

Disclosure statement

The authors declare no competing interests.

References


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