

## Summary of Several Studies on Respiratory Diseases

Cho WC\*

Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong, China

\*Corresponding author: Cho WC, Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong, China, Tel: 852-35062963; E-mail: [chocs@ha.org.hk](mailto:chocs@ha.org.hk)

Received date: May 05, 2016; Accepted date: May 26, 2016; Published date: May 27, 2016

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### Editor Note

Surge in air pollution has increased the risk of respiratory diseases to a greater extent in developing and developed countries across the world [1]. In this special issue, several aspects on respiratory diseases are presented, to stimulate more researches in this important area.

Anti-tuberculosis drug-induced hepatotoxicity (ATDH) is the most serious adverse effect of anti-tuberculosis (TB) drugs [2,3], Mawatari et al. have examined the genes related to ATDH for 100 Japanese patients with pulmonary TB. They found that a C/C genotype of rs553822 in glutamate cysteine ligase, catalytic subunit (GCLC) and an A/T or T/T genotype of rs12140446 in glutamate cysteine ligase, modifier subunit (GCLM) independently contributed to the susceptibility to ATDH. Genetic testing showed that the TB patients without these polymorphisms of GCLC and GCLM could be treated with anti-TB drugs with higher specificity. Interestingly, GCLC and GCLM were shown to be the genetic determinants of predisposition to the onset and/or development of ATDH in Japanese TB patients. They might be used as a biomarker to predict the high-risk TB patients susceptible to ATDH.

It is well known that airway inflammation and inflammatory mediators play an important role in the pathogenesis of chronic obstructive pulmonary disease (COPD) [4]. However, our understanding of the anti-inflammatory effect of Chinese herbal medicine (CHM) on COPD is limited and the mechanism of actions is unclear. Thus, Miao et al. conducted a systematic review to evaluate the anti-inflammatory effects of CHM on the concentration of various inflammatory mediators. They also explored the mechanism of CHM's anti-inflammatory action on patients with stable COPD. 2,268 patients in 29 studies were evaluated. The results showed a significant reduction in the serum level of IL-8 and TNF- $\alpha$  in patients treated with CHM plus bronchodilators, comparing to bronchodilators alone. The most commonly used herbs included *Astragalus membranaceus*, *Atractylodes macrocephala*, *Codonopsis pilosula*, and *Schisandra chinensis*. *Astragalus* has been well reported on its immunomodulating and immunorestorative effects [5], it was able to modify the responses of lipopolysaccharide-stimulated macrophages and reduce the production of TNF- $\alpha$ , IL-6 and IL-10 [6]. Schisandrin B from *Schisandra chinensis* could down-regulate the production of pro-inflammatory mediators, such as TNF- $\alpha$  and IL-6 [7]. Thus, using CHM adjunctively seems to be beneficial in treating and slowing the progression of COPD.

Effusions can be labeled as inflammatory (exudative) or non-inflammatory (transudative) depending on the pathophysiological process involved. Various biomarkers (fluid glucose, fluid proteins, fluid albumin, protein ratio, protein gradient, albumin gradient) have been employed to evaluate the inflammatory status [8]. Rajput et al. analyzed these biomarkers against the cytology (the gold standard) and the practical utility of fluid adenosine deaminase for the diagnosis of

tubercular serositis. They found that albumin gradient could differentiate the pathophysiological nature of effusion. These results suggested a cost effective diagnostic algorithm for serositis.

On the other hand, invasive fungal rhino sinusitis (IFRS) is a major cause of mortality in immunocompromised patients. Kaur et al. recruited 75 patients with suspected IFRS to study the clinicopathological and mycological profile. They found that one-third of the suspected IFRS cases were confirmed by microbiological and histopathological examination, comprising of 56% acute IFRS (AIFRS), 36% chronic IFRS (CIFRS) and 8% chronic granulomatous FRS. *Rhizopus arrhizus* (64.2%) was the most common isolate, followed by *Aspergillus flavus* (35.7%). *Mucor spp.* were solely isolated from AIFRS (14.3%). In CIFRS, *Aspergillus flavus* (44.4%) was found to be the major isolate with *Aspergillus niger*, *Alternaria spp.*, *Penicillium spp.* and *Candida albicans*. These results suggested that direct microscopy along with culture confirmation might be useful for the early diagnosis of IFRS.

Vegetable foreign bodies (FB) are commonly aspirated in pediatric and elderly patients [9]. However, it may be dangerous as most of them are hygroscopic, they swell up within a few days causing the blockage of lumen in bronchus and the retention of secretion distal to it. Lopez et al. described the development of a new therapeutic option to remove the aspirated vegetable FB from the respiratory tract of an elderly patient. They removed a cherry pit under conscious sedation using flexible cryoprobe with video bronchoscopy. Their study introduced a FB extraction method without using invasive procedures.

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