Update of cytokines and genes in asthma and allergic rhinitis

Surasakdi Wongratanacheewin

In this last issue of 2014, there are several papers related to the prevalence and pathogenesis mechanisms of asthma and allergic diseases. The first paper by Wanlapakorn et al. reports a cross-sectional descriptive study investigating asthma in Thai students aged between 6-12 years from 3 public schools and 3 private schools in Bangkok. Only 9% of the 1,428 students enrolled in this study were diagnosed as asthmatic, with only 10% of the cases reported not being under control. This result indicates that the prevalence of asthma in the student population from elementary schools in the Bangkok area is characterized by a relatively low incidence, which might be resulting from better asthma management strategies in the royal capital.

Two other papers investigate the role of IL-33 and IL-20 in pathogenesis of asthma. Although IL-33 is known to play a key role in the onset of asthma, Wu and colleagues demonstrated that it is also implicated in airway smooth muscle cells (ASMCs) proliferation in ovalbumin-sensitized mice and inflammation associated to bronchial asthma. IL-20, belonging to the interleukin family IL-10, has been found to be highly expressed in the airway epithelium of asthma patients where other cytokines such as Th2 cytokines, IL-4, IL-5 and IL-133 were also highly expressed. The IL-20 was also found to be significantly correlated with asthma severity, suggesting that it might be a good indicator of asthma risk. Biman Saikia and colleagues discovered a novel mutation in the DNA binding domain of STAT3 in patients with Hyper IgE syndrome (HIES), a primary immunodeficiency disorder. This mutation induces the reduction of Th17 cell production and consequently increases patients susceptibility to Mycobacteriological infection.

Another interesting finding was reported by Shen and colleagues. They found that patients with nasal polyposis (NP) have defective regulatory T cells and Foxp3 levels and present significantly decreased TGF-β levels in allergen stimulated PBMCs in vitro. The authors hypothesized that these finding may explain why NP patients have chronic inflammation that could not be controlled by regulatory T cells.

Finally, the last paper of the December 2014 issue investigate determinants of another important allergic disease: allergic rhinitis (AR). Yu Zhang et al. showed that the expression of H2-Eb1 (orthologous gene of human HLA-DRB1 in mice) gene accompanied by an increased GATA-3/T-bet ratio play an important role in AR model in mice, corroborating recent studies in the field.

References