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Editorial

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The sticky relationship between allergies and infections

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"For this general concept of a changed reactivity, I proposed the term allergy" Clemens von Pirquet, 1906 [1].

It is about 100 years ago, in July 1906, the word "allergy" was first used by Clemens von Pirquet in a brief, speculative article published in a German medical journal [1]. Created from two Greek words, alloz (other or different) and ergeia (signifying energy or reactivity), the term was intended to provide a mean of defining various manifestations of altered biological reactivity, particularly, different from the beneficial protective immunity to active immunization against infections. Although the initial broad meaning of allergy was relentlessly narrowed by subsequent investigators, but trace back this history providing us the notion that allergy and infection are at the two sides of coin in our immune response to environmental stimuli. Unfortunately, it is not the case in the daily clinical practice of allergic clinic. In several studies focused on the development of allergy since early infancy have found out, the combination of respiratory virus infection, allergen sensitization, and concurrent high exposure to environmental aeroallergen markedly increases the risk of persistent asthma in later life [2-4]. Holt et al. [5] have also provided strong evidence that early life of virus infection and allergen sensitization in the development of asthma. This "double hits" of synergism effects on mucosal immune response by infection and allergen sanitization could induce inflammation in the respiratory epithelial cells that frequently presents in allergic asthma. A good example in this hypothesis model has recently been shown in the findings of the critical role of interleukin (IL) 25 and IL-33 after rhinovirus infections and the development of allergy asthma [6, 7]. In fact, Martinez [8] has suggested the term of "The viral march" to describe the connection between early life virus wheezing and subsequent asthma. Therefore, it is interesting to ask whether allergy diseases in children are associated with infectious diseases and with antibiotics susceptibility at a country level as reported in the original article of this issue by Fsadni et al. [9]. Their findings shown significant positive correlation of atopic eczema and infectious diseases in childhood, while allergic rhinitis is negative correlated with bacterial pneumonia such as streptococcus and susceptibly to penicillin and erythromycin. For in the cases of atopic dermatitis which have skin barrier defect that may increase the chance of infectious disease in the host, but regarding the negative association between allergic rhinitis and antibiotic susceptibility, authors presumed that antibiotic overprescription may be the cause of this phenomenon. Previously, we have used two birth cohorts obtained from National Health Insurance Research Data Base of whole Taiwan Population, clearly showed that temporal

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effect of exposure to antibiotics in the first year of life influences the development of common allergic diseases in later childhood, i.e., increase the risk of asthma, allergic rhinitis, and atopic dermatitis to nearly two folds in general population of Taiwan [10], although confounding by familial factors and by respiratory infections are difficult to exclude. In fact, for a sticky relationship between infection and allergy that is difficult to separate from cause and effect, further investigation of this synergism and a better understanding of the "viral march" could yield new therapeutic approaches for the prevention and treatment of acute severe airway obstruction during childhood and lead to the development of strategies for allergy prevention.

Another interesting question is to ask whether treatment of allergic diseases, such as using allergen-specific immunotherapy, can reduce incidence of respiratory infections. Barberi et al. [11] reported in the original article of this issue provided evidence, although small in patient number, that high-dose house dust mites sublingual immunotherapy (SLIT) for 6 months had significantly reduced respiratory episode as comparted to those just using symptomatic medications. Moreover, medications for treating infection, such as antibiotics and antipyretic agents had less prescription than control groups. This is a very interesting finding for SLIT study, but need more subjects and multiple centers study to confirm Cipradi's finding.

As we mention in our previous editorials [12-14], Asia is notable for not only overall large size and population, within the continent of 4.4 billion people, but also with extremely diverse climates and geographic features. Allergic diseases as the final manifestations of environmental influence on the biological host will varies and different among different geographical zones of the world. In order to understanding recent rapid industrialization and urbanization on the diverse populations in Asia, the review article of this issue of AP Allergy, Song et al. [15] performed a literature review on chronic cough in community-based adult Asian population within recent 15 years. This first article of Series review on the chronic cough in Asia will focus on the epidemiology in the different parts of Asia.

Finally, for daily practice allergists, it is still very difficult to diagnose and aware some rare agents that caused anaphylaxis, such as intravenous tacolimus and cyclosporine [16], and gynecomastia caused by H1-antihistamine (ebastine) [17] in the case reported from Korea. Using basophil activation test for *in vitro* diagnosis of chlorpheniramine-induced anaphylaxis was discussed by Lee et al. [18] in this issue may provide some insights and future resolution in the diagnosis of life-threaten clinical condition of anaphylaxis. We expect our readers can benefit from our articles and glean the fruits of the diversity of Allergies in Asia.

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