



## ■ The Link Between Allergic Rhinitis and Asthma: The United Airways Disease

### **Prof. Abdulrahman Al Frayh**

- Professor of Pediatrics
- Allergy and Asthma
- Department of Pediatrics, College of Medicine
- King Khalid University Hospital, King Saud University

Rhinitis and asthma are often associated and the two disorders interact at various levels. Rhinitis typically precedes the development of asthma and can contribute to unsatisfactory asthma control. The presence and type of asthma is influenced by sensitization, and the duration and severity of allergic rhinitis. Nasal symptoms directly correlate with lower airway involvement. Local tissue factors, such as microbial stimuli and systemic inflammatory mechanisms, play a role in the clinical expression of the allergic airway syndrome. There is increasing evidence that suggests a major involvement of airway epithelial cells in the pathogenesis of both asthma and allergic rhinitis. Even in patients with rhinitis who do not have asthma, subclinical changes in the lower airways and inflammatory mediators can be detected.

The link existing between the upper and lower airways has been observed repeatedly in the past, but the concept of united airways disease (UAD) is a matter of recent years. Clinical, epidemiological, functional and immunological relationships between the two compartments have been confirmed at the experimental level. An increasing amount of evidence for the frequent coexistence of the two disease is now available, and the role of upper airways infections in exacerbating asthma has also been confirmed. Moreover, rhinitis has been identified as an independent risk factor for asthma development, and this has allowed clinicians to identify possible strategies for rhinitic patients, with aim of preventing asthma onset. The nose-bronchi functional links have been partially clarified by an understanding of the mechanisms sustaining allergic inflammation, concluding that allergy is not a disease of specific organ, but rather a disorder of the whole respiratory tract with a wide range of clinical manifestations. Overall, these observations have contributed to the genesis of the term UAD.



## **The Link Between Allergic Rhinitis and Asthma: The United Airways Disease**

**Abdulrahman Al Frayh**

Professor of Pediatrics

Allergy and Asthma

Department of Pediatrics, College of Medicine  
King Khalid University Hospital, King Saud University

### **Abstract**

Rhinitis and asthma are often associated and the two disorders interact at various levels. Rhinitis typically precedes the development of asthma and can contribute to unsatisfactory asthma control. The presence and type of asthma is influenced by sensitization, and the duration and severity of allergic rhinitis. Nasal symptoms directly correlate with lower airway involvement. Local tissue factors, such as microbial stimuli and systemic inflammatory mechanisms, play a role in the clinical expression of the allergic airway syndrome. There is increasing evidence that suggests a major involvement of airway epithelial cells in the pathogenesis of both asthma and allergic rhinitis. Even in patients with rhinitis who do not have asthma, subclinical changes in the lower airways and inflammatory mediators can be detected.

The link existing between the upper and lower airways has been observed repeatedly in the past, but the concept of united airways disease (UAD) is a matter of recent years. Clinical, epidemiological, functional and immunological relationships between the two compartments have been confirmed at the experimental level. An increasing amount of evidence for the frequent coexistence of the two disease is now available, and the role of upper airways infections in exacerbating asthma has also been confirmed. Moreover, rhinitis has been identified as an independent risk factor for asthma development, and this has allowed clinicians to identify possible strategies for rhinitic patients, with aim of preventing asthma onset. The nose-bronchi functional links have been partially clarified by an understanding of the mechanisms sustaining allergic inflammation, concluding that allergy is not a disease of specific organ, but rather a disorder of the whole respiratory tract with a wide range of clinical manifestations. Overall, these observations have contributed to the genesis of the term UAD.

## **Epidemiology of Allergic Diseases in Saudi Arabia**

A.R. Al-Frayh, MD, FACAAI, FAAAAI and Syed M. Hasnain, PhD, FACAAI, FAAAAI

\*College of Medicine, King Saud University,

\*\* King Faisal Specialist Hospital and Research Centre, Saudi Arabia

Alfrayh@yahoo.com, hasnain@kfshrc.edu.sa

Studies on prevalence of bronchial asthma and other allergic diseases in children have been conducted at various regions of the Kingdom including Eastern, Western and Central Regions, encompassing different climate and geographical zones. The studies were conducted in both boys and girls using an internationally designed questionnaire (similar to ISAAC) as well as by diagnostic parameters on cross sectional population of children. The results revealed significant regional variations in the prevalence rate of both diagnosed and highly suspected cases. The definite or diagnosed asthma recorded were as follow: Abha (n=485) 13%, Dammam (n=889) 3.7%, Gizan (n=362) 24.3%, Hofuf (n=923) 14.4%, Hail (n=507) 22.9%, Qassim (n=384) 15.1%, Riyadh (n=988) 10.2% and Jeddah (n=531) 10.4%. Addition of highly suspected case put the figures comparatively much higher. Though the number of children participated also varied from region to region, yet the trend shows that Gizan, a coastal region has the highest prevalence of asthma followed by Hail, an agricultural region. Another study, 9 years apart using the same protocol revealed increased prevalence of asthma in the Kingdom. Based on the data, we can conclude that the Kingdom of Saudi Arabia has not only higher prevalence of bronchial asthma in children but also the rate of prevalence is increasing.

There appear to be several factors involved in the increasing prevalence of the disease. Aeroallergen studies, both indoor and outdoor, revealed a number of allergenic and unknown pollen grains, fungal spores, house dust mites, cat and other allergens exceeding their threshold levels for both sensitization and elicitation of asthma and other allergic conditions. Change in life style, modernization, increased plantation and agricultural activities all appear to contribute to the disease prevalence.