

**1. What are the main airway allergies and what is their prevalence globally?**

Allergic rhinitis is an IgE-mediated chronic inflammation of the nose. Asthma is a chronic inflammatory disease of the lower airways that can also be caused by IgE-mediated inflammation, especially in children. Allergic rhinitis affects 400 million people and asthma affects 300 million people globally and the prevalence rates of both allergic rhinitis and asthma are increasing in both developed and developing countries<sup>1</sup>. The WHO has estimated that by 2025 400 million people in the world will suffer from asthma.

**2. What is the connection between allergic rhinitis and asthma?**

Allergic rhinitis is a risk factor for asthma. Prevalence of asthma in patients with rhinitis ranges from 10 to 40%; conversely up to 80% of patients with persistent asthma have allergic rhinitis<sup>2</sup>.

**3. What are the links between the upper and lower airways?**

Asthma and rhinitis are manifestations of a syndrome that is linked by several factors, the chronic allergic respiratory syndrome. Allergic rhinitis and asthma have epidemiological, pathophysiological, immunological links and share a similar inflammatory process. Treating allergic rhinitis has been shown to improve asthma.

**4. What are the triggers and aggravating factors of allergic rhinitis?**

Besides indoor allergens (house dust mites, pet dander, molds) and outdoor allergens (pollens from trees, grass and weeds) a variety of other factors like environmental pollutants (indoor tobacco smoke and chemicals) and outdoor air pollution resulting from vehicular emissions, diesel exhaust particles and industrial pollutants can aggravate allergic rhinitis and asthma.

**5. What is most important to know if the conditions are not controlled?**

The most common symptoms of allergic rhinitis are sneezing, runny nose, nasal congestion, nasal and ocular itching and watering of the eyes. Other associated symptoms include headache, facial and ear pain. Patients with asthma typically experience recurrent episodes of wheezing, difficulty in breathing, chest tightness and cough, particularly at night or early morning. Other co-morbidities of allergic rhinitis include: sinusitis, conjunctivitis, otitis media with effusion, upper respiratory infections, and sleep disorders.

**6. How can airway allergies impair quality of life?**

When uncontrolled, asthma can interfere with normal activities of life such as exercising, sleeping at night and breathing normally. Uncontrolled asthma is associated with reduced quality of life, missed work or school or unplanned office or emergency department visits. Comorbid allergic rhinitis and asthma can markedly affect the quality of life of the patients<sup>2,3</sup>.

## 7. What are the human and economic burdens of airway allergies?

Allergic rhinitis and asthma are a major socio-economic burden and reduces work productivity, learning performance and interferes with social interactions. It also has psychological effects, and creates a burden not only for the affected subject, but for the family and for the society at large.

Co-morbid allergic rhinitis in asthmatics, is associated with higher total annual medical costs, greater prescribing frequency of asthma-related medications and increased likelihood of hospitalizations and emergency visits<sup>4-9</sup>. Moreover, under-diagnosis and inadequate treatment of allergic rhinitis can worsen coexisting asthma leading to a greater public health problem, even in low and middle income countries.

## 8. What can be done to improve quality of life for patients who suffer from airway allergies?

Management is based on patient education, environmental control measures (allergen avoidance etc.), appropriate medications and allergen-specific immunotherapy<sup>1,10</sup>.

### Key References

1. Pawankar R, Canonica GW, Holgate ST, Lockey RF, Blaiss M. WAO White Book on Allergy (World Allergy Organization, 2013), pp 153-226.
2. Bousquet J, Bullinger M, Fayol C et al, Assessment of quality of life in patients with perennial allergic rhinitis with the French version of the SF-36 Health Status Questionnaire. *Journal of Allergy and Clinical Immunology* 1994; 94(2, Part 1): 182-188.
3. Valovirta E and Pawankar R, Survey on the impact of comorbid allergic rhinitis in patients with Asthma. *BMC Pulmonary Medicine* 2006; 6(suppl 1): S3-S12.
4. Thomas M, Sazonov Kocevar V, Zhang Q et al, Asthma-related health care resource use among asthmatic children with and without concomitant allergic rhinitis. *Pediatrics* 2005; 115(1): 129-34
5. Yawn BP, Yunginger JW, Wollan PC et al, Allergic rhinitis in Rochester, Minnesota residents with asthma: Frequency and impact on health care charges. *Journal of Allergy and Clinical Immunology* 1999; 103(1, Part 1): 54-59
6. Bousquet J, Gaugris S, Sazonov Kocevar V et al, Increased risk of asthma attacks and emergency visits among asthma patients with allergic rhinitis: a subgroup analysis of the improving asthma control trial. *Clinical and Experimental Allergy* 2005; 35: 723-7
7. Price D, Zhang Q, Kocevar VS, Yin DD, Thomas M. Effect of a concomitant diagnosis of allergic rhinitis on asthma-related health care use by adults. *Clin Exp Allergy*. 2005 Mar;35(3):282-7
8. Pawankar R, Bunnag C, Chen Y, Fukuda T, Kim YY, Le LT, Huong le TT, O'Hehir RE, et al. Allergic rhinitis and its impact on asthma update (ARIA 2008)--western and Asian-Pacific perspective. *Asian Pac J Allergy Immunol*. 2009 Dec;27(4):237-43.
9. Pawankar R, Baena-Cagnani CE, Bousquet J, Walter Canonica G, Cruz AA, Kaliner MA, Lanier BQ. State of World Allergy Report 2008: Allergy and Chronic Respiratory Diseases. *World Allergy Organ J*. 2008 Jun 15;1 (Suppl 1)
10. Bousquet J, Van Cauwenberge P, Khaltaev N; Aria Workshop Group; World Health Organization. Allergic rhinitis and its impact on asthma. *J Allergy Clin Immunol*. 2001 Nov; 108(5 Suppl):S147-334.