

Editorial

Links between allergic rhinitis and asthma still reinforced

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The nasal airways and their closely associated paranasal sinuses are an integral part of the respiratory tract (1–4). The nasal and bronchial mucosa present similarities, and one of the most important concepts regarding nose–lung interactions is the functional complementarity (2). Most patients with asthma have rhinitis suggesting the concept of ‘one airway one disease’. However, not all patients with rhinitis present with asthma and there are differences between rhinitis and asthma (5).

Epidemiologic studies have consistently shown that asthma and rhinitis often co-exist in the same patients in every region of the world (1, 6–8). The prevalence of asthma in subjects without rhinitis is usually <2%, whereas in patients with rhinitis varies from 10% to 40% (9, 10). Most patients with allergic or nonallergic asthma present rhinitis symptoms (11–14). However, in many instances, symptoms may predominate in one organ and be hidden or unrecognized in other organs even though they exist. Patients with persistent rhinitis appear to have more often asthma but not always (15–18).

Adults and children with asthma and documented concomitant allergic rhinitis experience more asthma-related hospitalizations and physician visits, and incur higher asthma drug costs than adults with asthma alone (19–22). These patients also experience more frequent absence from work and decreased productivity. However, some studies have not shown such an association (23).

Many patients with allergic rhinitis have an increased bronchial reactivity to methacholine or histamine (24), especially during and some time after the pollen season (25, 26). Patients with perennial rhinitis have a greater

bronchial reactivity than those with seasonal rhinitis (24, 27). Nasal and bronchial inflammations are often related (28), and a study in the issue of the *Journal* (29) shows that vascular endothelial growth factor and interleukin (IL)-5 can be important determinants of the development of bronchial hyperreactivity in allergic rhinitis patients, and that lower levels of other cytokines such as IL-4 and IL-13 may be associated with the absence of asthmatic symptoms in allergic rhinitis with bronchial hyperreactivity.

In the present issue of the *Journal*, it was found that patients with allergic and nonallergic asthma and chronic obstructive pulmonary disease show increased nasal symptoms and more nasal inflammation (30). These data confirm the ‘united airways’ concept to be beyond the scope of asthma.

The relationships between early life events and subsequent development of allergy and asthma are often studied in birth cohorts. Many studies have been recently published in our *Journal* (31–33). Strachan first proposed the so-called hygiene hypothesis suggesting that infections and unhygienic contact might confer protection against the development of allergy (34). Although this hypothesis has raised enormous amount of data, there are still many questions raised. In this issue of the *Journal*, using two UK birth cohorts, Bremner et al. (35) investigated infections during infancy in relation to allergic rhinitis, including rarer ones not previously researched in this context, while examining the role of potential confounding variables. Of 30 infectious illnesses investigated, none had strong or consistent associations with allergic rhinitis after adjustment for consultation frequency. Except for bronchiolitis,

possibly a chance finding, none of the clinically apparent infections considered appear to have an important role in allergy prevention.

Quality of life is impaired in patients with asthma and/or allergic rhinitis (36–38). Patients with both asthma and allergic rhinitis experienced more physical limitations than patients with allergic rhinitis alone, but no difference was found between these two groups regarding concepts related to social/mental health. Subjects with asthma but without rhinitis could not be studied as their number was too low. However, it seems that impairment in the social life of asthmatics may be attributable to nasal symptoms. Significant deterioration in rhinoconjunctivitis-specific quality of life was observed through the pollination period in patients with allergic rhinitis and asthma. At pollen peak, patients with asthma experienced significantly worse physical functioning than patients with rhinitis alone (39). To compare nasal and bronchial symptoms in the same patients, generic quality-of-life questionnaires are needed (40) whereas disease-specific questionnaires are more sensitive to change during interventions (41, 42).

It is not clear yet whether treatment of one airway may improve symptoms of the other site. This may be due to the difficulty to assess perennial rhinitis or seasonal asthma during clinical trials and more studies are needed to make a definite proposal. Moreover, studies should be analyzed using newer methodology (43). However, recently, there have been some compelling data suggesting that new studies with innovative methods need to be started (44–46).

There are similarities and differences between the nasal and bronchial mucosa in rhinitis and asthma (47). Most asthmatics present rhinitis whereas only a fraction of rhinitis patients present clinically demonstrable asthma even though a greater number of patients have nonspecific bronchial hyperreactivity. These studies strongly support the 1999 WHO workshop 'Allergic Rhinitis and Its Impact on Asthma' (1) which recommended:

- 'That patients with persistent allergic rhinitis should be evaluated for asthma by history, chest examination and, if possible and when necessary, assessment of airflow obstruction before and after bronchodilator.
- That history and examination of the upper respiratory tract for allergic rhinitis should be performed in patients with asthma.
- To propose a strategy combining the treatment of both the upper and lower airway disease in terms of efficacy and safety.'

The perception of patients and physicians about the links between asthma and rhinitis varies between countries, but there appears to be higher than expected (48, 49). However, the knowledge is not directly translated into practice as fewer physicians co-prescribe treatments for rhinitis and asthma in the same patient.

Under-diagnosis of asthma is common around the world and many patients might have been diagnosed with asthma if the links between the upper and lower airways had been recognized. Due to the reversibility of the airflow obstruction, the diagnosis of asthma is difficult and great attention should be focused on the history of paroxysmal attacks of breathlessness commonly associated with chest tightness and wheezing, particularly at night and in the early hours of the morning. However, these common symptoms are not pathognomonic by themselves. A history of recurrent exacerbations (or attacks) may be provoked by nonspecific triggers such as allergens, irritants, exercise, and virus infections. On the other hand, asthma symptoms are reversible spontaneously or under treatment. In all patients with persistent rhinitis, asthma should be investigated by history, and if needed using pulmonary function tests assessing the reversibility of airflow obstruction under inhaled short-acting β_2 -agonists. A simple questionnaire may be used for screening, but more structured questionnaires have been validated (50).

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