



# Opinion

## Allergic rhinitis and asthma

Allergic rhinitis and asthma are two very common conditions, which frequently co-exist. Epidemiological studies have revealed sharp increases in the prevalence of these conditions over recent decades and have also found that the UK prevalence of allergic rhinitis and asthma is amongst the highest in the world.<sup>1,2,3</sup>

The increasing realisation that allergic rhinitis and asthma share a number of anatomical, epidemiological and pathological characteristics has, for some time now, suggested that the two conditions may be directly linked and this argument has been formally advanced by the World Health Organization's Allergic Rhinitis and its Impact on Asthma (ARIA) guideline, as the 'one airway, one disease' model.<sup>4</sup>

This opinion sheet summarises the key literature on the nature of the relationship between allergic rhinitis and asthma.

### What is the evidence that allergic rhinitis and asthma are interlinked?

The upper and lower airways are anatomically connected and the mucosal linings of the nose and bronchi share similar histologies pointing to a possible direct relationship between these two organs. The two conditions share epidemiological similarities in that both demonstrate broadly similar international patterns and trends in disease prevalence over time. These population data are however difficult to interpret as they are subject to the impact of a range of potential confounding factors. More revealing however are the many studies that have now shown that these conditions very frequently co-exist, for example, rhinitis symptoms occur in up to 80% of those with asthma.<sup>5</sup> Interestingly, allergic rhinitis has been shown to be particularly associated with more severe and difficult to control asthma.<sup>6</sup> We are now also aware

that within individuals with co-morbidity, upper and lower airway symptoms are frequently provoked by exposure to the same allergic and non-allergic environmental triggers. Also noteworthy is that laboratory studies involving provocation testing have revealed that stimulation of the upper airways can lead to inflammation of the lower airways and vice versa following provocation of the lower airways.<sup>7</sup> There is also encouraging evidence from intervention studies which show that leukotriene receptor antagonists may simultaneously treat upper and lower airways inflammation in those with co-existent disease.<sup>8</sup> Finally, there is also anecdotal evidence from clinicians to suggest that in those with co-existent disease, adequate control of allergic rhinitis is often an essential pre-requisite to achieving asthma symptom control, this being supported by an analysis of routine UK data which suggests greater morbidity in patients with asthma who have documented coexistent allergic rhinitis.<sup>9</sup>

### What is the evidence that treating allergic rhinitis improves asthma outcomes?

Systematic reviews of the literature have shown that intranasal corticosteroids are highly effective and safe treatments for allergic rhinitis.<sup>10,11</sup> In order to further understanding of the relationship between allergic rhinitis and asthma, a number of researchers have experimentally investigated the impact of intranasal corticosteroids on asthma. Data from 14 randomised controlled trials involving 477 patients have been summarised in a Cochrane systematic review and meta-analysis.<sup>12</sup> Although this revealed a trend towards improvement in clinical and physiological outcomes for asthma, this failed to reach statistical significance leading the reviewers to conclude that in those with co-existent upper and lower airways inflammation, both intranasal and intra-

bronchial inhaled treatments are indicated. There is thus as yet no definitive evidence that treating allergic rhinitis will have a direct impact on asthma outcomes.

### Diagnosis of allergic rhinitis and asthma

The diagnosis of allergic rhinitis is in the main made by taking a thorough clinical history. Patients experience a symptom complex comprising of rhinorrhea, sneezing, nasal congestion and nasal itching, which typically last for an hour or more on most days.<sup>4</sup> It is helpful to determine whether symptoms are intermittent or persistent, these often mapping to the older classification of seasonal and perennial rhinitis. The history should also seek to ascertain the severity of the disease through assessing the impact on activities of daily living. Examination of the nose may reveal a typically inflamed nasal mucosa, hypertrophied turbinates and the classic 'salute' across the nasal bridge.

Once allergic rhinitis has been diagnosed it may be helpful to try and identify the allergens responsible for provoking symptoms as in some cases allergen avoidance may be possible and helpful.<sup>13</sup> Confirmation of the provoking aero-allergen is possible in primary care through skin prick testing and measurement of serum specific IgE.<sup>13,14</sup> Asthma is also diagnosed primarily through the history of wheezing, breathlessness, chest tightness and coughing, which are often worse at night and exacerbated by exercise or other (allergic and non-allergic) environmental triggers. Physical examination is however often normal, although demonstration of airway variability, hyper-responsiveness and/or reversibility are very helpful in securing a diagnosis.

Guidelines of direct relevance to primary care have been published on this subject.<sup>4,15</sup>

## Management of allergic rhinitis and asthma

Both allergic rhinitis and asthma can result in significant morbidity and in the case of asthma may also result in mortality. Such is the frequency of co-morbidity between the two conditions that the identification of one disorder should lead to a systematic search for the other condition. Evidence-based guidelines on the management of both these conditions advise that, in all but the mildest of cases, treatment should focus on controlling the underlying inflammation with regular use of topical corticosteroids and other anti-inflammatory agents and symptomatic treatments in order to minimise the impact on day-to-day life.<sup>16</sup>

## Gaps in knowledge

Despite evidence of a link between allergic rhinitis and asthma there are still as yet no data to support conclusively the idea that allergic rhinitis and asthma represent different manifestations of the same disease. Further research is also needed to investigate the suggestion that early diagnosis and aggressive management of allergic rhinitis might lead to a reduction in the risk of developing asthma. We also still need to find better ways of implementing the findings of guidelines into routine care.<sup>17</sup>

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