



The complex link between severity of asthma and rhinitis in mite allergic patients

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KEYWORDS

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Summary

Aim: The aim of the study was to evaluate the link between the severity of upper and lower airways diseases in mite allergic patients with respiratory allergy.

Patients and method: A multicentre, observational, cross-sectional study was carried out in 556 consecutively enrolled mite allergic patients with rhinitis and asthma comorbidity attending a specialist unit. Severity assessment of rhinitis and asthma was evaluated in accordance with ARIA and GINA guidelines.

Results: Reliable data were available for 518 patients. The distribution of rhinitis severity was: 15.6% mild intermittent rhinitis, 4.4% moderate-severe intermittent rhinitis, 30.3% mild persistent rhinitis and 49.6% moderate persistent rhinitis. The distribution of asthma severity was: 41.3% mild intermittent asthma, 14.3% mild persistent asthma, 19.1% moderate persistent asthma and 25.3% severe persistent asthma. In patients with moderate-severe persistent rhinitis (49.5%) a significant trend ($p = 0.005$) was found pointing to an increased link with asthma severity.

Conclusion: A link between respective severities of rhinitis and asthma was found in only half of mite allergic patients with rhinitis and asthma.

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Introduction

The prevalence of rhinitis and asthma is increasing worldwide, this trend is also present in Italy where among the general population prevalence is greater than 25% for rhinitis and 5% for asthma.¹ Rhinitis and asthma frequently coexist: it is estimated that rhinitis affects 80% of the asthmatic population and that between 20 and 50% of patients with allergic rhinitis report asthma or asthma-like symptoms.^{2,3}

The United Airways Diseases (UAD) hypothesis postulates that rhinitis and asthma are manifestations of a single inflammatory process, leading to disease of both the upper and lower airways. In brief, rhinitis is the initial clinical presentation of such inflammatory process, and as its severity grows, lower airways are clinically involved.^{3–6} Therefore the severity of the disease is the central issue in this hypothesis, unfortunately severity measures, particularly for rhinitis, are inconsistent and dependent primarily on subjective reports about symptoms and treatment.

Even though evidence exists supporting the UAD hypothesis – in particular that rhinitis is associated with the onset of asthma, and that severity of rhinitis is associated with the prevalence and severity of coexisting asthma^{6–10} – other data fail to show a link between severity of the two diseases.^{11–14}

Further proof supporting the differences between rhinitis and asthma is provided by genetics.

It has become clear that there are separate genetic polymorphisms that affect susceptibility to allergic sensitization while totally different genes are associated with allergic diseases: genes identified in allergy are mostly involved with mechanisms regulating the balance of immune responses whereas disease-specific genes are mostly associated with the epithelial functions.¹⁵

The results of surveys concerning rhinitis and asthma comorbidity are highly dependent on the disease-defining criteria,⁵ therefore a targeted study, with a homogeneously selected group of patients with coexisting rhinitis and asthma could help shed some light on this issue.

Allergic sensitization to indoor allergens is the most influential risk factor for the onset of asthma^{16,17} and the peculiar features of mite allergens enhance the development of asthma,¹⁸ therefore the aim of this study was to evaluate the link between the severity of upper and lower airways diseases in symptomatic mite allergic patients attending a specialist medical setting for consultation.

Materials and methods

Study design

A multicentre, observational, cross-sectional study involving allergy and pulmonologist units throughout Italy was carried out. Participation was accepted via e-mail following invitations to collaborate sent to the 570 members of the AAITO association (Italian Association of Territorial and Hospital Allergists and Immunologists). Forty-three units joined the survey, nine subsequently

dropped out for reasons unrelated to the study. The patients enrolled signed an informed consent form and completed the section for the patient of a two-part questionnaire. The patient section of the questionnaire collected the basic demographic details. The physician part of the questionnaire was designed to gather some relevant clinical information (clinical diagnosis of mite allergic rhinitis and asthma; duration of the disease; current therapy; self reported presence of coexisting sinusitis; nasal polyps and gastro-oesophageal reflux; rate of asthma exacerbations and related health care resource use) and to assess rhinitis and asthma severity, in accordance with the ARIA and GINA classifications.

The study was approved by the ethics committee.

Patients

All consecutively enrolled patients attending a specialist unit from September 1st 2007 to December 31st 2007, aged 14 and older, with a history of rhinitis and asthma, with symptoms in the last year and evidence of house dust mite allergy were eligible for the study.

As part of the inclusion criteria, a clinical diagnosis of rhinitis and asthma was certified by a pulmonologist and/or allergy specialist. Diagnosis of asthma was supported by: (1) affirmative answers to the following questions: "In the past 12 months, have you experienced wheezing or whistling in your chest?" or "In the past 12 months, have you taken any asthma medication?"; (2) a positive bronchodilation test (minimum 12% relative improvement in the volume FEV₁ after bronchodilator administration) and/or a prior positive methacoline test (PC20 < 16 mg/ml) when available.

In accordance with ARIA guidelines,¹⁹ severity of rhinitis was evaluated by combining the duration of symptoms with the disease's impact on patients quality of life and classified as follows: intermittent (<4 days/week or <4 weeks/year) and persistent (>4 days/week and >4 weeks/year). Rhinitis was diagnosed as moderate-severe in patients who replied "yes" to one or more of the following items: abnormal sleep; impairment of daily work or school; impairment of leisure activities; presence of troublesome symptoms. Rhinitis was classified as mild in patients who replied "no" to all of the above listed items.

Asthma severity, in accordance with the GINA 2006 classification algorithm, was ascertained using a grid sheet (Table 1), cross-checking the patient's level of symptoms and his/her level of treatment.²⁰

Patients were classified as mite allergic, provided that at least the following two conditions were satisfied: a structured allergy history consistent with mite allergy (predominant symptoms, seasonality of symptoms and exacerbating factors) and a positive skin prick test.

Skin prick testing was performed in all patients with a panel of the most relevant inhalant allergens in Italy (*Dermatophagoides pteronyssinus* and *Dermatophagoides farinae*, *Alternaria*, *Cladosporium*, Grass mix, *Parietaria*, *Olea*, Cypress, Birch, Hazel, *Artemisia*, *Ambrosia*, Dog, Cat) (ALK-Abello A/S, Horshølm, Denmark and Stallergenes, Antony, France). A mean wheal diameter ≥ 3 mm was considered positive.

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