

Clinical and allergic sensitization characteristics of allergic rhinitis among the elderly population in Istanbul, Turkey

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Abstract Prevalence of allergic rhinitis (AR) in elderly population in Turkey is not known. Studies on the prevalence and features of allergy in older adults are needed to identify safe and effective diagnostic/therapeutic methods for elderly AR patients. We aimed to identify the clinical and allergic characteristics of sensitization to aeroallergens among individuals aged ≥ 60 years with allergic rhinitis admitted to an allergy outpatient clinic in Istanbul. Of 109 patients, 33.9 % were atopic. Sixty-five percent of subjects were sensitized to *Dermatophagoides pteronyssinus*, 17 % to a grass-pollen mixture, 8 % to *Aspergillus fumigatus*, and 8 % to *Blattella germanica*. There was no difference between mono- and polysensitized patients in terms of the duration of rhinitis and symptom severity. No significant difference was observed between the two groups according to age, sex, smoking status, AR onset (<40 or ≥ 40 years), or duration/severity of disease. There was no significant difference between the two groups in the prevalence of asthma and conjunctivitis, ($p = 0.256$). Atopic dermatitis/eczema was more prevalent in those with AR ($p = 0.046$). Clinical characteristics of AR in the elderly could be different from those in non-allergic patients, and the prevalence of allergy may be higher than expected.

Keywords Allergic rhinitis · Atopy · Elderly · Atopic dermatitis/eczema

Introduction

Allergic rhinitis affects 20–40 % of the world population and its prevalence in adults according to the Turkish academic literature is ≈ 1.6 –27.5 % [1–3]. The number of people aged >60 years is increasing rapidly in “developed” countries. It is estimated that by 2030 this age group will comprise ≈ 20 % of the total population [4]. The prevalence of allergic diseases in the elderly is estimated to be ≈ 5 –10 % and allergic rhinitis has been estimated to affect ≈ 5.4 –10.7 percent of patients aged >65 years [4]. However, the prevalence of allergic rhinitis in the elderly in Turkey is not known.

Allergic conditions are often thought of as “childhood disorders”. However, allergic diseases can often persist into old age and can also be seen in the elderly. Several factors in older subjects (e.g., change in the immune system, comorbidities, use of multiple medications) can contribute to the risk of developing allergic-related conditions [2]. Also, rhinitis symptoms are usually attributed to age or the drugs such patients use.

There have been few studies focusing on determination of the clinical features of allergic rhinitis in older adults. Also, studies on the prevalence and characteristics of allergy in the elderly are warranted to provide an evidence base to identify safe and effective diagnostic/therapeutic methods. We aimed to identify the clinical and allergic characteristics of sensitization to aeroallergens among individuals aged ≥ 60 years with allergic rhinitis admitted to an allergy outpatient clinic in Istanbul, Turkey.

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Methods

The study protocol was approved by the Ethics Committee of Medeniyet University Hospital (Istanbul, Turkey). Written informed consent was obtained from all participants.

A retrospective review was undertaken for all patients aged ≥ 60 years admitted to an outpatient clinic of the Allergy Department of Medeniyet University Hospital between 1 September 2012 and 1 September 2013 to identify subjects with perennial rhinitis. One hundred and nine subjects (78 females, 27 males) with a mean age of 65.9 ± 5.8 years entered the study. Subjects who had a clinical history of *perennial rhinitis* for ≥ 1 year were included. Patients with acute infections of the upper respiratory tract, nasal polyposis, or who were taking antibiotics within 1 month of study commencement were excluded. Patients were divided into two groups according to skin prick test (SPT) reactions: allergic rhinitis (group 1) or non-allergic rhinitis (group 2).

Data were collected on demographics (age, sex), clinical features (predominant symptoms, age of onset, duration of disease, disease severity), accompanying allergic disorders (conjunctivitis, asthma, urticaria, atopic dermatitis/eczema, food allergy, drug allergy, allergy to bee venom), smoking status, and familial history of atopy. “Atopy” was defined as ≥ 1 positive SPT reactions to eight common aeroallergens (Alyostal, Antony, France): *Dermatophagoides pteronyssinus*, mixture of grass pollens, mixture of tree pollens, cat dander, dog dander, *Alternaria alternata*, *Aspergillus fumigatus*, and *Blattella germanica*. Severity of allergic rhinitis was determined using Allergic Rhinitis and its Impact on Asthma definitions [5]. Time to onset of allergic rhinitis was classified as <40 years of age or ≥ 40 years of age. Documented predominant symptoms were grouped as being mainly due to conjunctivitis (crying, redness, or itching) or mainly due to rhinitis (nasal discharge, congestion, or itching). Concomitant allergic diseases were verified according to available medical records.

Statistical analyses

The Chi-square test and Student's *t* test were used for categorical and continuous variables, respectively. $p < 0.05$

was considered significant. SPSS v10.0 (IBM, Armonk, NY, USA) was used for statistical analyses.

Results

Demographic and clinical characteristics of 109 patients are given in Table 1. Eighty-two patients (75.2 %) had mild persistent allergic rhinitis, and 27 (24.8 %) had moderate-to-severe persistent allergic rhinitis. Fifteen patients (45.9 %) also had asthma. There were no significant differences between the two groups with respect to age, sex, smoking status, onset of allergic rhinitis, or duration and severity of disease. The prevalence of conjunctivitis was 22 and 32 % in allergic and non-allergic groups, respectively. Predominant symptoms were due to conjunctivitis in patients with rhinoconjunctivitis. In terms of asthma and conjunctivitis, there was no significant difference between the two groups ($p = 0.256$). Atopic dermatitis/eczema was more prevalent in group-1 patients ($p = 0.046$).

Of all patients, 33.9 % were atopic. Sixty-five percent of subjects were sensitized to *Dermatophagoides pteronyssinus*, 17 % to a grass-pollen mixture, 8 % to *Aspergillus fumigatus* and 8 % to *Blattella germanica*. Of atopic patients, 11.5 % were sensitized to multiple allergens. Duration of disease in those with allergic rhinitis was 19.1 ± 18.2 years and age of onset of allergic disease was 46.24 ± 16.28 years. There was no significant difference between mono-sensitized and polysensitized patients in terms of the duration of rhinitis and severity of symptoms. Mono-sensitization was associated with atopic dermatitis/eczema ($p = 0.04$).

Discussion

In the present study, we demonstrated that the prevalence of atopy was high in a study cohort of older adults with *perennial rhinitis* living in Istanbul. There were no significant differences between allergic and non-allergic rhinitis groups in terms of age, sex, smoking status, onset of allergic rhinitis,

Table 1 Demographic and clinical features of the two study groups

Variables	Group 1 ($n = 37$) (%)	Group 2 ($n = 72$) (%)	<i>p</i>
Age	65.8 ± 5.8	65.6 ± 5.7	0.9
Females	27 (72)	56 (77)	0.057
Age onset ≥ 40 years	11 (29)	13 (18)	0.164
Familial atopy	17 (45)	30 (41)	0.323
Non-smokers	25 (67)	50 (69)	0.058
Asthma	17 (45)	33 (45)	0.991
Conjunctivitis	12 (32)	16 (22)	0.248
Atopic dermatitis/eczema	3	0	0.046

Bold value indicates statistical significance ($p < 0.05$)

or duration and severity of disease. The prevalence of asthma and conjunctivitis was similar in both groups. However, we found that atopic dermatitis/eczema was more common in the elderly allergic rhinitis group compared with the non-allergic group. The prevalence of atopy as detected by the SPT was 33.9 % in the elderly. The most common allergens were *Dermatophagoides pteronyssinus* and grass pollen in patients with *perennial rhinitis*. Similar results were found by Bozek et al. in an elderly population [5]: prevalence of atopy, 26.7 %; most common allergens, grass pollen, *Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, and *Alternaria alternata*. The reason why the prevalence of atopy in our study was higher than that in the study by Bozek et al. [6] could be different characteristics in the populations between the two studies.

Allergic disease can often be seen in young adults and, in general, persists into old age. Allergy to house dust mite usually persists, but spontaneous disappearance and improvement has been reported in ≈ 50 % of patients with adult seasonal allergic rhinitis [7]. In the present study, the time to onset of the symptoms of allergic rhinitis was ≥ 40 years in 29 % of allergic patients and 18 % in non-allergic patients. Patients with perennial symptoms due to sensitization to grass pollen were 17 % of atopic patients. It appeared that rhinitis could begin in older age and persist to elderly age, and that pollen allergy could become *perennial* if it persisted. Ciprandi and Cirillo [8] found no significant difference between mono-sensitized and polysensitized patients in terms of the duration of rhinitis. However, symptom severity was higher in polysensitized patients than in mono-sensitized subjects. A study by Celikel et al. [9] showed that polysensitization was associated with an increased risk of asthma and food allergy in patients with seasonal rhinitis. In our study, the prevalence of asthma or other accompanying allergic disease between the polysensitized group and the mono-sensitized group was not significantly different. Atopic dermatitis/eczema was more prevalent in mono-sensitized patients. Our findings suggest that sensitization to one type of allergen is not related with any accompanying allergic diseases in elderly subjects apart from atopic dermatitis/eczema.

We found no significant differences between allergic and non-allergic groups with regard to clinical characteristics. The prevalence of asthma and conjunctivitis was similar in both groups. However, we found that atopic dermatitis/eczema was more common in patients with allergic rhinitis. Ventura et al. [10] compared the clinical characteristics of 54 patients aged >65 years with those of 89 young adults with allergic rhinitis. They found that the elderly patients had a lower prevalence of a positive family history of atopy, and that more elderly patients had rhinitis

plus conjunctivitis than young adults. The familial atopy was less positive in our population and there were no significant differences between allergic and non-allergic group due to familial atopy history. The prevalence of conjunctivitis was high in allergic and non-allergic rhinitis groups, and predominant symptoms were due mainly to conjunctivitis in subjects with rhinitis plus conjunctivitis. However, the difference between the two groups was not significant.

The limitation of this study was that a small group of subjects was assessed retrospectively, which restricted its epidemiologic importance. Prospectively designed studies with much larger patient cohorts are needed to document the clinical and laboratory characteristics of elderly individuals with allergic rhinitis. Despite these constraints, we conclude that the clinical characteristics of allergic rhinitis in elderly subjects could be different from non-allergic patients, and that the prevalence of allergy could be higher than expected in the elderly.

Conflict of interest None.

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