



Local allergic rhinitis in elderly patients



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ABSTRACT

Background: Local allergic rhinitis (LAR) is characterized by the production of specific IgE in the nasal mucosa and a positive response to a nasal provocation test in the absence of atopy by conventional measurements. There is no information about LAR in elderly people, just as there is little information about allergic rhinitis (AR) in this age group.

Objective: To investigate the prevalence of LAR, AR, and non-AR in elderly patients with rhinitis.

Methods: In 219 patients with a mean (SD) age of 65.81 (5.88), skin prick tests, serum total specific IgE, and nasal provocation tests against common aeroallergens were performed. In addition, nasal specific IgE was measured in the nasal lavage at baseline and after provocation. For monitoring nasal symptoms, a visual analog scale was used.

Results: Of the 219 patients, 46 (21.0%) had LAR, 88 (40.2%) had AR, and 85 (38.8%) were diagnosed as having non-AR. *Dermatophagoides pteronyssinus* was the main sensitizing aeroallergen in patients with LAR (29 patients [63.0%]) and with AR (48 patients [56.4%]). No significant differences were found between the visual analog scale score and the type of AR (local or nonlocal) and the types of allergens. Clinical responses during the nasal provocation test were associated with significant increases in nasal IgE (Spearman correlation test, $R = 0.89$, $P < .05$). Polysensitization was more predominant in patients with AR than in those with LAR ($P < .05$).

Conclusion: The results indicate that LAR and AR are common in elderly patients. However, in this age group, these conditions are often underdiagnosed.

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Introduction

The increasing incidence of allergies and the aging of the population has led to increased allergic rhinitis (AR) in older patients.^{1,2} However, there are still problems with the proper diagnosis of chronic rhinitis in elderly patients, and it seems that AR is underdiagnosed in this population.³ Rhinitis has been classified as allergic or nonallergic based on the medical history, skin prick tests (SPTs), and serum IgE levels specific to aeroallergens.⁴ Unfortunately, these procedures are frequently omitted in older patients, most of whom have a diagnosis of vasomotoric or senile rhinitis.

Despite attempts to more frequently diagnose allergic diseases in older people, a large number of elderly patients still receive an incorrect diagnosis. In addition, regardless of age, previous studies suggest that 47.0% to 62.5% of patients previously diagnosed as having non-AR or idiopathic rhinitis actually have local allergic

rhinitis (LAR).^{5,6} It is possible that this effect is even greater in elderly patients. This could explain the weak effect of rhinitis treatment in older patients. LAR is characterized by the local production of specific IgE during natural exposure to aeroallergens. These patients have negative SPT results and serum specific IgE but positive nasal provocation test results to aeroallergens.⁷ Our aims were to determine the prevalence of AR and LAR in elderly patients with previous diagnoses of rhinitis and to attempt to correct the diagnosis of the type of rhinitis in the examined patients.

Methods

This study included 426 elderly patients (age range, 65–89 years) with rhinitis lasting more than 12 months but without an established diagnosis. The exclusion criteria were chronic rhinosinusitis and/or nasal polyposis or respiratory infections in the previous 4 weeks. Within this group, 219 patients (age range, 65–85 years; 130 women) were randomly selected for further procedures. A clinical questionnaire of allergy symptoms, SPTs, serum total IgE and specific IgE, and nasal specific IgE during nasal provocation testing was performed. The patients avoided the use of systemic

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Table 1
Characteristics of the study patients^a

Characteristic	LAR	AR	Non-AR
Total study patients	46 (21.0)	88 (40.2)	85 (38.8)
Age, mean (SD), y	68.45 (5.81)	66.75 (6.09)	70.56 (10.71)
Women	29 (63.0)	49 (55.7) ^b	52 (61.2)
Total IgE, mean (SD), kU/L	34.98 (28.9)	167.77 (76.55) ^a	29.74 (50.11)
Family atopy	31 (67.4)	59 (67.0)	12 (20.7) ^d
Intermittent	22 (47.8)	36 (40.9)	30 (35.3)
Persistent	24 (52.2)	52 (59.1)	55 (64.7)
Severe	11 (23.9)	34 (36.6)	31 (36.5)
Current or former smoker	27 (58.7)	48 (54.5)	50 (58.8)
Incorrect diagnosis of rhinitis type at the start	46 (100) ^c	36 (40.9)	35 (41.2)

Abbreviations: AR, allergic rhinitis; LAR, local allergic rhinitis.

^aData are presented as number (percentage) of study patients unless otherwise indicated.

^bStatistically significant difference between AR vs and non-AR and LAR.

^cStatistically significant difference between non-AR vs LAR and AR.

^dStatistically significant difference between LAR vs AR and non-AR.

corticosteroids (6 months), antihistamines (2 weeks), intranasal corticosteroids (6 weeks), and vasoconstrictors (1 week). The study was approved by the local ethics committees of Medical University of Silesia in Poland. All patients signed informed consent forms.

Rhinitis Characteristics

AR was confirmed by nasal examination and a positive diagnosis for inhalation allergy (positive SPT result and/or high serum concentration of IgE). Other patients were classified as having conditions suggestive of LAR (history of allergy, positive nasal examination finding, and the presence of nasal IgE in nasal lavage) or non-AR. According to the Allergic Rhinitis and its Impact on Asthma guidelines, rhinitis was classified as intermittent (symptoms present <4 days per week or for <4 consecutive weeks) or persistent (symptoms present >4 days per week or for >4 consecutive weeks). The severity of rhinitis was based on the estimation of the impaired aspects of life (sleep, daily activities, work or school performance) and was classified as severe, mild, or moderate.⁴

SPTs

SPTs were performed with a panel of the following aeroallergens: *Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, *Phleum*, *Artemisia*, birch, alder, hazel, *Alternaria*, *Cladosporium*, *Aspergillus*, and dog and cat epithelia (Allergopharma, Reinbek, Germany). Positive (histamine, 10 mg/mL) and negative (saline) controls were included. Allergy was defined as having positive SPT results for at least one allergen with a maximum wheal diameter of at least 3 mm greater than that of the negative control. Patients with negative test results for histamine were excluded from further analysis.⁸

Serum and Specific IgE

Serum total and specific IgE to the same aeroallergens in the SPT panel were determined by a fluoroenzyme immunosorbent assay (UniCAP, Uppsala, Sweden). The positive cutoff value of the specific IgE was greater than 0.35 kU/L.

Nasal Specific IgE

A bilateral nasal lavage following the Nacireo method was performed with 6 mL of physiologic saline at room temperature.⁹ The sample of mucus and saline was expelled after 10 minutes. The procedure was performed in each nostril. Specific IgE to the aeroallergens mentioned above was examined in the supernatant by immunoassay (UniCAP). The detection limit was 0.35 kU/L. These measurements were performed at baseline and at 15 minutes, 1 hour, and 6 hours after the nasal provocation tests.

Table 2

Comparison of the positive results from SPTs, sIgE, nsIgE, and clinical positive NPT results in patients with LAR and AR (common allergens)

	No. of patients (mean [SD] value)		P value ^a
	LAR	AR	
Dermatophagoides pteronyssinus^b			
SPT positive	0	48	
sIgE positive	0	49 (37.98 [12.76] kU/L)	
nsIgE positive after 1 hour	26 (1.2 [0.23] kU/L)	47 (0.7 [0.23] kU/L)	<.05
NPT positive	29 (VAS score, 54.7 [11.8])	48 (VAS score, 50.2 [23.7])	.11
Phleum			
SPT positive	0	43	
sIgE positive	0	44	
nsIgE positive	6 (0.89 [0.33] kU/L)	40 (0.70 [0.45] kU/L)	.21
NPT positive	11 (VAS score, 62.9 [9.13])	44 (VAS score, 70.2 [15.93])	<.05
Alternaria			
SPT positive	0	38	
sIgE positive	0	38	
nsIgE positive	18 (0.59 [0.36] kU/L)	28 (0.61 [0.45] kU/L)	.19
NPT positive	20 (VAS score, 36.9 [9.13])	44 (VAS score, 35.77 [23.44])	.45
Birch			
SPT positive	0	26	
sIgE positive	0	25	
nsIgE positive	9 (1.45 [0.56] kU/L)	23 (1.22 [0.46] kU/L)	.18
NPT positive	9 (VAS score, 65.5 [23.82])	44 (VAS score, 75.0 [20.81])	<.05
Alder			
SPT positive	0	11	
sIgE positive	0	12	
nsIgE positive	5 (0.89 [0.56] kU/L)	9 (0.94 [0.82] kU/L)	.09
NPT positive	5 (VAS score, 45.6 [22.87])	44 (VAS score, 69.33 [13.44])	<.05
Hazel			
SPT positive	0	14	
sIgE positive	0	14	
nsIgE positive	8 (1.22 [0.45] kU/L)	11 (1.66 [0.74] kU/L)	<.05
NPT positive	44 (VAS score, 74.2 [26.03])	44 (VAS score, 71.63 [34.01])	.08
Artemisia			
SPT positive	0	12	
sIgE positive	0	12	
nsIgE positive	3 (0.51 [0.22] kU/L)	10 (0.55 [0.25] kU/L)	.08
NPT positive	3 (VAS score, 28.76 [21.52])	44 (VAS score, 47.0 [20.12])	<.05
Cladosporium			
SPT positive	0	4	
sIgE positive	0	4	
nsIgE positive	2 (0.76 [0.15] kU/L)	4 (0.54 [0.33] kU/L)	<.05
NPT positive	2 (VAS score, 27.56 [14.0])	4 (VAS score, 30.11 [12.04])	.17
Cat epithelium			
SPT positive	0	6	
sIgE positive	0	6	
nsIgE positive	2 (0.70 [0.45] kU/L)	6 (0.67 [0.41] kU/L)	.23
NPT positive	2 (VAS score, 70.2 [15.93])	6 (VAS score, 89.2 [15.11])	<.05

Abbreviations: NPT, nasal provocation testing; nsIgE, nasal specific IgE; sIgE, specific IgE; SPT, skin prick test; VAS, visual analog scale.

^aFor comparison of the mean values of sIgE and nsIgE.

^bComparable results with the allergen *Dermatophagoides farinae*. Other tested allergens (*Cladosporium* and dog epithelium) have provided only single positive results of SPT, sIgE, nsIgE, and NPT.

Nasal Provocation Test

Nasal patency was assessed by acoustic rhinomanometry with the use of a SRE 2000 rhinometer (Rhinometrics, Lynge, Denmark). The procedure was performed according to the guidelines of the Standardization Committee on Acoustic Rhinometry.¹⁰

Nasal provocation tests were performed from November through January. First, using a meter pump spray, the patients were

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