

# The impact of allergic rhinitis in clinical practice: an Italian Survey

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**Abstract.** Allergic rhinitis (AR) is a very common disorder. The current Survey was conducted on a sample of about 5,000 adult subjects in 5 Italian cities. A questionnaire, containing 15 questions, was administered on the road. AR affects about 20% of the general population. The most common diagnostic test was the skin prick test, but only 12% of patients performed an allergy test to confirm the diagnosis. About 50% of patients did not take any medicine. Even about 40% of treatments were suggested by friends or pharmacists. In conclusion, the current Survey demonstrated that AR is a common disorder in Italy, the diagnostic work-up is still incorrect, and the therapeutic approach does not adhere to the guidelines. Therefore, there is a need to implement adequate information on this topic in Italy. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** allergic rhinitis, Italy, Survey, general population, questionnaire, on the road

## Introduction

Allergic rhinitis (AR) is an inflammation of the nasal membrane which is characterized by symptoms, including sneezing, rhinorrhoea, nasal congestion, and nasal itching. It is often associated with eye symptoms, such as tearing, redness, and itching. AR is caused by sensitization, such as the production of specific IgE, to one or more aeroallergens. It is a very common disorder worldwide, as it may affect up to 40% of the general population. In Italy, its prevalence has steadily increased over the last decades in almost all the age classes and currently is estimated at 25% (1,2). The diagnosis of AR is based on the demonstration of the production of allergen-specific IgE and the concordance between allergy testing and history, such as the symptom occurs after the inhalation of the sensitizing allergen.

Allergic rhinitis was conventionally classified into seasonal AR and perennial AR based on the du-

ration of exposure and symptoms (3). The common allergens for perennial AR include indoor allergens such as house dust mites, moulds, and animal dander, while those for seasonal AR are usually outdoor allergens such as tree pollen, grass pollen, weed pollen and moulds (4). Some patients sensitized to seasonal allergens have symptoms throughout the year and some patients sensitized to perennial allergens have symptoms during specific seasons. Moreover, many patients are sensitized to both perennial allergens and seasonal allergens simultaneously. The conventional classification has some limitations from a therapeutic standpoint due to its poor association with clinical symptoms. In 2001, the World Health Organization (WHO) proposed a new Allergic Rhinitis and its Impact on Asthma (ARIA) classification, which classifies allergic rhinitis according to the severity and symptom duration (5).

Skin prick test (SPT) and serum allergen-specific IgE (sIgE) measurements are the most common meth-

ods used to diagnose an allergy. Both techniques are widely accepted diagnostic tools. Several authors have investigated the concordance between the level of sIgE and SPT (6-11). SPTs have been used for decades to prove or exclude sensitization to allergens. Also, sIgE assessment is very popular and, particularly in polysensitized patients, allows to define the relevance of sensitizing allergens more appropriately than SPT in choosing the allergen extract for allergen immunotherapy (12).

The International guidelines proposed pharmacological treatments, mainly concerning antihistamines and intranasal corticosteroids, and allergen-specific immunotherapy (5, 13).

On the other hand, precise data about prevalence, clinical features, and pragmatic management are lacking. Therefore, an Italian Survey has been performed

aiming to describe these characteristics in clinical practice.

## Methods

The current Survey was performed using a questionnaire administered to subjects in 5 Italian cities: Ferrara, Viterbo, Reggio Calabria, Trapani, and Cagliari. The choice of these cities was made to guarantee a homogeneous distribution among the North, Centre, South Italy and the two major islands.

The interviewees were adults of both genders, randomly enrolled (the interview was performed on the road).

The questionnaire included 15 questions, reported in detail in Table 1.

The analysis of the data was descriptive.

**Table 1.** Questionnaire

Questions	Possible answers
1 Do you think of suffering from allergic rhinitis?	a) Yes b) No c) I do not know
2 At what age did your illness begin?	a) <10 years b) 10-20 years c) 21-30 years d) 31-40 years e) 41-50 years f) >50 years
3 Are there other members of your family with allergic rhinitis?	a) Yes, my father b) Yes, my mother c) Yes, my brother/sister d) Nobody
4 Have you another allergic disease?	a) Urticaria b) Conjunctivitis c) No d) I do not know
5 Who did the diagnosis perform?	a) General practitioner b) Otorhinolaryngologist c) Allergist d) Homoeopathy doctor e) Pharmacist f) Yourself
6 Have you ever performed tests to confirm the diagnosis?	a) Yes b) No c) I do not know

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**Table 1 (continued).** Questionnaire

Questions	Possible answers
7 If yes, what?	a) Skin prick test b) Serum specific IgE c) Serum total IgE d) Other
8 In which season are the symptoms more severe?	a) Spring b) Summer c) Autumn d) Winter e) Always
9 What are your symptoms?	a) Nasal obstruction b) Rhinorrhea c) Sneezing d) Nasal itching e) Headache f) Dysosmia g) Lacrimation h) Padded ear i) Sinusitis
10 Do you do any therapy for your problem?	a) Yes, conventional medicine b) Yes, homoeopathy c) Yes, both d) No treatment
11 When do you use medicine?	a) During the acute phase b) Before the acute phase c) Before and during the acute phase d) During the whole year e) On-demand
12 Who did the conventional therapy prescribe?	a) General practitioner b) Otorhinolaryngologist c) Allergist d) Homoeopathy doctor e) Pharmacist
13 If you take homoeopathy, who did homoeopathy suggest?	a) General practitioner b) Otorhinolaryngologist c) Allergist d) Homoeopathy doctor e) Pharmacist f) Other (friends)
14 What kind of treatment do you use?	a) Environmental prevention (allergen avoidance) b) Systemic Antihistamines c) Intranasal Antihistamines d) Chromones e) Systemic corticosteroids f) Intranasal corticosteroids g) Nasal decongestants h) Allergen immunotherapy i) Nasal irrigation j) More medications
15 Do you remember the name of the homoeopathy product?	

## Results

Globally, 4942 subjects (2798 males and 2144 females; mean age 37 years) participated in the Survey, equally distributed along Italy.

The results are reported in Table 2 and Figures.

The 22% of the sample think to have allergic rhinitis (Figure 1A), however, 17% do not know what respond. Most patients had the onset of RS between 10 and 30 years (74%). Family atopy was frequent as 62% of patients had a family member with allergic disease (Figure 1B). Allergic comorbidity was quite rare: 11% reported allergic conjunctivitis and 6% urticaria.

The diagnosis of AR was mostly self-made (28%), AR diagnosis was performed by ORL specialists in 22% of patients, in 17% by GPs, in 16% by allergists, and in 15% by pharmacists (Figure 1C). Allergy tests were performed in 12% of patients (Figure 1D): skin prick test was the most popular (82%), serum specific IgE assay in 41%, and serum total IgE in 42% (Figure 2A).

Spring (64%) was the most frequent period with symptoms (Figure 2B).

The most common symptoms were: rhinorrhea (90%), nasal obstruction (80%), sneezing and nasal itching (70% for both), and headache (20%), as reported in Figure 2C.

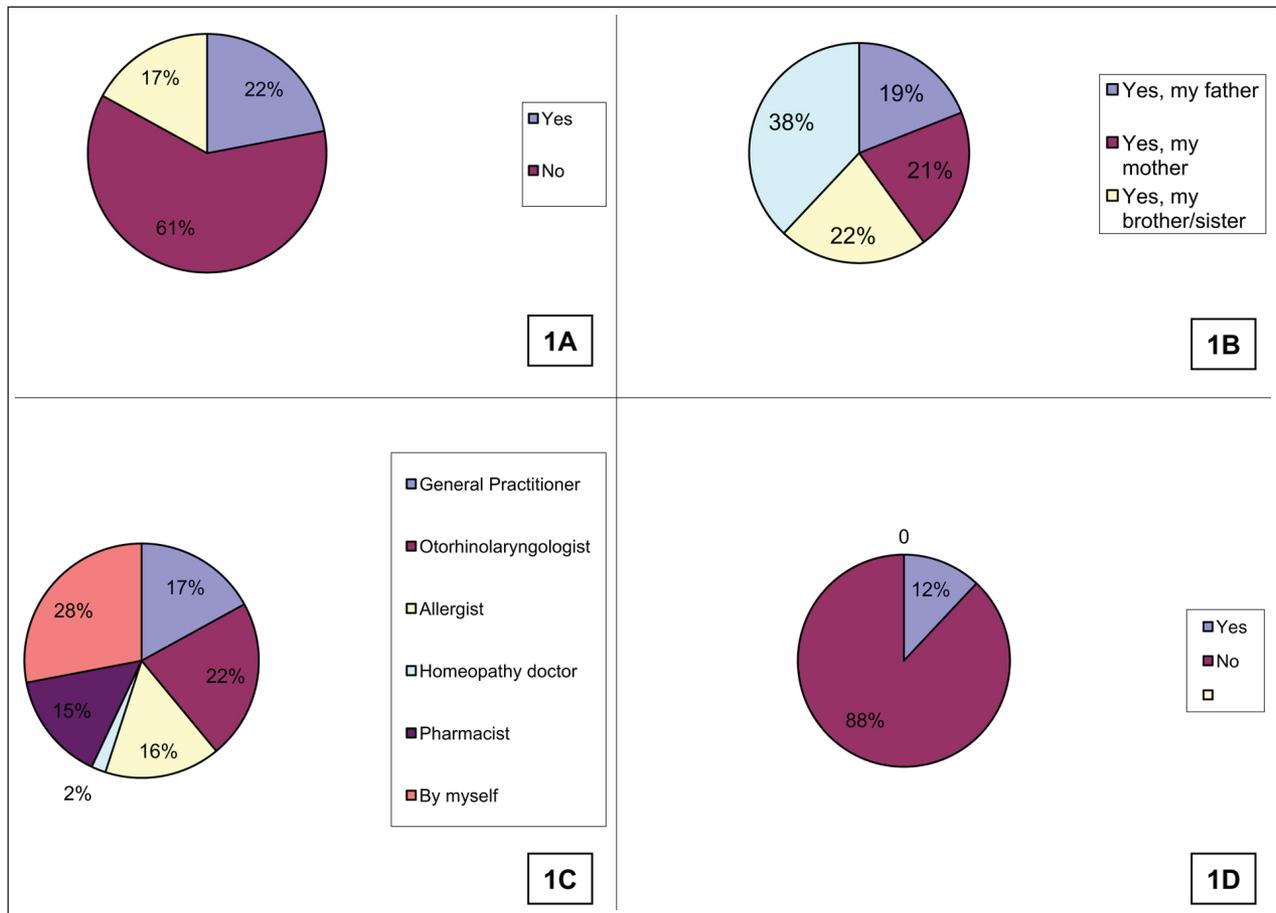
**Table 2.** Answers

Questions	Possible answers	Answers
1 Do you think of suffering from allergic rhinitis?	Yes	22%
	No	61%
	I do not know	17%
2 At what age did your illness begin?	<10 years	12%
	10-20 years	41%
	21-30 years	33%
	31-40 years	8%
	41-50 years	5%
	>50 years	1%
3 Are there other members of your family with allergic rhinitis?	Yes, my father	19%
	Yes, my mother	21%
	Yes, my brother/sister	22%
	Nobody	38%
4 Have you another allergic disease?	Urticaria	6%
	Conjunctivitis	11%
	No	39%
	I do not know	44%
5 Who did the diagnosis perform?	General practitioner	17%
	Otorhinolaryngologist	22%
	Allergist	16%
	Homoeopathy doctor	2%
	Pharmacist	15%
	Yourself	28%
6 Have you ever performed tests to confirm the diagnosis?	Yes	12%
	No	88%
7 If yes, what?	Skin prick test	82%
	Serum specific IgE	41%
	Serum total IgE	42%
	Other	0

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**Table 2 (continued).** Answers

Questions	Possible answers	Answers
8 In which season are the symptoms more severe?	Spring	64%
	Summer	7%
	Autumn	7%
	Winter	0
	Always	22%
9 What are your symptoms?	Nasal obstruction	80%
	Rhinorrhea	90%
	Sneezing	70%
	Nasal itching	70%
	Headache	20%
	Dysosmia	15%
	Lacrimation	15%
	Padded ear	25%
Sinusitis	25%	
10 Do you do any therapy for your problem?	Yes, conventional medicine	51%
	Yes, homoeopathy	3%
	Yes, both	1%
	No treatment	45%
11 When do you use medicine?	During the acute phase	42%
	Before the acute phase	9%
	Before and during the acute phase	11%
	During the whole year	14%
	On-demand	24%
12 Who did the conventional therapy prescribe?	General practitioner	20%
	Otorhinolaryngologist	16%
	Allergist	16%
	Homoeopathy doctor	3%
	Pharmacist	17%
	Friends	28%
13 If you take homoeopathy, who did homoeopathy suggest?	General practitioner	0
	Otorhinolaryngologist	0
	Allergist	0
	Homoeopathy doctor	21%
	Pharmacist	0
	Other (friends)	79%
14 What kind of treatment do you use?	Environmental prevention (allergen avoidance)	0
	Systemic Antihistamines	20%
	Intranasal Antihistamines	5%
	Chromones	0
	Systemic corticosteroids	15%
	Intranasal corticosteroids	50%
	Nasal decongestants	20%
	Allergen immunotherapy	7%
	Nasal irrigation	30%
	More medications	14%
15 Do you remember the name of the homoeopathy product?		No



**Figure 1.** A = Prevalence of allergic rhinitis; B = Familial atopy; C = Who perform the diagnosis of allergic rhinitis; D = Use of diagnostic tests

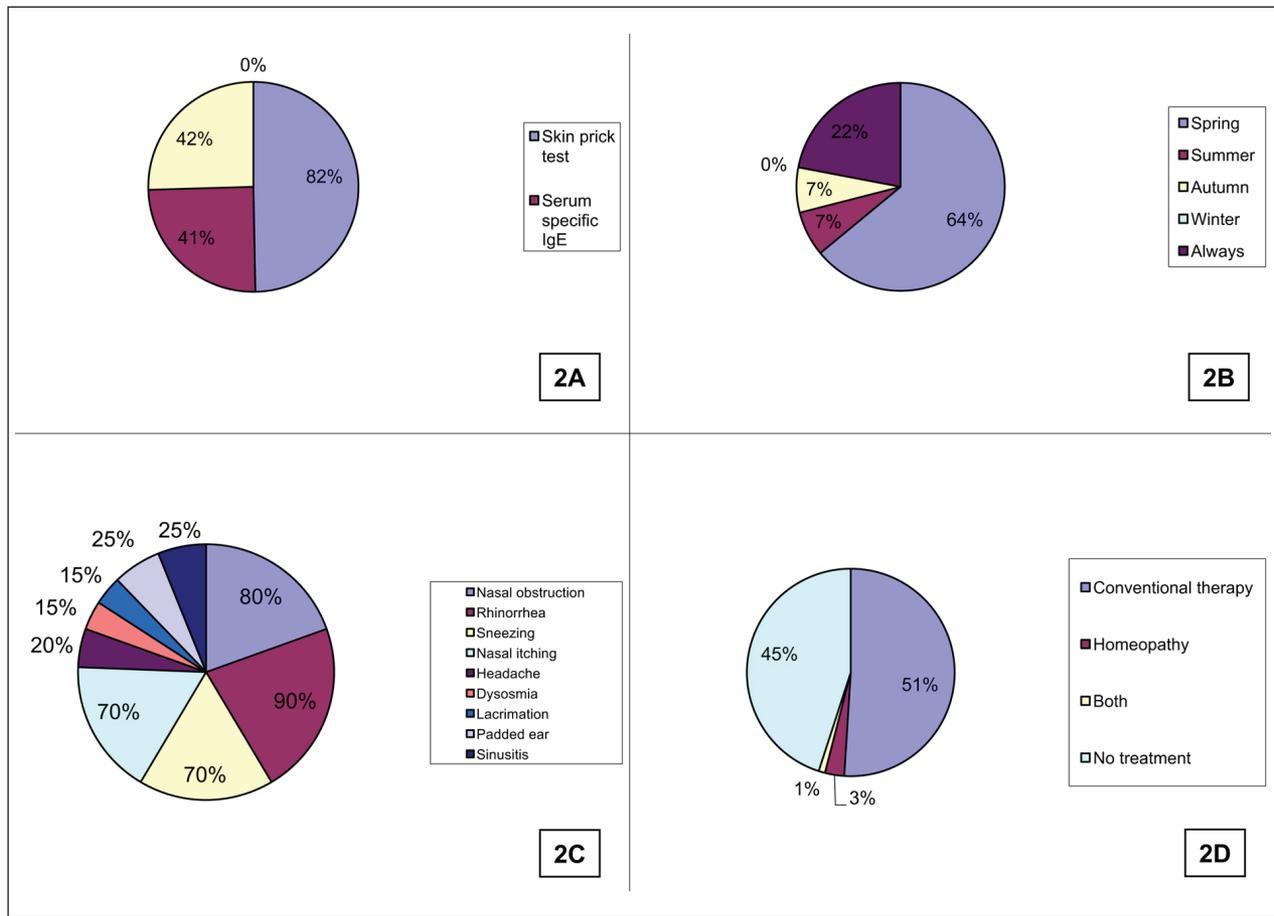
Conventional therapy was used by 51% of patients, 3% took homeopathy, and 1% both; 45% did not take any medicine (Figure 2D). Most patients used medicines during the acute phase (42%) or on-demand (24%), as reported in Figure 3A. Treatments were mostly suggested by friends (28%) or by the pharmacist (17%), GPs prescribed therapy to 20% of patients, allergists as well as ORL specialists prescribed medicines in 16% (for both). Homeopathy was prescribed only by homeopathy doctors.

The kind of medicine is reported in Figure 3B: intranasal corticosteroids was the most common treatment (50%), followed by nasal irrigation (30%), nasal decongestants and systemic antihistamines (20% for both), and systemic corticosteroids (15%).

## Discussion

Allergic rhinitis is a very common disease and may be classified both considering the seasonality or the duration/severity of nasal symptoms. Its prevalence is very high. However, there are very few studies that investigated the pragmatic approach concerning the work-up and the therapy in clinical practice in Italy. For these reasons, the current Survey was conducted in a wide sample of the Italian general population in 5 cities. Moreover, the questionnaire was administered on the road, so, the findings represented the real-world situation that may mirror what usually happens in the daily clinical setting.

Firstly, the rough prevalence is 22%, substantially this outcome is consistent with the International



**Figure 2.** A = The most common test used to confirm the AR diagnosis; B = Season of symptom presence; C = The most common symptoms of AR; D = Kind of used treatment

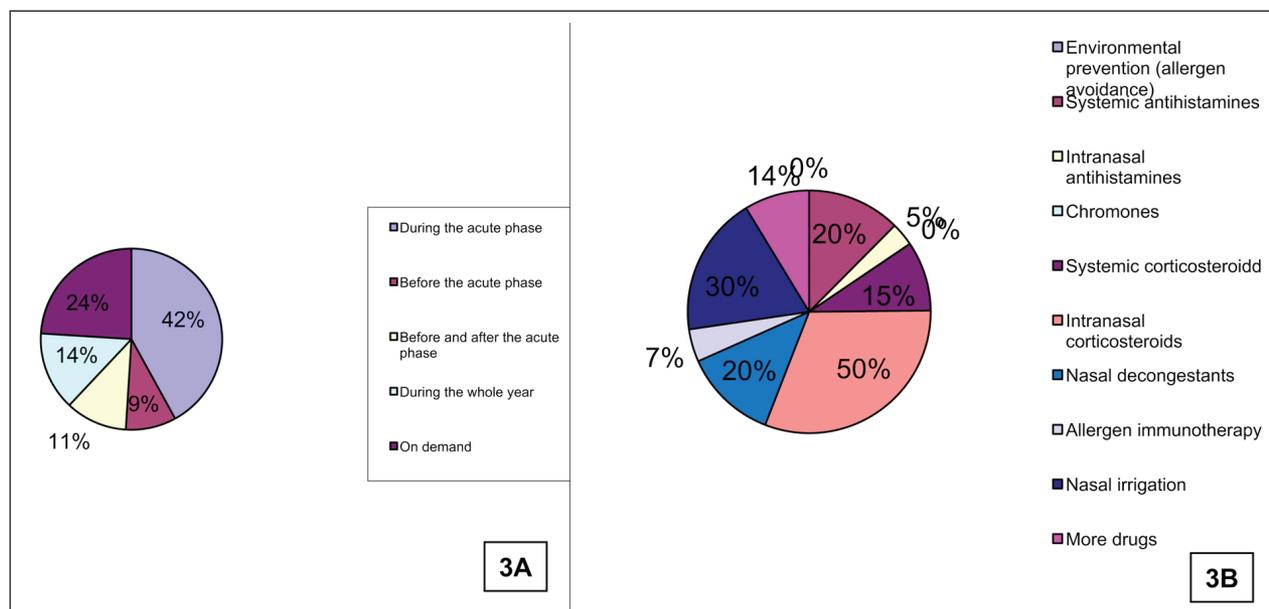
reports. Most subjects showed that the age at onset ranges between adolescence and young adulthood, such as between 10 and 30 years. It means that AR is a disease characterized by an early beginning. Also, family atopy is very common: 62% of patients have at least a family member with allergy. This finding underlines the genetic component of allergy. Surprisingly, allergic comorbidity is rather rare it has to be noted that this was the perception of the interviewed subjects.

Unfortunately, only 12% of patients referred that performed allergy tests to confirm AR diagnosis. In this context, the skin prick test was the most popular. However, total IgE is still assayed, even though they have no real diagnostic value. These results reinforce the concept that AR is underestimated and conse-

quently underdiagnosed and undertreated. It depends on the scarce information on AR in the medical class and also in the general population.

Spring was the most frequent season with the symptom. AR is frequently experienced as a seasonal, mainly concerning spring, disease.

Another negative finding was the modest use of treatments for AR, in fact, only 51% of patients took medications and consequently, 45% of patients did not take any drug for AR. Interestingly, AR treatment is limited to only the acute phase (66%): during this period, it could be continuous or on-demand. Moreover, therapy was suggested by pharmacists in 17% of patients and even by friends in 28% of patients. ORL and allergy specialists had a prescriptive role only in 32% of patients.



**Figure 3.** A = When the treatment was performed; C = The most common medicines used to treat AR.

These outcomes are very impressive and underline the lack of updated knowledge about diagnostic and therapeutic criteria by Italian doctors and the scarce confidence of patients.

From a therapeutic point of view, intranasal corticosteroids seem to be the most common medication used by patients (50%) as well as nasal irrigation was a popular remedy. Antihistamines were used by 20% of the interviewed subjects.

Globally, the scenario that appears from this Survey is rather unsatisfying and highlights the need for adequate information for the medical class and also for the general population.

The current Survey has some limitations, including the cross-sectional design, the lack of a methodologically correct definition of the questions, and the answers based only on patients' impressions. On the other hand, the strength of this study is based on the high number of participants and the conduction on the general population.

In conclusion, the current Survey demonstrated that AR is a common disorder in Italy, the diagnostic work-up is still incorrect and frequently underused, and the therapeutic approach does not adhere to the guidelines. Therefore, there is a need to implement adequate information on this topic in Italy.

**Conflict of interest:** all the authors, but DV employee of DMG, have no conflict of interest about this matter.

## References

- Verlato G, Corsico A, Villani S, et al. Is the prevalence of adult asthma and allergic rhinitis still increasing? Results of an Italian study. *J Allergy Clin Immunol* 2003;111:1232-8.
- Accordini S, Corsico AG, Cerveri I, et al. Diverging trends of chronic bronchitis and smoking habits between 1998 and 2010. *Respir Res* 2013 Feb 8;14.
- Dykewicz MS, Fineman S. Executive Summary of Joint Task Force Practice Parameters on Diagnosis and Management of Rhinitis. *Ann Allergy Asthma Immunol* 1998;81:463-8.
- Bauchau V, Durham SR. Epidemiological characterization of the intermittent and persistent types of allergic rhinitis. *Allergy* 2005; 60:350-3.
- Bousquet J, Khaltaev N, Cruz AA, et al. Allergic Rhinitis and its Impact on Asthma (ARIA) 2008 Update (in collaboration with the World Health Organization, GA2LEN and Allergen). *Allergy* 2008;63(Suppl. 86):8-160.
- Brunetto B, Tinghino R, Braschi MC, Antonicelli L, Pini C, Iacovacci P. Characterization and comparison of commercially available extracts for in vivo diagnosis. *Allergy* 2010;65:184-90.
- Sastre J, Landivar ME, Ruiz-Garcia M, Andregnette-Rosign MV, Mahillo I. How molecular diagnosis can change allergen-specific immunotherapy prescription in a complex pollen area. *Allergy* 2012;67:709-11.
- van der Linden IJM, de Groot MJM, de Jong NCCM,

- Bozkurt Z, Cobbaert CM. The diagnostic performance of allergen-molecules in comparison to allergen-extracts. *Clin Chem Lab Med* 2011;60:129-32.
9. Patelis A, Gunnbjornsdottir M, Alving K, et al. Allergen extract vs. component sensitization and airway inflammation, responsiveness and new-onset respiratory disease. *Clin Exp Allergy* 2016;46:730-40.
10. Silvestri M, Oddera S, Crimi P, Rossi GA. Frequency and specific sensitization to inhalant allergens within nuclear families of children with asthma and/or rhinitis. *Ann Allergy Asthma Immunol.* 1997;79:512-6.
11. Palao-Ocharan P, Domínguez-Ortega J, Barranco P, Diaz-Almiron M, Quirce S. Does the Profile of Sensitization to Grass Pollen Allergens Have Clinical Relevance? *J Investig Allergol Clin Immunol.* 2016;26:188-9.
12. Ciprandi G, De Amici M, Giunta V, Marseglia GL. Comparison of serum specific IgE and skin prick test in polysensitized patients. *Int J Immunopathol Pharmacol* 2010;23:1293-5
13. Wise SK, Lin SY, Toskala e, Orlandi RR, Akdis CA, Alt JA, et al. International Consensus Statement on Allergy and Rhinology: Allergic Rhinitis. *Int Forum Allergy & Rhinology* 2018;8:1-245

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