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Pre-co-seasonal Allergen Immunotherapy in Parietaria allergic patients

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Key words
Parietaria; allergic rhinitis; allergen immunotherapy; pre-co-seasonal course; symptoms; medications

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Summary
Background. *Even though the Parietaria pollen season may be rather long, many physicians think that Parietaria pollen is a perennial allergen present along the whole year. In fact, many doctors prefer to prescribe allergen immunotherapy (AIT) in Parietaria allergic patients, using continuous courses. On the other hand, physicians usually prescribe pre-co-seasonal AIT course for other pollen allergies.* ***Objective.*** *This study aimed at investigating whether a single pre-co-seasonal AIT course could be effective in Parietaria allergic patients.* ***Methods****. Globally, 59 subjects (31 males, mean age 35.9 years) were retrospectively evaluated. All were treated with SLIT as a pre-co-seasonal course: 33 with Parietaria extract and 26 with birch extract. Patients' perception of symptom severity and medication use was assessed by visual analogue scale, comparing the previous pollen season and the present.* ***Results****. The Parietaria 2012 pollen season started from the 60th day and ended at the 205th day of 2012. A single pre-co-seasonal SLIT course was able to significantly ($p < 0.0001$) reduce symptom severity and medication use.* ***Conclusion.*** *This preliminary study demonstrates that Parietaria pollen season in Genoa lasted about six months and a single pre-co-seasonal SLIT Parietaria course could be sufficient to reduce symptom severity and medication use.*

Introduction

Allergic rhinitis (AR) is characterized by an IgE-mediated inflammation. Several allergens may cause AR, however pollens are the most common source. It is to note that any pollen has a particular pollination season and overall biological properties, mainly concerning its pro-inflammatory activity (1). In addition, it has been demonstrated that allergic inflammation is closely related to pollen exposure duration and causes symptom occurrence (2).

Parietaria officinalis is a widespread weed in the Mediterranean area, and it is cause of frequent sensitization (3). Even though the Parietaria pollen season may be rather long, many physicians think that Parietaria pollen is a perennial allergen present along the whole year. This thought may have a practical implication in allergen immunotherapy (AIT) prescription. In fact, many doctors prefer to prescribe AIT in Parietaria allergic patients, using continuous courses. On the other hand, physicians usually prescribe pre-co-seasonal AIT course for other pollen allergies.

However, the real duration of Parietaria pollen season is never perennial, and also depends on climate factors. In fact, Parietaria pollen season usually lasts for about 6-7 months with two peaks: the main during the spring and the second during early autumn, but never for the whole year.

Therefore, the aim of this study was to investigate whether a pre-co-seasonal course is able of improving symptoms and reducing drug use in patients with AR due to Parietaria allergy, comparing the findings with patients allergic to a typical seasonal allergen, such as birch, and treated with an identical course.

Materials and Methods

We retrospectively analyzed the data concerning a group of patients with AR, who were consecutively visited during 2011 and treated with AIT at the Allergy Office of Genoa. All patients assumed sublingual immunotherapy (SLIT) closely before and during the beginning of 2012 pollen season (the so called pre-co-seasonal course).

Because SLIT is commercially available and was prescribed for indications that are recognized both nationally and internationally, our ethics committee required written informed consent for the diagnostic tests and the clinical data management only, and this was obtained from each patient.

Inclusion criteria were: i) documented diagnosis of allergic rhinitis based on patient-reported symptoms and physical examination, ii) documented sensitization (such as positive skin prick test and/or presence of allergen-specific serum IgE) , iii) clinically relevant allergic symptoms (such as really perceived and bothersome symptoms), iv) demonstration of a consistent relationship between inhalation of sensitizing allergen and occurrence of respiratory symptoms for defining the causal allergen (such as true allergy), and v) AIT prescription for a single allergen: Parietaria or birch.

Exclusion criteria were: i) suffering from other allergic diseases (i.e. atopic dermatitis, eczema), ii) clinically relevant anatomic impairment (such as septum deviation or nasal polyps), iii) acute or chronic disorders representing a contraindication to AIT (e.g. autoimmune disease, malignancy, etc), and iv) polyallergy (such as true allergy to more allergens).

Globally, 59 subjects (31 males) with ages ranging between 17 and 72 years (mean age 35.9 years) were enrolled. All were treated with SLIT as a pre-co-seasonal course: 33 with Parietaria extract and 26 with birch extract.

Sensitization to the most common classes of aeroallergens was assessed by performing a skin-prick test. It was performed as stated by the European Academy of Allergy and Clinical Immunology (4). The allergen panel consisted of the following: house-dust mites (*Dermatophagoides farinae* and *D. pteronyssinus*), cat, dog, grasses mix, Compositae mix, P. judaica, birch, hazel trees, olive trees, cypress, *Alternaria tenuis*, Cladosporium, and Aspergilli mix. The concentration of allergen extracts was 100 immune reactivity/mL (Stallergenes, Milan, Italy). A histamine solution in distilled water (10 mg/mL) was used as positive control and the glycerol-buffer diluent of the allergen preparations was used as negative control. Each patient was skin tested on the volar surface of the forearm using 1-mm prick lancets (Stallergenes). The skin reaction was recorded after 15 minutes by evaluating the skin response in comparison with the wheal given by the positive and the negative control. A wheal diameter of at least 3 mm was considered as a positive reaction.

In addition, allergen-specific IgE levels were determined by using the IFMA procedure (ImmunoCAP Thermo Fisher Scientific Specific). IgE levels were considered positive over 0.35 kU/L.

Clinical evaluations were done at baseline and at the end of the pollen season: late May for birch allergic patients and autumn for Parietaria allergic subjects. Evaluations included assessment of symptoms severity and medication use, compared to the previous pollen season records.

AIT efficacy was assessed by the patient's perception of improvement, using visual analogue scale (VAS) according to validated criteria (5). The AIT effectiveness was evaluated, considering both clinical severity and drug use reduction (6). Patients globally evaluated both parameters, reporting their perception by the VAS. VAS must assess a global evaluation including all symptoms (for eye: itching, tearing and redness; for nose: itching, sneezing, rhinorrhea and obstruction). Antihistamines and intranasal corticosteroids were prescribed on demand and the perception of their use was assessed by VAS. In this study, the VAS was a 10-cm horizontal line on which 0 implied no symptom or drug use, while 10 corresponded to very severe symptom or maximal drug use. With a movable marker, the patient could mark any point on the 10-cm segment which best described his/her perception. No interval marker was visible on the line.

Pollen count was monitored along the 2012. Data concerned the Genoa area and were provided by the "PollinieAllergia" network (info@pollinieallergia.net).

SLIT (Staloral 300, Stallergenes Italia, Milan, Italy) was administered as a pre-co-seasonal course (5 months). The maintenance dose was 4 pressures administered 3 times a week on alternate days. The daily dose was: Bet v 1: 75 mcg/die and Par j 1: 105 mcg/die.

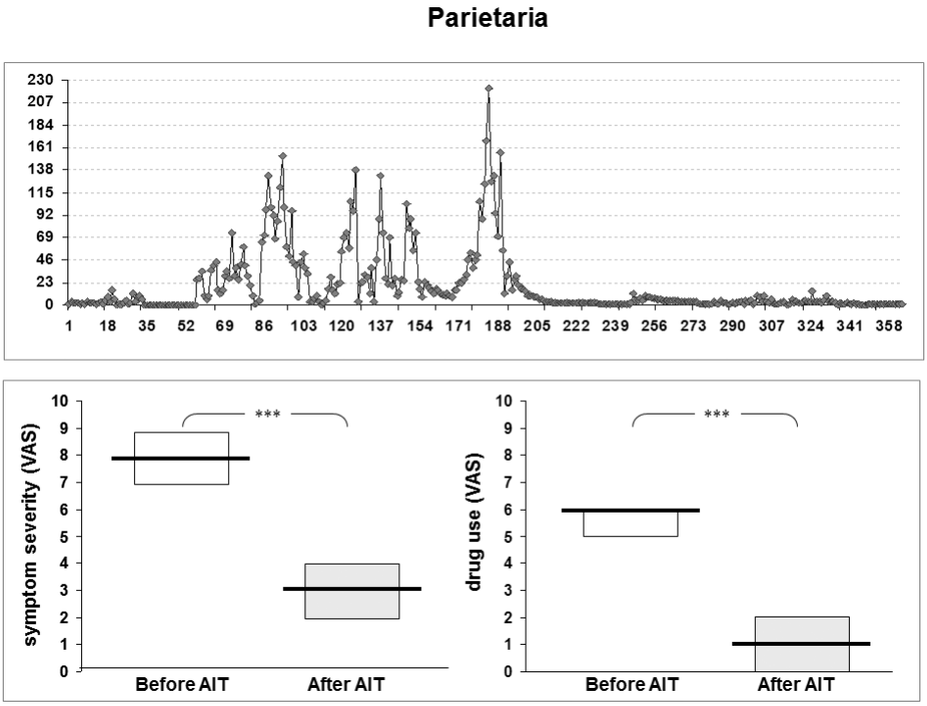
Statistical analysis was performed with the GraphPad software package (analysis (GraphPad Prism Software Inc, San Diego, CA, USA). Wilcoxon signed rank test was performed. Data were reported as median and interquartiles.

Results

The Parietaria 2012 pollen season started from the 60th day and ended at the 205th day of 2012, with three peaks: the first occurred in April, the second in May and the third in June (**figure 1**). The birch 2012 pollen season started from the 58th day and ended at the 125th day of 2012, with an initial peak (**figure 2**).

Parietaria allergic patients achieved a significant improvement after the pre-co-seasonal SLIT course: in fact, symptom severity perception assessed by VAS significantly diminished (from 8 (7-9) concerning 2011 pollen season to 3 (2-4) concerning the 2012 pollen season; $p < 0.0001$), as well as perception of medication use assessed by VAS significantly reduced (from 6 (5-6) concerning 2011 pollen season to 1 (0-2) concerning the 2012 pollen season; $p < 0.0001$), as reported in **figure 1**.

Figure 1 - *Upper panel: Parietaria pollen count during 2012; Lower panel: symptom severity and drug use perception assessed by patients before and after AIT with Parietaria extract.*



Birch allergic patients also achieved a significant improvement after the pre-co-seasonal SLIT course: in fact, symptom severity perception assessed by VAS significantly diminished (from 8 (7-9) concerning 2011 pollen season to 3 (2-4) concerning the 2012 pollen season; $p < 0.0001$), as well as perception of medication use assessed by VAS significantly reduced (from 5 (5-6) concerning 2011 pollen season to 1.5 (0-2) concerning the 2012 pollen season; $p < 0.0001$), as reported in **figure 2**.

Discussion

Pollen allergy, such as hay fever, is the most common allergic disorder, as it affects up to 25% of general population (7). In this regard, Parietaria allergy is very frequent mainly in the Mediterranean area (8). However, many physicians believe that Parietaria pollen season may hold over the whole year; this faith may have a consequence in the clinical practice about the schedule of Allergen Immunotherapy (AIT). In fact, most prescriptions for Parietaria allergic patients concern perennial course of AIT.

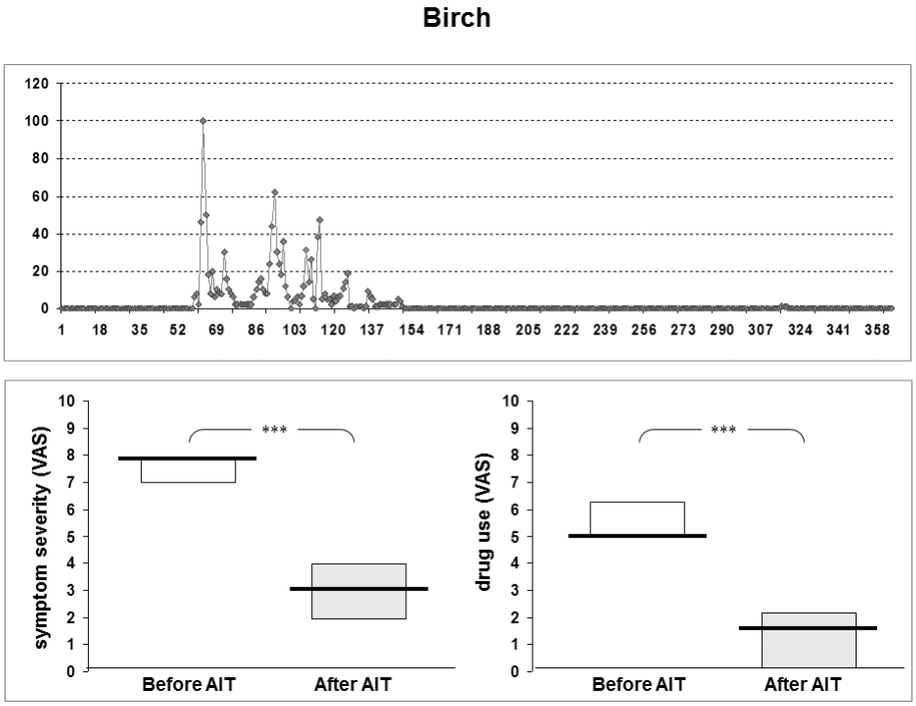
The present study addressed this relevant issue: in fact, it aimed at verifying whether a pre-co-seasonal SLIT course was able of affecting symptom severity and medication use in a group of patients with allergic rhinitis due to Parietaria allergy. In addition, a comparison group was considered, such as patients allergic to a typical spring pollen (birch) and treated with a pre-co-seasonal SLIT course.

The present study demonstrated some relevant findings. First, Parietaria pollen 2012 season lasted for about five months: surely a long season, but not perennial. It is noteworthy that this trend occurred also in other years (data not shown). In addition, pollen was typically present with a wave fashion with peaks and absence. Birch pollen season was shorter: about 3 months during 2012.

Second, a pre-co-seasonal Parietaria SLIT course was able to significantly reduce the patients' perception of both symptom severity and medication use, compared with the scores of the previous pollen season. This finding may be confirmed considering the efficacy of a pre-co-seasonal SLIT course in birch allergic patients. The outcome was the same in the two groups. It is to note that a pre-co-seasonal AIT course is commonly considered as a reliable schedule in patients with pollen allergy.

The present study suggests relevant clinical information: Parietaria allergy, even though long, lasts for less than half year, and overall a single pre-co-seasonal SLIT Parietaria course may be sufficient for achieving AIT efficacy. This issue might suggest

Figure 2 - *Upper panel: birch pollen count during 2012; Lower panel: symptom severity and drug use perception assessed by patients before and after AIT with birch extract.*



a practical implication about AIT prescription: in Parietaria allergic patients, a single pre-co-seasonal AIT course may be prescribed, similarly to other pollen species.

The main limitations of this study is that was conducted as a retrospective experience, and its restricted cohort. In this regard, the investigation should be extended to more years and a greater number of subjects. In addition to this, the investigation should be replicated as a longitudinal study.

Conclusions

This preliminary study demonstrates that Parietaria pollen season in Genoa lasted about five months in 2012 and a single pre-co-seasonal SLIT Parietaria course could be sufficient to reduce symptom severity and medication use.

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