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Ragweed allergy in northern Italy: are patterns of sensitization changing?

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SUMMARY

Background: Previous surveys performed in this area showed that the age at onset of ragweed allergy in monosensitized subjects is about 35. **Objective:** To detect whether a reduction in the mean age of ragweed sensitization in the area of Milan has taken place after the last survey. **Methods:** All patients developing clinical ragweed pollen allergy in the years 2007–2010 and monosensitized to this allergen seen were included. 30 randomly selected subjects already sensitized to at least one other allergen source among grass, pellitory, or mite who developed ragweed allergy during the same period served as controls. **Results:** The 137 patients showed a median age at onset of ragweed allergy of 36–40 years in the years 2007–2010 with no tendency to reduction. About 10% of patients were < 20 years old in 3 of the 4 study years. 15% of patients were > 50 years old at onset, and 3 of them were > 70. In the control group the mean age at onset of ragweed allergy was 31,6 years (median 32,5 years; range 10–60; $p < 0.001$ vs patients). **Conclusion:** In this area monosensitization to ragweed occurs steadily at an adult age. In already allergic subjects it occurs at a younger age. The age at onset of allergy to one specific airborne allergen source seems to depend on several variables, including exposure duration, atopic status, and specific features of the allergen.

Introduction

Following its timid appearance at the end of the '80s (1,2), over the last 20 years ragweed has gradually become the second most frequent cause of respiratory allergy in Northern Italy and by far the one causing the most severe symptoms. At the beginning of this century one study from this allergy centre noted that in the area north of Milan ragweed allergy showed a curious but typical pattern, as de novo sensitization occurred mostly in subjects that lacked a familiar history of atopic diseases and were much older than those developing allergies to other airborne allergens (3). The mean age at onset of ragweed al-

lergic patients in this area was around 35 years. In a subsequent longitudinal retrospective study examining ragweed monosensitized patients seen at this allergy centre from 1990 to 2006 (4) it was noted that the mean and median age at onset had remained virtually unchanged over the years, the only change being the proportion of patients aged < 20 years that showed a trend on the rise. Based on those results it was hypothesized that a gradual reduction in mean age at onset of clinical allergy to ragweed might have been expected in the forthcoming years. The data recorded during the last 4 years and analysed using the same criteria are reported here. The study aimed to detect whether a reduction in the mean age of

ragweed sensitization in the area of Milan has taken place or not after the last survey.

Methods

All patients developing clinical ragweed pollen allergy in the years 2007, 2008, 2009, and 2010 and monosensitized to this allergen seen at this allergy centre between October 1, 2007 (just at the end of the ragweed pollen season) and April 30th t, 2011 were included in this analysis. Monosensitization was defined as the presence of both typical seasonal respiratory symptoms (including rhinoconjunctivitis with or without asthma) from mid-August to the end of September in the area of Milan associated with an unequivocally positive skin prick test with commercial ragweed pollen extract (Allergopharma, Reinbeck, Germany) in the absence of any skin reactivity to other seasonal allergens including grass, mugwort, pellitory, plantain, birch, olive, and cypress.

As control, the age at onset of ragweed allergy was assessed in 30 randomly selected age and-sex-matched subjects already sensitized to at least one other allergen source among grass, pellitory, or mite who developed ragweed allergy during the last 4 years was assessed.

Results

Results are summarized in table 1. A total of 137 patients met the inclusion criteria and were admitted to the study. The median age at the start of the ragweed allergy in the years 2007-2010 ranged between 36 years and 40 years with no appreciable tendency to a reduction. Similarly, the mean age at onset did not show any tendency to lower through the years and was very close to that found in the previous survey (4). The proportion of subjects < 20 years old, albeit variable, was around 10 % in 3 of the 4 study years. A total of 21 (15%) subjects were > 50 years old

when they started having respiratory allergy, and 3 of them were > 70.

The control group showed a mean age at onset of ragweed allergy of 31,6 years (median 32,5years; range 10-60). Although still relatively old, controls were significantly younger than patients ($p < 0.001$)

Discussion

Although it generally believed that de novo sensitization to airborne allergens in old individuals is not frequent, this does not seem to be the case for ragweed allergy, at least in northern Italy. De novo sensitization in adult age has been reported also for pellitory (*Parietaria spp*)(5,6) and cypress (7). The reasons for this are unclear, although the recent appearance of ragweed in this area may well have played a role. More than 20 years have gone with ragweed pollen in this area; thus, an entire generation has been exposed to the allergen from birth onwards. Such a period should have been long enough to sensitize many young patients as well, which does not seem the case. The possibility that the low proportion of young patients allergic to ragweed is, at least in part, linked to the design of this study should be considered. In fact, admitting only patients ragweed-monosensitive subjects might have led to the exclusion of many younger patients who developed ragweed allergy following grass sensitization. The fact that monosensitization to one single allergen source may be characterized by a delay in the appearance of clinical symptoms in comparison with polysensitized individuals has been reported (8,9). This finding is confirmed by the observation that in the atopic control group seen at this centre and living in the same area, the age at onset of ragweed allergy was on average 6-9 years younger than in ragweed-monosensitized patients. In conclusion, several variables seem to influence the age of occurrence of respiratory allergy to each specific allergen source: duration of the exposure to that particular allergen (10), ato-

Table 1 - Age at onset of respiratory allergy

Year	No.	Mean age at onset (range)	Median age	< 20 y old (%)
2007	51	37.3 (11-70)	36	4 (8%)
2008	35	35.9 (10-64)	37	4 (11%)
2009	32	38.2 (6-91)	39	7 (22%)
2010	19	38.7 (12-56)	40	2 (11%)

pic status (i.e., being already sensitized to other sources or not), and characteristics of single airborne allergens, with mite, *Alternaria*, and grass pollen being able to sensitize at a much younger age than cypress, pellitory, or ragweed pollen.

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