



Short Communication

Allergy to ragweed: clinical relevance in Turin

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(Received 4 November 1999; accepted in final form 30 December 1999)

Key words: aerobiology, airborne pollen, allergy, bronchial asthma, ragweed, rhinoconjunctivitis

Abstract

This study evaluates the contribution of ragweed to the development of allergic manifestations in a group of outpatients and the atmospheric pollen concentration trend in the city of Turin (Italy) from January 1996 to December 1997.

We examined 5680 subjects affected by rhinoconjunctivitis and/or bronchial asthma during spring and summer or by perennial respiratory symptoms with seasonal increase. All subjects were submitted to: (a) a clinical questionnaire; (b) skin prick tests with standard inhalant allergens battery including pollens of Gramineae, Compositae (*Artemisia* and *Ambrosia*), *Parietaria*, *Plantago*, *Olea*, *Betula*, house dust mite, cat and dog danders, mould spore (*Alternaria* and *Cladosporium*); (c) measurement of specific IgE antibodies in serum (RAST). A weekly programmed Hirst spore-trap was used to sample airborne pollen grains. Pollen was identified and quantified at the Plant Biology Institute of Turin University.

The highest concentration of ragweed pollen was 28.6 P/m³ in 1996 and 9.66 P/m³ in 1997. The number of subjects allergic to *Ambrosia* pollen alone was 8 (0.14% of the total), while the number of those allergic to *Artemisia absinthium* was 22 (0.38% of the total). The subjects allergic to both pollens of the *Compositae* family was 57 (1%).

Our results show a low prevalence of sensitization to ragweed pollen, which is contrary to what we see in other Italian regions like Lombardy and Veneto. One cause of low sensitization may be the low percentage of *Ambrosia* pollen in the atmosphere.

1. Introduction

The Ragweed tribe is the most important cause of allergic rhinitis and asthma in North America. The genus *Ambrosia* belongs to the Compositae family which is composed of about 35 species. The most representative species is *Ambrosia artemisiifolia* (short ragweed), first signaled in Europe in 1870 (Touraine et al., 1966) and in Italy in 1902 (namely in Piedmont and Liguria as documented by vegetational investigations in fallow land) (Mandrioli et al., 1998). Its habitats are now on the increase: farmland, wasteland, ruins, roadside and railway embankments, along riverbanks and canals, in sandy and pebbly soils (Man-

drioli et al., 1998). Ragweed is anemophilous and one plant produces many millions of pollen grains travelling long distances because of their small size. In recent years, we have noticed a progressive diffusion of the exotic *Ambrosia* in many European countries: France (Rhône valley) (Touraine et al., 1965; Charpin et al., 1983; Dechamp et al., 1990; Thibaudon, 1992), Yugoslavia, Poland (Obtulowicz et al., 1995), Austria (Jager, 1990), Hungary (Jarai-Komlodi et al., 1993), Bulgaria (Yankova et al., 1996); some rare colonies of native species (*A. maritima* and *A. coronopifolia*) are also found (D'Amato et al., 1998). Recently, in some regions of Italy (Lombardy, Veneto, Liguria, Friuli Venezia Giulia) high levels of *Ambrosia* pol-

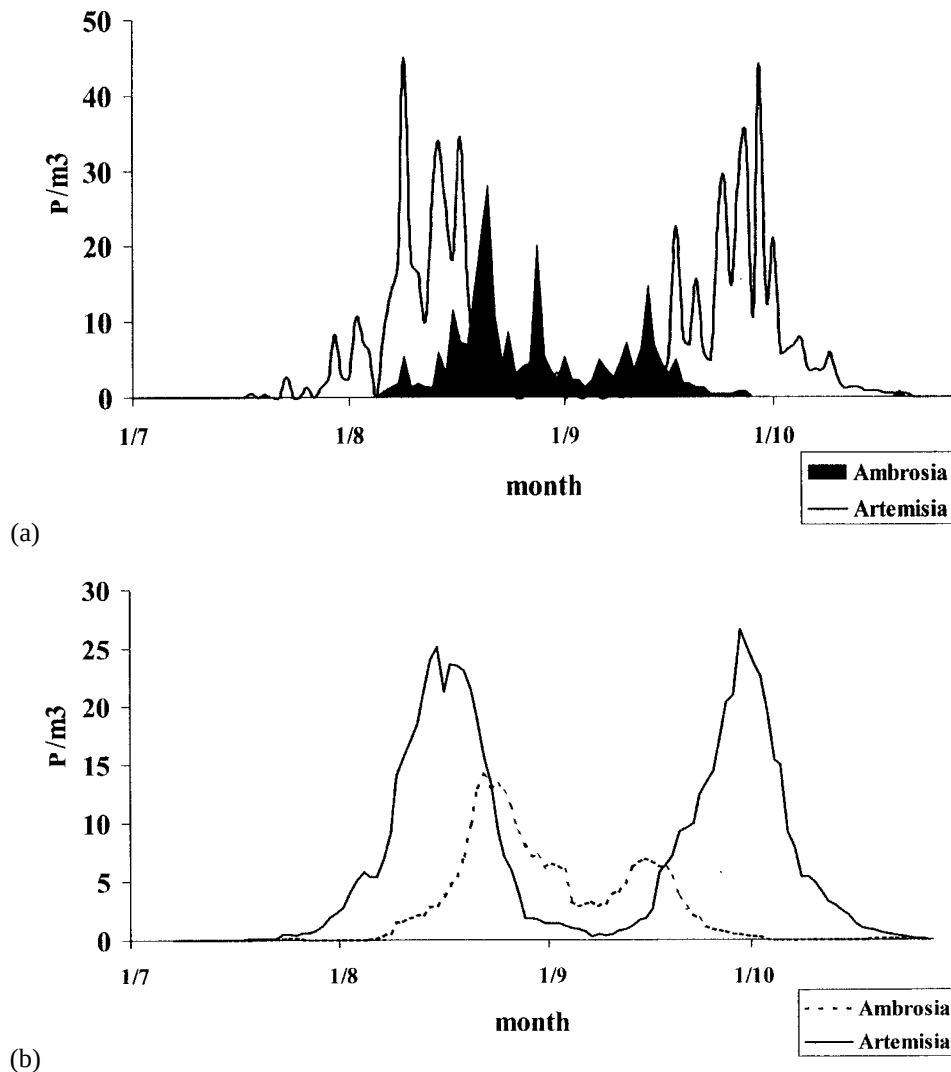


Figure 1. (a) Compositae pollen count in Turin 1996. (b) Compositae pollen count (running mean) in Turin 1996.

lens have been observed (Albasser, 1992; Albasser et al., 1998; Larese, 1995; Piazza et al., 1992; Pizzulin Sauli et al., 1992). The percentage of sensitization and related diseases has consequently increased (Pizzulin Sauli et al., 1992; Goracci et al., 1996; Pozzi, 1998). In Italy, the summer-autumn pollinosis are mainly due to *Ambrosia artemisiifolia* and *Ambrosia trifida*, while *Ambrosia tenuifolia* and *Ambrosia coronopifolia* have a comparatively limited distribution (Mandrioli et al., 1998). In previous works (Lomagno et al., 1984; Gallesio et al., 1986; Caramiello et al., 1990; Gallesio, 1991) the presence of *Ambrosia* in Piedmont (whose pollen has been collected by the pollen sampler on the Mauriziano hospital roof in the centre of Turin from August to early October) has been reported.

The aim of our study was to evaluate the contribution of ragweed pollen to the development of allergic manifestations in a group of outpatients and the pollen concentration in the Turin area in 1996 and 1997.

2. Materials and methods

5680 consecutive subjects (57% females and 43% males aged 32.45 ± 25 years) were examined at our outpatient clinic between January 1st, 1996 and December 31st, 1997. All patients were affected by rhinoconjunctivitis and/or bronchial asthma during spring and summer or by perennial respiratory symptoms with seasonal increase. All subjects were submit-

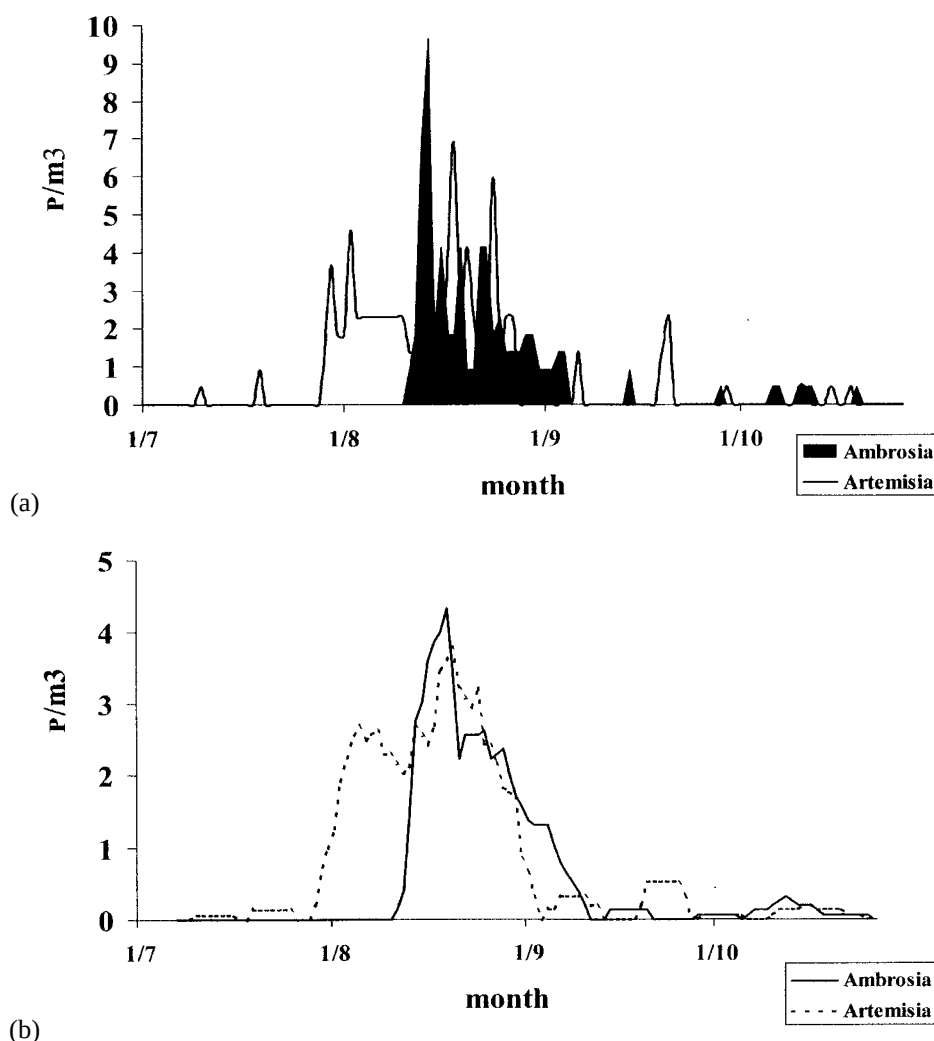


Figure 2. (a) Compositae pollen count in Turin 1997. (b) Compositae pollen count (running mean) in Turin 1997.

ted to: (a) a clinical questionnaire on respiratory symptoms and their seasonal presence in the year; (b) skin prick tests with available commercial extracts including pollen of Gramineae, Compositae (*Artemisia* and *Ambrosia*), *Parietaria*, *Plantago*, *Olea*, *Betula*, house dust mites, cat and dog danders, mould spore (*Alternaria* and *Cladosporium herbarum*). Skin prick tests were performed on the volar side of the forearm with a prick standardized lancet (EAACI, 1993) and interpreted according to S.I.A.I.C. guidelines (1987); (c) measurement of specific IgE antibodies in serum (RAST – CAP System Pharmacia) in subjects with doubtful skin reactivity and/or polysensitization.

A weekly programmed Hirst spore-trap was used to sample airborne pollen grains. Pollen was identified and quantified (pollen grains on the total of the fields

examined and assessed as number per m³ of air) at the Plant Biology Institute of Turin University.

3. Results

The number of subjects monosensitized to *Ambrosia* pollen was 8 (0.14% of the total), while the number of those sensitized to *Artemisia absinthium* (which belongs to the same Compositae family) was 22 (0.38% of the total). The subjects allergic to both pollen types were 57 (1%). In the polysensitized subjects, a positive reaction to ragweed was found in 9.5% of the total. The most frequent associations with other pollens were: Gramineae pollens (89.9%), other Compositae (76.5%), Fagaceae and Oleaceae

(72%), Betulaceae (70%), Plantaginaceae (71%) and Urticaceae (37%). Patients monosensitized to ragweed had summer-autumn symptoms of asthma and rhinitis (more asthma than rhinitis); they live in Turin areas where the presence of high quantities of ragweed was demonstrated by vegetational investigations as in the north-western area of the city (Gallesio et al., 1986).

The pollen concentration (number of pollen grains per m³ of air) is shown in figures 1a & 1b and 2a & 2b.

4. Discussion and conclusions

Our results show a low prevalence of sensitization to ragweed pollen in the Turin area, especially if we consider subjects monosensitized (less than 1%), contrary to what we see in other Italian regions like Lombardy, Veneto and Friuli Venezia Giulia. The percentage of subjects sensitized to ragweed is higher in subjects polysensitized (9.5%), but in these cases the difficulty is to evaluate the clinical relevance of skin positivity to ragweed pollen because of the confounding effect of sensitization to other pollens spreading in the summer season.

One of the causes of low sensitization could be the low concentration of ragweed pollen in the atmosphere.

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