

Short communication

Cupressaceae pollen in the atmosphere of Ascoli Piceno (Central Italy) and sensitization of allergic subjects

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Abstract

The aim of this work is to study the incidence of pollinosis in the Health District of Ascoli Piceno, Central Italy (U.S.L.24), this being an underestimated pathology from the clinical point of view and also as a result of the recent introduction of this taxa in the National Aeroallergen Network. Since 1990, 5055 patients of both sexes with respiratory symptomatology of suspected IgE mediated aetiology have been examined in our Centre with the Skin Prick Test (SPT) using allergen panels including Cypress; 171 (3.38%) patients were found to be positive to this allergen. These results show that the subjects with symptoms in the period January–March in most cases have a sensitization to *Cupressus* pollen and new studies will evaluate the possibility of specific immunotherapy. Copyright © 1996 Elsevier Science Ireland Ltd.

Keywords: Allergy; *Cupressus sempervirens* pollen; Pollinosis; Aerobiology

1. Introduction

The aim of this study is to evaluate the prevalence of *Cupressus* pollen allergic subjects in the Province of Ascoli Piceno and the neighbouring area enrolled in our study since 1990. Such data have been evaluated in relation to environmental surveys.

We studied monosensitive subjects (execution of SPT, specific IgE, total IgE and anamnesis) with the aim of evaluating both the extent and the type of symptoms shown and the opportunity for immunotherapy.

2. Materials and methods

A total of 5055 patients were examined by SPT with glucerinated allergenic extracts (Bayropharm) for the following allergens: Parietaria, Dermatophagoides, Grass pollen and *Cupressus* pollen; skin reactions were read after 20 min, and a whealing reaction was compared to the size of a positive histamine control (10 mg/ml) and to a negative control, according to the guidelines on the diagnosis of the allergic diseases (S.I.A.I.C., 1992).

The concentration of total IgE was measured by nephelometer method (Behring) and the concentration of specific IgE was measured by RAST (CAP method, Pharmacia).

Aerobiological data were obtained using a Hirst-type, 7-day volumetric air sampler (Burkard) placed

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Table 1
Features of skin positivity to *Cupressus* pollen extracts

	<i>n</i>	%
<i>Cupressus</i> pollen S.P.T. positive patients	171	3.8
Polysensitized patients	157	3.1
<i>Cupressus</i> and <i>Parietaria</i> positive subjects	30/157	19
<i>Cupressus</i> and <i>Dermatophagoides</i> positive subjects	75/157	48
<i>Cupressus</i> and grass pollen positive subjects	52/157	33
Monosensitized patients	14	0.27
Oculorhinitis	10/14	71
Oculorhinitis and asthma	1/14	7
Rhinitis	3/14	22
Total patients	5055	100

S.P.T., skin prick test.

on the terrace of the 'Mazzoni' Hospital, about 25 m above street level.

3. Results

Table 1 shows the data obtained in this study; 171 (3.38%) patients out of 5055 observed had a cuti-positivity for *Cupressus* pollen, in agreement with the observations of other authors (Ariano, 1985); 14 were monosensitive and 11 had a typical clinical history. The data for the comparison of specific and total IgE (Table 2) between these two groups of patients do not show a significant difference. Of the 171 patients studied, those with a significant clinical history had the highest concentration of specific IgE; however, this is not statistically significant given the small number of cases examined, but it is an important factor that points out the need to evaluate eventual immunotherapy. In total, 157 patients also had sensitivity to other allergens as shown in Table 1. Fig. 1 shows the *Cupressus* pollen levels in Ascoli Piceno during the period January–May 1994.

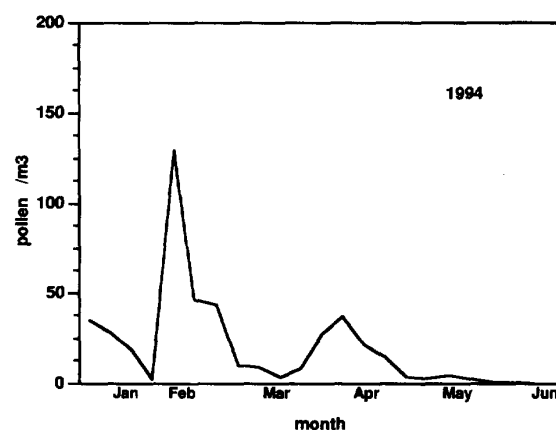


Fig. 1. *Cupressus* pollen concentration recorded in Ascoli Piceno (Central Italy) during 1994.

4. Discussion and conclusion

The *Cupressus* allergy certainly represents a real problem in the diagnosis of allergies. The role of this pollen has been identified quite recently because of the period of atypic pollination in the winter and early spring.

The growing frequency of sensitization is also due to the introduction of ornamental plants (Caiaffa et al., 1988).

Cupressus pollen is responsible for allergic (rhinitis and conjunctivitis) syndrome during the period January–March. For this symptomatic period, this allergy is underestimated, and it is often confused with infectious or vasomotor rhinitis (Cimignoli et al., 1992). The absence of reference standards often causes difficulties interpreting the results of in vivo and in vitro tests as results can be negative, even if the symptoms suggest the *Cupressus* allergy.

Various authors have studied the biochemical characterization of the *Cupressus* pollen (Gross et al., 1988; Lowenstein, 1980; Panzani et al., 1986; Spinozzi et al., 1990). The principal allergen of *Cupressus* pollen consists of a protein fraction (36 kDa), and 100%

Table 2
Serum concentration of total and specific IgE in patients monosensitive to *Cupressus* pollen

	Mean serum concentration of total IgE (kU/l)	Mean serum concentration of specific IgE for <i>Cupressus</i> pollen (RPU/ml)
Subjects with a compatible clinical history	137	3.76
Subjects with no specific clinical history	44.3	0.64
Student <i>t</i> -test	N.S.	*

N.S., not significant.

*Significant at $P = 0.05$.

of serum tested has antibodies against this fraction; other allergens are present in the 42 kDa protein fraction and even the response of IgG1 and IgG4 shows the same specificity as the above (Spinozzi, 1993).

Moreover the *Cupressus* pollen has an instability attributed to the presence in fresh extracts of lysosomal enzymes, alfa mannosidase, beta galactosidase with a very high specific activity. The inefficiency of commercial extracts may be attributed to this instability which, when subjected to electrophoretic analysis, showed very minor protein content; for this reason, these extracts do not have therapeutic efficacy (Spinozzi et al., 1993).

References

- Ariano, R. (1985) Allergia al polline di Cipresso in Liguria. 17° Congresso della Società Italiana di Allergologia ed Immunologia Clinica, Milan, 3–5 October, p. 107.
- Caiaffa, M.F., Macchia, L. and Tursi, A. (1988) La pollinosi da Cupressaceae, Atti del III Congresso Nazionale, Associazione Italiana di Aerobiologia, 21–22 September 1988, p. 145.
- Cimignoli, E., Brocucci, L., Cernetti, C., Gerli, R. and Spinozzi, F. (1992) Isolation and partial characterization of *Cupressus sempervirens* allergens. *Aerobiologia* 8, 465–470.
- Gross, G.N., Zimburean, J.M. and Capra, J.D. (1988) Isolation and partial characterization of the allergen in mountain cedar pollen. *Scand. J. Immunol.* 8, 437.
- Lowenstein, H. (1980) Physico-chemical and immunochemical methods for the control of potency and quality of allergenic extracts. In: Brede Goings (Ed.), *Regulatory Control and Standardization of Allergenic Extracts*, Fisher, New York.
- Panzani, R., Centanni, G. and Brunel, M. (1986) Increase of respiratory allergy to the pollen of Cypresses in the south of France. *Ann. Allergy* 56, 460.
- Società Ital di all Eimmunol Clinica (1992) Memorandum su diagnostica delle allergopatie. *Giorn. It. Allergol. Immunol. Clin.* 2, 351.
- Spinozzi, F. (1993) Caratterizzazione biochimica del polline di Cupressaceae. Atti del I Convegno di Allergologia Sezione Umbro-Marchigiana-S.I.A.I.C. 'La prevenzione delle malattie allergiche' Perugia, 29–30 April 1993, pp. 63–64.
- Spinozzi, F., Cimignoli, E. and Cernetti, C. et al. (1990) Immunochemical analysis of Cupressaceae allergens. *Clin. Exp. Allergy* 20 (Suppl. 1), 66.
- Spinozzi, F., Cimignoli, E. and Grignani, F. (1993) Immunotherapy: what are we administering to the allergic patient? *Lancet* 341, 386.