

Indian Journal of Allergy, Asthma & Immunology

CASE REPORT

Year : 2013 | Volume : 27 | Issue : 2 | Page : 143--146

A case of bronchial asthma and allergic rhinitis exacerbated during *Cannabis* pollination and subsequently controlled by subcutaneous immunotherapy

Raj Kumar, Nitesh Gupta

Department of Respiratory Allergy and Applied Immunology, National Centre of Respiratory Allergy, Asthma and Immunology, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi, India

Correspondence Address:

Raj Kumar

Department of Respiratory Allergy and Applied Immunology, National Centre of Respiratory Allergy, Asthma and Immunology, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi - 110 007
India

Abstract

The prevalence of bronchial asthma and allergic rhinitis has been on the rise in India. *Cannabis* is reported to be one of the allergenically important airborne pollen identified by the clinico-immunologic evaluation in the spring season in India. We report a case of 38-year-old male patient with typical clinical manifestations of bronchial asthma and allergic rhinitis that classically exacerbates during the pollination period of *Cannabis*. On evaluation, the patient was found to be significantly sensitized to *Cannabis sativa*. Subsequent subcutaneous immunotherapy leads to marked improvement in control of asthma as well as improved quality-of-life.

How to cite this article:

Kumar R, Gupta N. A case of bronchial asthma and allergic rhinitis exacerbated during *Cannabis* pollination and subsequently controlled by subcutaneous immunotherapy. Indian J Allergy Asthma Immunol 2013;27:143-146

How to cite this URL:

Kumar R, Gupta N. A case of bronchial asthma and allergic rhinitis exacerbated during *Cannabis* pollination and subsequently controlled by subcutaneous immunotherapy. Indian J Allergy Asthma Immunol [serial online] 2013 [cited 2014 Jan 9];27:143-146

Available from: <http://www.ijaai.in/text.asp?2013/27/2/143/124399>

Full Text

Introduction

The prevalence of allergic diseases such as bronchial asthma and allergic rhinitis has been on the rise all over the world including developing countries like India. The number of people suffering from allergy is 20% to 30% of population and pollinosis alone accounts in about 10-15% of the world inhabitants. [1],[2],[3]

Hemp (*Cannabis sativa*), a plant of Asian origin belongs to Cannabaceae family. It is usually cultivated but may grow wild in some places. *C. sativa* is, an anemophilous plant bears very light pollen which can be transported over long distances and its allergenic capability varying from being mild to high. [4] In an analysis of the qualitative and quantitative prevalence of

In a cohort of 17 individuals with symptoms suggestive of marijuana sensitivity, 15 were suffered from rhinitis and conjunctivitis on inhalational exposure. [14] Other manifestations were urticaria, periorbital angioedema, wheezing and sinusitis. All individuals reported symptoms on repeated exposures and cessation following avoidance of marijuana. In current case, the patient too had aggravation of symptoms on repeated exposures and reduced intensity on avoidance of allergen.

The identification of five *C. sativa* IgE-binding proteins, ranging from 10 to 68 kDa and a 9-kDa lipid transfer protein have been implicated with type 1 sensitization to Cannabis plant. In Cannabis sensitized patients cross-reactivity has been observed with tomato, tobacco, latex, ragweed, pigweed and Aspergillus. [15],[16],[17] In our case, the SPT was performed against 58 aero-allergens including Aspergillus but only Cannabis was positive.

Allergen specific immunotherapy works through enhancing immune tolerance mechanisms and reduction in the lymphoproliferative responses to allergens. It is the most effective therapeutic approach for dysregulated immune response toward allergens and shifting of immune response from the allergic Th2 to non-allergic Th1. [18]

IT has been highly effective in management of allergic rhinitis, allergic conjunctivitis, allergic asthma and stinging insect hypersensitivity. [19],[20] In a study by Gaur et al. [21] half of patients suffering from seasonal allergic rhinitis exhibited substantial reduction in their symptom score as well as drug intake after 2 years of IT with mixed allergen vaccines. A study comparing inhaled budesonide with IT in subjects of perennial asthma; IT resulted in slow but steady improvement which was long lasting and did not decline rapidly in comparison to budesonide therapy. [22] In another prospective study of subjects suffering from asthma and rhinitis IT showed significant improvement in the symptom score, forced expiratory volume in first second, and immunological parameters. [23],[24] Similar to results above, our case also showed slow, steady and sustained response to IT with marked improvement in his symptoms, quality-of-life and significant reduction of his drugs dosages. To the best of our knowledge, this is the unique study in which IT against Cannabis has been initiated and the response being documented.

The above case attempts to highlights the importance of familiarity with local aero-allergen prevalence and difficulty in assessing Cannabis exposure history and thus increased awareness of Cannabis as a potential aeroallergen should be nurtured. The identification of the allergen and subsequent initiation of IT with dramatic response to symptoms and quality-of-life in the current case may denote a role of IT in management of Cannabis allergy.

References

- 1 Pekkanen J, Remes ST, Husman T, Lindberg M, Kajosaari M, Koivikko A, et al. Prevalence of asthma symptoms in video and written questionnaires among children in four regions of Finland. *Eur Respir J* 1997;10:1787-94.
- 2 Woolcock AJ, Bastiampillai SA, Marks GB, Keena VA. The burden of asthma in Australia. *Med J Aust* 2001;175:141-5.
- 3 Anthracopoulos M, Karatza A, Liolios E, Triga M, Triantou K, Priftis K. Prevalence of asthma among schoolchildren in Patras, Greece: Three surveys over 20 years. *Thorax* 2001;56:569-71.
- 4 Mayoral M, Calderón H, Cano R, Lombardero M. Allergic rhinoconjunctivitis caused by *Cannabis sativa* pollen. *J Investig Allergol Clin Immunol* 2008;18:73-4.
- 5 Singh AB, Shahi S. Aeroallergens in clinical practice of allergy in India- ARIA Asia Pacific Workshop report. *Asian Pac J Allergy Immunol* 2008;26:245-56.
- 6 Kumar R, Sharan N, Kumar M, Bisht I, Gaur SN. Pattern of skin sensitivity to various aeroallergens in patients of bronchial asthma and/or allergic rhinitis in India. *Indian J Allergy Asthma Immunol* 2012;26:66-72.
- 7 Stokes JR, Hartel R, Ford LB, Casale TB. *Cannabis* (hemp) positive skin tests and respiratory symptoms. *Ann Allergy Asthma Immunol* 2000;85:238-40.
- 8 Gaur SN, Singh BP, Singh AB, Vijayan VK, Agarwal MK. Guidelines for practice of allergen immunotherapy in India. *Indian J Allergy Asthma Appl Immunol* 2009;23:1-20.
- 9 Maloney ES, Brodkey MH. Hemp pollen sensitivity in Omaha. *Nebr Med J* 1940;25:190-1.
- 10 Williams C, Thompstone J, Wilkinson M. Work-related contact urticaria to *Cannabis sativa*. *Contact Dermatitis* 2008;58:62-3.
- 11 Majmudar V, Azam NA, Finch T. Contact urticaria to *Cannabis sativa*. *Contact Dermatitis* 2006;54:127.
- 12 Stadtmayer G, Beyer K, Bardina L, Sicherer SH. Anaphylaxis to ingestion of hempseed (*Cannabis sativa*). *J Allergy Clin Immunol* 2003;112:216-7.
- 13 Clement YN, Williams AF, Aranda D, Chase R, Watson N, Mohammed R, et al. Medicinal herb use among asthmatic patients attending a specialty care facility in Trinidad. *BMC Complement Altern Med* 2005;5:3.

- 14 Tessmer A, Berlin N, Sussman G, Leader N, Chung EC, Beezhold D. Hypersensitivity reactions to marijuana. *Ann Allergy Asthma Immunol* 2012;108:282-4.
- 15 de Larramendi CH, Camés J, García-Abujeta JL, García-Endrino A, Muñoz-Palomino E, Huertas AJ, *et al.* Sensitization and allergy to *Cannabis sativa* leaves in a population of tomato (*Lycopersicon esculentum*)-sensitized patients. *Int Arch Allergy Immunol* 2008;146:195-202.
- 16 Armentia A, Dueñas-Laita A, Bartolomé B, Martín-Gil FJ, San Miguel A, Castrodeza JJ. Clinical significance of cross-reactivity between tobacco and latex. *Allergol Immunopathol (Madr)* 2010;38:187-96.
- 17 Kagen SL. Aspergillus: An inhalable contaminant of marihuana. *N Engl J Med* 1981;304:483-4.
- 18 Akdis M, Akdis CA. Mechanism of allergen-specific immunotherapy. *J Allergy Clin Immunol* 2007;119:780-9.
- 19 Cox L, Nelson H, Lockey R, Calabria C, Chacko T, Finegold I, *et al.* Allergen immunotherapy: A practice parameter third update. *J Allergy Clin Immunol* 2011;127:S1-55.
- 20 Gaur SN, Singh AB, Mehta AK. Successful desensitization with honey bee venom: A case report. *Indian J Allergy Asthma Immunol* 2007;21:69-7.
- 21 Gaur SN, Gupta SN, Gupta S. Clinical response of immunotherapy in cases of nasobronchial allergy. *Indian J Allergy Asthma Immunol* 1996;10:65-8.
- 22 Shaikh WA. Immunotherapy vs inhaled budesonide in bronchial asthma: An open, parallel, comparative trial. *Clin Exp Allergy* 1997;27:1279-84.
- 23 Srivastava D, Singh BP, Sudha VT, Arora N, Gaur SN. Immunotherapy with mosquito (*Culex quinquefasciatus*) extract: A double-blind, placebo-controlled study. *Ann Allergy Asthma Immunol* 2007;99:273-80.
- 24 Srivastava D, Singh BP, Arora N, Gaur SN. Clinico-immunologic study on immunotherapy with mixed and single insect allergens. *J Clin Immunol* 2009;29:665-73.

Thursday, January 09, 2014

[Site Map](#) | [Home](#) | [Contact Us](#) | [Feedback](#) | [Copyright and Disclaimer](#)

Figure 1: Skin prick testing showing the reaction was significantly positive (4+) with pseudopodia formation against *Cannabis sativa*



Table 1: Immunotherapy schedule of the patient

Concentration of antigen	Duration and dose
1:5000	Two times a week, from 0.1 ml to 0.9 ml
1:500	Two times a week, from 0.1 ml to 0.9 ml
1:50	One time a week, from 0.1 ml to 0.5 ml
1:50	One time in 2 weeks, 0.6 ml
1:50	One time in 3 weeks, 0.7 ml
1:50	One time a month, 0.8 ml
1:50	One time a month, 0.9 ml
1:50	One time a month, 1.0 ml – highest maintenance dose