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ORIGINAL ARTICLE

Year : 2014 | Volume : 28 | Issue : 2 | Page : 83-85

Immunotherapy in parthenium dermatitis

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Date of Web Publication 15-Sep-2014



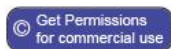
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DOI: 10.4103/0972-6691.140780



Abstract

Introduction: Plant dermatitis is most commonly caused by compositae family plants and *Parthenium hysterophorus* belongs to the same family. *Parthenium hysterophorus* is the commonest cause of plant dermatitis in India. Parthenium dermatitis is a contact sensitization to parthenium antigen and the response is mediated by a series of cellular and molecular mechanisms. Parthenium dermatitis is caused by dried leaves and trichomes. **Materials and Methods:** Our study includes the data on 30 patients of parthenium dermatitis. Patch tests with acetone extracts and prick tests with parthenium antigen were done. **Results:** 30 patients were included in the study out of which 10 were lost to follow-up and only 20 patients completed the study.

Keywords: Dermatitis, *parthenium hysterophorus*, patch test, prick test

How to cite this article:

Jerath V P, Jerath P, Sood M, Nishchal R. Immunotherapy in parthenium dermatitis. Indian J Allergy Asthma Immunol 2014;28:83-5

How to cite this URL:

Jerath V P, Jerath P, Sood M, Nishchal R. Immunotherapy in parthenium dermatitis. Indian J Allergy Asthma Immunol [serial online] 2014 [cited 2015 Feb 20];28:83-5. Available from: <http://www.ijaai.in/text.asp?2014/28/2/83/140780>

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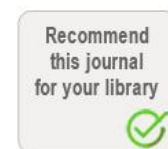
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Introduction



Plant dermatitis is most commonly caused by compositae family plants and *Parthenium hysterophorus* (congress grass) belongs to the same family. Parthenium dermatitis, the commonest cause of plant dermatitis in India, was first reported in 1968 in Pune. ^[1] Since then it has been widely reported across the Indian sub-continent. ^{[2],[3],[4]} Parthenium dermatitis is caused by dried leaves and trichomes. Sesquiterpene lactones (SQLS) are formed in the leaves, stem and waxy coat of the pollen thus parthenium is able to produce air borne contact dermatitis by direct or indirect contact. Parthenium dermatitis is a contact sensitization to parthenium antigen and the response is mediated by a series of cellular and molecular mechanisms. Langerhans cells in epidermis and other dendritic cells transport the allergen from the skin to the regional lymph nodes, where T cell proliferation occurs with the production of effector and memory cells. On re-exposure to parthenium antigen, there is infiltration of T-lymphocytes and development of dermatitis. ^[5] The higher concentration of SQL's is in the smaller glandular hair (trichomes) present on the under surface of the leaves and stem. Among the SQL's Parthenium was found to be the major allergen, the others being corcophillin, Tetraneurin-A and Thymerin etc. Other component plants as *Xanthium strumarium*, *Helianthus annuus*, *Chrysanthemum coronarium*, *Magnolia stellata* and *Laurus Nobilis* also contains similar SQL's and hence these plants may show cross-reactivity with Parthenium and vice-versa. ^{[5],[6]}

Most of the air borne contact dermatitis (ABCD) due to parthenium or other plants starts from eyelids (initially the allergen lodges in the folds and dermatitis occurs on the eyelids), face, neck, v-area of chest etc., and later the arms and legs especially popliteal and cubital fossae. The dermatitis flares in summers due to growing season of plant and disappears in winters. After few years persistent lichenoid dermatitis develops without any seasonal variation. ABCD may continue due to contamination of clothes with allergens; and patients may feel cured when they move to allergen free areas. Later this ABCD pattern may take the form of chronic actinic dermatitis (CAD), mixed pattern (ABCD + CAD), exfoliative dermatitis or hand and feet dermatitis, prurigo nodularis like or lichen nitidis like symptoms. ^{[7],[8]} On exposure to allergen, clinical manifestations may appear within 24 hours or take 2-3 days in milder cases. Severe dermatitis may show extensive vesiculation, exudation and redness with itching along with burning. Repeated exposure over the years leads to lichenified dermatitis.

Diagnosis



- Patch test: Testing with plant extracts can identify majority of patients with parthenium allergy. The plant allergens can be extracted with various solvents and it has been shown that the acetone extract is significantly better than aqueous extracts in detecting contact sensitivity to parthenium ^[5]
- Prick test: It is preferred with parthenium antigen included in the Indian standard series (ISS), with leaf or plant materials crushed and diluted with normal saline. Both the immediate reaction at 15-20 minutes and the late phase reaction at 24-48 hrs should be recorded. ^[8]

Our study includes the data on 30 patients of parthenium dermatitis. Patch tests with acetone extracts and prick tests with parthenium antigen procured from Council of Scientific and Industrial Research (CSIR) centre, New Delhi and later All Cure Pharma Pvt. Ltd. New Delhi were done. The duration of illness varied from 2-30 years.

- Patch test were performed on the volar surface of the forearm with acetone extracts and the patient was called after 24-48 hrs; the erythema and/or vesiculation was noted. All our patients were patch test positive. Patients on antihistaminics were patch tested only after the drug was withdrawn for 3 days. Patients on photosensitizing drugs and pregnant patients too were excluded. Normal saline served as a negative control
- Prick test: Prick test was done with parthenium antigen (1:500 dilution) on arm or volar surface of the forearm. A negative control with buffered saline and a positive control with 100 µg/ml of histamine acid phosphate were used in the study. The skin reactions were read at 15-20 minutes to see Type I reaction and at 24-48 hours to watch late (Type IV) reaction
- Sublingual oral immunotherapy was started as 1: 5000 concentration starting from 1 drop sublingually (S/L), increased upto 10 drops. Later a concentration of 1: 500 was started. The patients tolerated above mentioned concentration and were started from 1 drop Sublingually daily which was increased slowly according to patient tolerability.

Results



Thirty patients were included in the study out of which 10 were lost to follow up and only 20 patients completed the study. Five patients who completed the study had exacerbation during Sublingual immunotherapy (SLIT), so they were put on 1:10000 conc. of SLIT vaccine and later the dose was increased when they tolerated the concentration. The SLIT immunotherapy was continued in other patients in 1: 5000 dilution and after finishing the first vial, the concentration was increased to 1: 500 and it was continued for at least 3 years, and maintenance dose say once in 15 days even beyond 5 years.

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Discussion



Allergen specific immune therapy (SIT) is the most effective therapeutic modality for dysregulated immune response towards allergens and is effective through immune tolerance mechanisms and reduction in lymphoproliferative responses to allergens. [9] The earliest effect of SIT leads to the decrease in the number and mediator release of mast cells, basophils and eosinophils, improvement in the clinical symptoms and decreased tendency for systemic anaphylaxis despite exposure to allergens. [10],[11],[12] Next is the increase in the regulatory T cells secreting interleukin (IL) 10 and shifting of immune response from the allergic Th2 to non allergic Th1. IL10 induces a decrease in B-cell antigen specific Ig E production and concomitantly increases IgA and IgG levels particularly IgG isotope production from 10-100 folds. [9],[13],[14] The serum specific IgA again leads to the induction of IL-10 released from the monocytes. [15] A significant decrease in the allergen specific IgE/IgG ratio occurs after several months of SIT.

For sublingual immunotherapy (SLIT) contact with Langerhans cells is important which are found under the tongue. The allergen is captured by the langerhans cells in the oral mucosa and after maturation migrate to the proximal lymph nodes which facilitate the production of IgG antibodies and production of lymphocytes with suppressive function. IL10 secretion is increased leading to induction of T cells with regulatory phenotypes.

Specific desensitization is done with subcutaneous injection and is the treatment of choice for patients with IgE mediated allergies like nasobronchial allergy, bronchial asthma. [7] However SLIT is not the routinely accepted modality though widely used for its good efficiency and convenience of intake. There are two reports in the literature about hyposensitization being carried out in patients of ABCD. [7],[16] Srinivasan *et al* [16] tried oral hyposensitization in a patient with parthenium dermatitis using crushed leaves; however symptoms of the patient recurred on discontinuation of the therapy. In the second study Handa *et al* [7], 50% patients had good clinical improvement and some had exacerbation as immunotherapy was stopped.

In the present study 7 (35%) patients had very good results, 7 (35%) had moderate response and another 6 (30%) had no beneficial effect. The results were mainly monitored clinically (eg. A little or no itching, clearing of dermatitis, no oozing, no need for glucocorticoid therapy) and patient satisfaction. Patch tests were not done after immunotherapy.

In conclusion, we believe that further studies from bigger institutions are needed to prove the efficacy of this therapeutic regimen in patients of allergic contact dermatitis to Parthenium hysterophorus.

References



1. Lonkar A, Mitchell JC, Calnan CD. Contact dermatitis from Parthenium hysterophorus. Trans St Johns Hosp Dermatol Soc 1974;60:43-53. [\[PUBMED\]](#)
2. Sharma SC, Kaur S. Airborne contact dermatitis from compositae plants in northern India. Contact Dermatitis 1989;21:1-5.
3. Bhutani LK, Rao DS. Photocontact dermatitis caused by parthenium hystrophorus. Dermatologica 1978;157:206-9. [\[PUBMED\]](#)
4. Pasricha JS. Titer of contact hypersensitivity as a means of determining the degree of hypersensitivity in contact dermatitis. Indian J Dermatol Venerol Leprol 1986;52:195-7.
5. Sharma VK, Verma P. Parthenium dermatitis in India: Past, present and future. Indian J Dermatol Venereal Leprol 2012;78:560-8.
6. Nandkishore T, Pasricha JS. Pattern of cross sensitivity between 4 compositae plants, Parthenium hysterophorus, Xanthium Strumarium, Helianthus annuus and Chrysanthemum coronarium, in Indian patients. Contact Dermatitis 1994;30:162-7.
7. Handa S, Sahoo B, Sharma VK. Oral hyposensitization in patients with contact dermatitis from parthenium hysterophorus. Contact Dermatitis 2001;44:279-82.
8. Lakshmi C, Srinivas CR. Parthenium: A wide angle view. Indian J Dermatol Venerol Leprol 2007;73:296-306.
9. Akdis M, Akdis CA. Mechanism of allergen-specific immunotherapy. J Allergy Clin Immune 2007;119:780-91.
10. Joint Task Force on Practice Parameters, American Academy of Allergy, Asthma and Immunology, American College of Allergy, Asthma and Immunology; Joint Council of Allergy, Asthma and Immunology. Allergan immunotherapy: A practice parameter second update. J Allergy Clin Immunol 2007;120 (3 Suppl):S25-85.
11. Chaplin DD. Overview of the immune response. J Allergy Clin Immunol 2010;125:S3-23. [\[PUBMED\]](#)
12. Eberlein-Konig B, Ullmann S, Thomas P, Przbilla B. Tryptase and histamine release due to a sting challenge in bee venom allergic patients treated successfully or unsuccessfully with hyposensitization. Clin Exp Allergy 1995;25:704-12.

13. 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. *
14. James LK, Dusham SR. Update on mechanisms of allergen injection immunotherapy. *Clin Exp Allergy* 2008;38:1074-88. *
15. Pilette C, Nouri-Aria KT, Jacobson MR, Wilcock LK, Derry B, Walker SM, *et al.* Gross pollen immunotherapy induces an allergen specific IgA2 antibody response associated with mucosal TGF-beta expression. *J Immunol* 2007;178:4658-66. *
16. Srinivas CR, Krupashankar DS, Singh KK, Balachandran C, Shenoi SD. Oral hyposensitization in parthenium dermatitis. *Contact Dermatitis* 1998;18:242-3. *



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