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RESEARCH ARTICLE

Patch testing to detect Dermatitis and Allergies to plants.

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Abstract

Background and Objectives: Partheniumhysterophorous weed often referred to as 'scourge of India' is a major cause of systemic as well as cutaneous allergies (Phyto-Dermatitis) in India. Awareness of the allergic potential of this weed is high in India but knowledge of its various allergic manifestations and related weeds is poor. Patch testing may reveal underlying sensitivity to the weeds in populations which are closely associated with them. This study is done to evaluate the awareness and prevalence of allergy to Parthenium and associated plants.

Methods: Five hundred and fifty consenting subjects among the populations closely associated with plants were interviewed of which 202 with past history and/or signs, symptoms suggestive of plant allergy were tested.

Results: Chrysanthemum was well recognized (89.6 %) than Parthenium (34.7%).Five subjects had a positive result for all antigens. Parthenium(9) Xanthium(8) and chrysanthemum (14) were the distribution of positive reactions among subjects. Overall 8.4% subjects had positive testing for one or more antigen. The age of 46-60 had the highest positivity. Farm workers were at maximum risk of acquiring allergy (14.5%), followed by green grocers/fruit sellers (11.8%), florists (10%) and horticulturists, gardeners,others (8%).Rural subjects had a higher positivity (10.6%) compared to Urban (6.5%).

Interpretation and Conclusion: Majority of Subjects who could recognize and identify Parthenium and Xanthium as plants causing allergy were unsure of the potential risk from Chrysanthemum, a common commercial flowering plant and was unknowingly considered least allergic. But patch testing proved otherwise

INTRODUCTION

With extensive traveling and exploration, phyto-dermatitis or plant dermatitis[1] to exotic and rare plants developed due to spread of these plants all over the world. Most plants are harmless but some can cause allergic, irritant and photo toxic reactions. Most of these plants belong to a few plant families and the sensitizers are related chemicals. In Indiaparthenium dermatitis has assumed epidemic proportions. Parthenium belongs to compositae family. The others in the group are chrysanthemum and xanthium. The first report of parthenium hypersensitivity in India was from pune in 1966 [2] .Later several reports have been published [3, 4, 5] .Chrysanthemum too belongs to the compositae family and is widely grown for its flowers, they may cause occupational dermatitis among gardeners, florists and horticulturists[6] .Clinically it may present as hand dermatitis but generalized erythroderma may occur too[7] .Other plant of the compositae family which can produce contact dermatitis is Xanthium Strumarium[8].

The allergens may be localized in any part of the plant but usually it is the leaves or its extracts are used for the test. Unfortunately false positive or negative results are common. Preferably active ingredients or standard concentrations of extracts of plants should be used. The allergic nature of the plant may vary according to the season and between two plants of the same species.

Materials &Methods:

A total of 550 subjects who are closely associated with plants were Interviewed. Of which 202 with present or past history and symptoms suggestive of dermatitis consented for the patch test.

Patch test strips approved by CODFI (Contact and Occupational Dermatitis Forum of India) containing Parthenium, xanthium, Chrysanthemum and control Marketed by Systopic labs Pvt. Ltd, New Delhi was used. Institutional ethics committee clearance was taken. Informed consent was taken from all subjects.

Individuals suffering from evidence of severe dermatoses, diabetes, and HIV infection or taking antihistamines, steroids were excluded. The study was done at different flower markets, construction sites, agricultural farms, horticulture etc in and around Mangalore, Karnataka, India for two months in 2004.

Patch testing was done on the arm. It was left in place for 72 hrs. Instructions to avoid wetting, scratching, exercising etc. was given. Evaluation was done based on the development of erythema, papules & vesicles. Faint erythema (doubtful +), Erythema with few papules (+), Erythema with papules and infiltration (++), Intense erythema with infiltration and many vesicles (+++) erythema beyond patch site with above finding (Irritant reaction). X^2 test was used for statistical significance.

Results:

Chrysanthemum was the most familiar plant (89.6%) followed by parthenium (34.6%), xanthium (12.3%) was least known. After picture or specimen of plants were shown to the subjects the above percentages further changed to chrysanthemum (94.1%) parthenium (58.9%) and xanthium (40.1%).The percentage increase in persons identifying xanthium after specimen was shown was highly significant. Among 190 subjects who could identify chrysanthemum only 36.3% knew of its allergic nature while almost all (94.9%) who identified parthenium knew of its harmful effects. Of 154 males patch tested 13(8.4%) were positive for one or more antigens and among females it was 4 (8.3%).Overall 17 patch test positive individuals were detected and 5(2.5%) of them were positive for all three antigens. Four (1.9%) were positive for any two antigens and 8(3.9%) were positive for any one antigen. Parthenium antigen showed 4.4% positivity among subjects, Xanthium with 3.9% and Chrysanthemum was highest with 6.9%.

There was an increasing trend of susceptibility of acquiring allergy to these plants with increasing age. Among males higher number of positivity was noted in 16 to 30 yr group and in female's 46 to 60 yr group. It was observed that among all occupations in the study, farm workers were at maximum risk of acquiring allergy (14.5%), followed by green grocers/fruit sellers (11.8%), florists (10%) and horticulturists, gardeners etc. (8%) .

Discussion:

In the current study it was found that chrysanthemum was well known (94%) but only 36.3% knew of its allergic nature. This means even if they repeatedly came in contact to these plants most of them would not take precautionary measures. This might have attributed to the high number of chrysanthemum sensitivities among even those who do not regularly handle this plant. Parthenium and Xanthium were well known to be harmful among those who could identify them. Patch test positivity was almost same among both sexes thus there is no predilection to any sex. Overall positivity among rural (10.6%) was higher than urban (6.5%) which may be due to farming and agriculture being prominent occupation among rural populations, the difference was statistically insignificant. The possible explanation for higher allergies among older subjects could be because of increased exposure to plant antigen as age advances.

Nine of 202(4.4%) subjects who were tested positive were unaware of their sensitiveness to Parthenium. They could have been sensitized during unsuspected contact with the weed or other related compositae plants and compounds. There are reports of retention of allergic potential of Parthenium following composting[9] .Compositae plant extracts are also used in cosmetics, shampoos,herbal creams and ingested herbal medicines[10] and also pesticides[11] .Cross reaction with other unsuspected compositae plants and use of pesticides, herbal medicines could be a major sensitizing factor in many who do not come directly in contact or have Parthenium in their vicinity. Though a small percentage (4.4%) were found to be positive without having had significant allergic symptoms they could still be at risk of a future allergic attack and in India with a huge population it translates to millions potentially at risk of allergic manifestations. A large number of air borne contact dermatitis in India could be blamed on Parthenium with as high as 90% patch test positive reactions[12] .Awareness campaign and biodiversity approach[13] to check spread of Parthenium seems to be more environmental friendly action plan in the present day scenario.

References:

1. Bajaj AK. Contact Dermatitis. In: Valia RG, Valia AR Ed.Textbook and atlas of dermatology.Bhalani Publishing House.Mumbai.379-418.

2. Lonkar A, Jog MK. Dermatitis caused by a plant Partheniumhysterophorus.Ind J DermatolVenereol 1968; 34:194-196.
3. Tiwari VD, Soni AS, Chopra TR. Allergic contact dermatitis due to partheniumhysterophorus.Ind J DermatolVenereolLeprol 1979;45:392-400.
4. Sharma SC, Kaur S. Airborne Contact Dermatitis from compositae plants in northern India. Contact Dermatitis 1989; 21:1-5.
5. Bajaj AK, Govil DC, Bhargava SN. Contact Dermatitis due to plants. Ind J DermatolVenereolLeprol 1982; 48:268-270.
6.Compoloni P,SertoliA,FabbriP,PanconesiE.Alantolactone sensitivity in chrysanthemum contact.Contact Dermatitis 1978;4: 93-102.
7. Sharma SC,TanwarRC,KaurS.Contact Dermatitis from chrysanthemum in India.Contact Dermatitis 1989;21:69-71.
8.Pasricha JS,BhaumikP,Agarwal.Contact Dermatitis due to xanthium strumarium.Ind J DermatolVenereolLeprol 1990;56:319-321.
9. Lakshmi C,SrinivasCR,ChinnusamyC.Retention of allergic potential of Parthenium following composting.Contact Dermatitis 2007 Nov;57(5):348-349.
10. Gordon LA.CompositaeDermatitis.Australas J Dermatol.1999 Aug; 40(3):123-128.
11. DattaS,SaxenaDB.Pesticidal properties of parthenin(from Partheniumhysterophorous)and related compounds.PestManag sci. 2001Jan;57(1):95-101
12. Agarwal KK,D'SouzaM.Airborne contact dermatitis induced by Parthenium-A study of 50 cases in south India.ClinExpDermatol. 2009 Jul; 34(5) 4-6, Epub 2009 Nov 24
13. Kumar R,Soodan AS.A biodiversity approach to check Partheniumhysterophorous L.J Environ Biol.2006 May;27(2suppl):349-353.