

# Clinical Spectrum of Disease in Patients of Parthenium Dermatitis

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## ABSTRACT

**Objective:** To determine the clinical spectrum of disease in patients of parthenium dermatitis.

**Methodology:** It was a cross sectional study conducted at Department of Dermatology Jinnah Hospital Lahore from February to August, 2010. 115 clinically suspected cases of parthenium dermatitis were enrolled for the study from dermatology outdoor department. After taking informed consent those were patch tested to confirm the presence of parthenium sensitivity. Later on detailed clinical examination was performed in confirmed cases of parthenium dermatitis to determine the clinical pattern of disease.

**Results:** Out of 115 cases of allergic contact dermatitis, 64 patients (56%) were confirmed as cases of parthenium dermatitis. Those consisted of 88% males and 27% females with the age range of 35 to 75 years (Mean 42 yrs & SD±10.20). The most common clinical pattern of parthenium dermatitis was airborne (46%) followed by the mixed pattern (23%), photo contact dermatitis (22%), adult onset atopic dermatitis (6%) and exfoliative dermatitis (3%).

**Conclusion:** Patients of parthenium dermatitis develop a wide clinical spectrum of disease ranging from classical airborne type to mixed pattern, photo contact dermatitis and exfoliative dermatitis.

**Key words:** Parthenium hysterophorus, parthenium dermatitis, airborne contact dermatitis.

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## INTRODUCTION

Parthenium hysterophorus, member of compositae family is an exotic weed that was accidentally introduced in India through imported food grains<sup>1</sup>. In Pakistan it is found in rural as well as urban areas as a wild weed, also used in bouquets as filler<sup>2</sup>. It is the leading cause of plant induced air-borne contact dermatitis and has achieved major weed status in India as well as in Pakistan and Australia within the past few decades<sup>3,4,5</sup>.

The weed can affect human health, animal husbandry, crop production and biodiversity<sup>2</sup>. After 1-10 years of exposure, 10-20% of the population will develop severe allergic reactions<sup>1</sup>. There may be hay fever, asthma or dermatitis. The allergens responsible for contact dermatitis are sesquiterpene lactones and are present in the oleoresin fraction of the leaf, the stem, and the flower and also in pollen. A prevalence rate of 37% was found when testing for sensitivity to parthenium weed with patch test was done<sup>2,3</sup>.

Various clinical patterns of dermatitis have been described<sup>1,4</sup> typically airborne contact dermatitis, photodermatitis, atopic dermatitis<sup>6,7</sup> exfoliative dermatitis and photosensitive lichenoid dermatitis<sup>8,9</sup>. Delayed hypersensitivity alone does not explain the

varying clinical patterns and photoaggravation. The combined type IV and type I hypersensitivity to parthenium has been recently postulated<sup>10,11</sup>.

## MATERIALS AND METHODS

It was a cross sectional comparison study conducted at Department of Dermatology Jinnah Hospital Lahore from Feb to Aug; 2010. 115 patients of allergic contact dermatitis, of both sex and any age presented in dermatology outdoor department and clinically suspected for presence of parthenium sensitivity were included in this study. It was a non probability purposive sampling technique. All the patients on oral steroid above 15 mg/day or on immunomodulator drugs during previous two weeks and patients with active eczematous skin eruption on the back were excluded from the study. Also patients suffering from chronic morbid conditions like diabetes mellitus, chronic renal failure, chronic liver failure, SLE and pregnant ladies were excluded.

Enrolled patients were admitted in dermatology ward and appropriate treatment was started as well. Their detailed history regarding occupation, daily routine activities, hobbies and allergies was taken. After taking Informed consent, patch test was performed with 1% Acetone extract of parthenium hysterophorus (as gold standard allergen)<sup>13</sup> using standard IQ chambers of patch test kit for the confirmation of presence of parthenium sensitivity.

Patches were kept applied to patients back for

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48 hours and then removed. Baseline readings were recorded and two other readings were recorded at 72 and 120 hours after application of Patches. These readings were interpreted according to International Contact Dermatitis Research Group (ICDRG) criteria (Table 2). Later on in the confirmed patients of parthenium dermatitis, detailed clinical examination was performed and distribution of lesions was recorded diagrammatically in Performa to determine the clinical pattern of disease.

**Data analysis:** Data was collected and entered by using SPSS version 16. Age distribution and frequency distribution of patients was done according to various clinical pattern of parthenium dermatitis.

## RESULTS

One hundred and fifteen cases of allergic contact dermatitis with clinical suspicion of parthenium sensitivity were patch tested. Out of those, 64 patients (56%) had positive patch test with parthenium allergen thus proving parthenium sensitivity. The demographic profile of study population is shown in table 1. Age range was 35-75 years and age distribution of those patients (Fig. 1).

Clinical spectrum of disease in patients of parthenium dermatitis that was determined after detailed examination was as followed. 28 patients (46%) were of air borne contact dermatitis presented with erythematous papules and plaques on exposed areas that was face, upper eyelid, sides of neck, V of chest, flexures of forearm and cubital fossae.

Table 1: Demographic profile of study population

Sample size	n=115
Patients with positive patch test reaction	64 (56%)
Gender distribution In patients of parthenium dermatitis	
Males = 88 (76.5%)	Females=27(23.47%)
Male female ratio 3:1	
Age distribution in patients of parthenium dermatitis	
Range = 35-75 years	Mean=52 yrs & S.D ±10.20

Table 2: Recording of patch test reactions according to International Contact Dermatitis Research Group Criteria.

Type of reaction	Skin changes	Inter-pretation
Negative	No skin lesions	-
Doubtful reaction	Faint erythema only	+/-
Weak positive reaction	Palpable erythema, infiltration, possibly papules	+
Strong positive reaction	Erythema, infiltration, papules, vesicles	++
Extreme positive reaction	Intense erythema, infiltration and coalescing vesicles	+++
Irritant reaction	-	IR
Not tested	-	NT

Fig no 1: Age distribution in patients of parthenium dermatitis

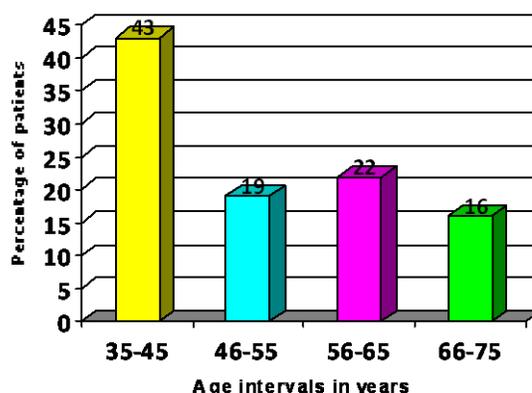
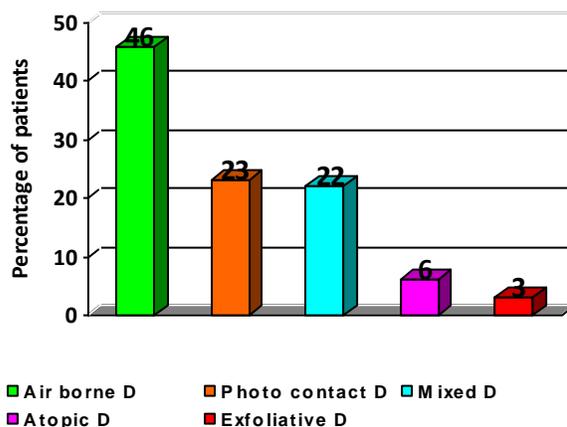


Fig no 2: Frequency distribution of patients of parthenium dermatitis according to clinical pattern



Fifteen patients (23%) were diagnosed as cases of photo contact dermatitis that presented clinically with erythematous papules and plaques (few showing vesicles) on the sun-exposed regions of the body. 14 patients (22%) had clinical features of both airborne and photo contact dermatitis that was mixed pattern. Severely itchy and lichenified papules and plaques involving cubital fossae, popliteal fossae and hands like adult onset atopic dermatitis pattern was present in 4 of patients (6%). Two patients (3%) presented with exfoliative dermatitis (Fig 2).

## DISCUSSION

Parthenium hysterophorus is an annual herb belonging to the composite family. Parthenium dermatitis is widespread and distressing dermatoses

in rural and urban areas of Pakistan caused by the air borne allergen of *Parthenium hysterophorus*. In our study out of 115 patients of allergic contact dermatitis, 65 patients (56%) proved presence of parthenium sensitivity.

When we compared our results with a national study done by Khan AR, we found them nearly same. That study was done on patients of chronic extensive eczematous eruption and out of 50 patients, twenty seven (54%) patients showed positive patch test reactions with fresh crushed extract of flowers of *P. hysterophorus*<sup>12</sup>.

In another multiphase study done by Nadeem et al in Pakistan, overall 77% patients showed positive patch test reactions to parthenium hysterophorus proving it a cause for various pattern of allergic contact dermatitis<sup>5</sup>. Their study was conducted in a free medical camp on 511 patients of allergic contact dermatitis from a close rural community. But our study population was selected from a tertiary care hospital where patients presented from both rural as well as urban areas. That may be the reason of comparatively low percentage of parthenium sensitivity in our study patients.

In our study patients of parthenium dermatitis commonest and dominant clinical pattern seen was airborne contact dermatitis, followed by mixed pattern and photo contact dermatitis. Percentage of patients of adult onset atopic dermatitis and exfoliative dermatitis were lowest comparatively. We found our results comparable with the following international studies.

A study was carried out by Agarwal KK on 50 patients with a clinical picture and history consistent with allergic contact dermatitis due to exposure to *Parthenium hysterophorus*, who were also patch tested. In their results also the most common type of dermatitis was the classic pattern i.e., airborne contact dermatitis (46%), then the mixed pattern (30%), erythroderma (14%) and chronic actinic dermatitis (10%)<sup>6</sup>.

In another relevant Indian study by Sharma, 74 patients with clinical picture consistent with parthenium dermatitis for 3 years or more along with positive patch test to parthenium were studied. Their clinical spectrum of disease was as, airborne contact dermatitis in 60 patients, chronic actinic dermatitis in 9 and mixed pattern dermatitis in 6 patients<sup>14</sup>.

Today parthenium hysterophorus has become a growing concern in our community due to its serious impact on humans, animals and even on natural ecosystem. We should create public awareness regarding health hazards of parthenium hysterophorus.

## CONCLUSION

Allergic contact dermatitis due to parthenium hysterophorus can present with various clinical patterns ranging from the classical airborne contact dermatitis, then photo contact dermatitis, mixed pattern, atopic dermatitis and even exfoliative dermatitis.

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