

Parthenium dermatitis presenting as erythroderma

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Parthenium hysterophorus is a member of the Compositae family, which was accidentally introduced to India in 1956 in a wheat shipment from the USA. Since then, it has spread all over the country and has become the commonest cause of plant dermatitis in India (1). Erythroderma is a rare manifestation of parthenium dermatitis. In this study, we present four cases of erythroderma because of parthenium dermatitis seen over a period of 2 years.

Materials and Methods

Patients presenting with erythroderma, suspected to be caused by *P. hysterophorus* based on their history, were admitted to hospital (as we had found that removing the patients from their normal environment helped in clearance of their skin

lesions) and treated as inpatients with systemic steroids and other conservative measures for erythroderma until their skin lesions completely cleared, and steroids were tapered and stopped. Patch testing was performed at this stage, and those who tested positive to *P. hysterophorus* (Indian baseline series of patch test allergens approved by the Contact and Occupational Dermatoses Forum of India) were included in the study. The allergens were procured from Systopic Pharmaceuticals, New Delhi, India. *P. hysterophorus* was tested at 1% concentration in pet. The patches were applied using Finn Chambers® on Scanpor tape (Systopic Pharmaceuticals, New Delhi, India), and they were removed after 2 days of occlusion. Patch test readings were taken at D2 and D4 as per the recommendations of the International Contact Dermatitis Research Group (2). Our patients were later discharged and were asked to return for regular follow-up. The history, clinical examination, skin biopsy reports, and patch test results of the patients are presented.

Results

All our patients were middle-aged to elderly individuals. They were agricultural labourers and had significant exposure to parthenium. All patients developed erythroderma after a pre-erythrodermic phase of airborne contact dermatitis of variable duration. Patch testing in all four cases indicated allergic reaction to *P. hystero-*

phorus. The various characteristics of erythroderma because of parthenium dermatitis in our patients are shown in Table 1.

Discussion

Parthenium hysterophorus produces allergic contact dermatitis, which may manifest as airborne contact dermatitis (1), chronic actinic dermatitis-like presentation (3), mixed pattern dermatitis (3), photosensitive dermatitis (1), and erythroderma (1, 4–8). As seen in our study, parthenium dermatitis usually begins as an airborne contact dermatitis pattern or as a localized dermatitis. Repeated exacerbations occur because of continued exposure with seasonal variations [mostly in summer, sometimes in spring (9, 10)] and application of topical irritants prepared locally. This is further compounded by delayed presentation for treatment because of the mild nature of the initial dermatitis and later the inability to change the occupation or the place of living because of financial constraints. Thus, in untreated patients, the dermatitis gradually spreads and eventually progresses to erythroderma over a variable period of time. Patch testing to establish the aetiology is preferably undertaken after the skin lesions have subsided completely and immunosuppressive medications stopped. In our experience, no patient had an exacerbation after patch testing.

Table 1. Characteristics of the four patients of erythroderma due to parthenium dermatitis

Characteristics	Case 1	Case 2	Case 3	Case 4
Age (years)	65	60	55	46
Sex	Male	Male	Male	Female
Occupation	Farming	Farming	Farming	Farming
Duration of erythroderma	9 months	1 month	3 years	6 months
Pre-erythrodermic dermatitis	Started as localized dermatitis in both lower limbs → later ABCD	ABCD	ABCD	ABCD
Duration of pre-erythrodermic dermatitis	6 months	17 months	1 year	8 months
Itching	Yes	Yes	Yes	Yes
Exposure to <i>Parthenium hysterophorus</i>	Yes	Yes	Yes	Yes
Seasonal exacerbation	Summer	Summer	Spring	Summer
Occupational exacerbation	Yes	Yes	Yes	Yes
History of exacerbation on exposure to sunlight	Yes	Yes	Yes	No
Atopy	No	No	No	No
Skin biopsy report	Chronic dermatitis	Chronic dermatitis	Chronic dermatitis	Chronic dermatitis
Patch test reaction to <i>P. hysterophorus</i>	++	+	+	+++
Exacerbation after patch test	No	No	No	No

ABCD, airborne contact dermatitis.

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