

Role of Common Contact Sensitizers in the Aetiopathogeneses of Prurigo Nodularis

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ABSTRACT:

Prurigo nodularis (PN) is a chronic condition characterized by itchy, papulonodular eruption of unknown etiology. It is a difficult condition to treat and often causes frustration to both the patient and the treating doctor. A variety of systemic conditions have been reported to be associated with Prurigo Nodularis including Allergic Contact Dermatitis. The present study evaluates the role of common contact sensitizers in the aetiopathogeneses of PN.

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Introduction

Prurigo Nodularis (PN) is a dermatological condition characterized clinically by chronic, intensely pruritic nodules and histologically by marked hyperkeratosis and acanthosis with downward projections of the epidermis¹. PN occurs at all ages, but mostly between 20 to 60 years.. Both sexes are equally affected^{2,3}

Lesions of PN range from small papules to hard nodules, round and keratotic, and may present a depressed surface. Lichenoid plaques are also a frequent finding. Intense excoriation and post-inflammatory hyperpigmentation may be found. Crust and scale may cover recently excoriated lesions. The number of lesions may vary from a few to hundreds. There is a tendency for symmetrical distribution, with predominance of the extensor surface of limbs (Fig. 1). However, the trunk, face and even palms can be affected^{4,5} Etiology of PN is not clear understood. It has been observed that approximately 65-80% of patients are Atopic^{4,6,7}. Emotional stress appears to be contributory factors in some cases with PN. Studies have shown that certain diseases like anaemia, hepatic dysfunction, uremia, myxoedema, venous stasis, folliculitis, nummular eczema, lymphoma, HIV infection, Perforating collagenoses, Gluten-sensitive enteropathy etc are sometimes associate with PN. Moreover it is interesting to note that allergic contact dermatitis has been found increasingly associated with PN⁸. The aim of the present study is to evaluate the role of common contact sensitizers in the aetiopathogeneses of PN.

Methods:

A total of 55 cases with PN were selected in this study after taking a thorough history and clinical examination. Serum IgE level was estimated in all patients. Pregnant and lactating women were excluded in this study. A valid written consent was obtained from each patient. There were 22 male and 33 female participants in this study. The youngest patient was 18-year old male and the oldest patient was 70 year- old housewife. These patients were earlier extensively investigated for PN by different clinicians; but none of these patients had undergone patch testing for PN. These patients were treated mostly with Topical steroids, oral Immune- suppressive (Oral corticosteroid, Azathioprine and Cyclosporine), antihistaminic & few received topical Psoralene, Narrow band UVB phototherapy, Dapsone and Thalidomide in addition having frequent remission and relapse.

To evaluate the role of common contact sensitizers in the aetiopathogeneses of PN, the patients were tested with the Indian standard battery of Allergens approved by the Contact and Occupational Dermatoses Forum of India. Patches were applied to the upper back using aluminum patch-test chambers mounted on a micropore tape. All patches were removed after 2 days and readings were taken on day 2, 3 and 4. Grading of the reactions was performed based on the ICDRG guidelines and only those reactions that persisted till day 3 and beyond were considered to be positive. Patients showing allergy to patch test allergens were advised to avoid contact with the allergen(s) to which they had allergy; they were also advised to remain aloof from or restrict the allergens in the diet. This avoidance/restriction advice was limited for 12 weeks period. During this period, any clinical improvement of each patient noticed was evaluated at weekly interval and recorded. It was a clinic-based study which was undertaken for a period of three and half years.

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Fig. 1 Showing Prurigo Nodularis

Results

Out of the 55 cases of PN, 10 patients showed positive reactions to the patch test allergens. Amongst the positive reactors, 6 were males and 4 females. The youngest patient was a 20-year-old girl and the oldest patient was a 68-year-old male who exhibited positive reaction in this series. Metal allergy was noted in 3 cases (Nickel: 2 cases and Potassium Dichromate: 1 case); other cases of allergens were- Balsam of Peru – 1 case, MBT – 2 cases , Fragrance Mix –1 case, PPD -2 cases and Formaldehyde – 1 case . The result of the study revealed that one out of 10 patients showed complete regression of skin lesions of PN during the 12 weeks follow-up period. There was complete absence of itching by the end of 12 weeks; only few pigmented spots were noted. However in 2 cases partial regression in the size of skin lesions was observed. There was significant reduction in the intensity of itching of the skin lesions which varies from severe to mild- during the follow up period (Intensity of Itch: 1. Mild itch, that is only occasionally disturbing night sleep; 2. Moderate itch, that is disturbing night sleep more than occasionally but not continually; 3. Severe itching, that is continually disturbing night sleep). In 2 cases, those allergens which were tested positive might have acted as aggravating factors. The remaining 7 cases showed no changes, showing that those tested allergens, at least, had no relation with their skin problem.

Table 1
Result of patch test (Patients with positive allergy to patch test allergens)

Sl	Age in (yrs)	Atopic	IgE level	Duration of PN (Yrs)	Occupation	Areas of involvement	Result of patch test: Sensitive to	On avoidance of contact allergens (at 12 wks)
F1	20	yes	High	3 1/2	Beautician	Hands & Forearms	PPD	No change
F2	25	yes	High	2 1/2	Student	Trunk & Limbs	Fragrance Mix	No change
F3	39	No	WNL	2	Beautician	Hands & Forearm	Potassium. Dichromate	Complete regression of lesions
F4	59	yes	WNL	10	House wife	Trunk & Limbs	Balsam of Peru	Partial regression of lesions
M1	21	yes	High	3	Painter	Trunk & upper Limbs	Formaldehyde	No change
M2	48	yes	High	6	Cobbler	Hands & Forearm	MBT	Partial regression of lesions
M3	60	No	WNL	10	Automobile Mechanics	Upper limb & Trunk	PPD	No change
M4	62	yes	High	16	Cement worker	Upper & Lower limb	Nickel	No change
M5	65	yes	High	15	Taxi-driver	Trunk & Limbs	MBT	No change
M6	68	No	WNL	20	Lawyer	Trunk & Limbs	Nickel	No change

Legend: M = male ; F = female

Discussion:

Although the etiology of PN is not clear, Contact allergy has found to be one of the causative factors. In one study, Zelickson et al 8 found three patients with positive patch tests, who got improvement from the PN lesions simply by avoiding allergens. In one study involving 32 patients with prurigo nodularis were evaluated at the Mayo Clinic from 1975 to 1987. It has been revealed that while using patch test for sensitivity to appropriate allergen series, 25 patients got relevant positive reactions and subsequent follow up for 5 to 14 years this declined considerably to 11 patients. Among these 6 patients had persistent disease and 5 had resolution or marked improvement. It is further remarkable that in 3 of these later patients a strong positive interrelation between improvement and avoidance of collagen allergens were evidenced.

In the present study, one female patient out of 55 patients (1.8 % cases) who had allergy to patch test allergen showed complete regression of skin lesions by the end of 12 weeks. She was free from itching completely. Another 2 cases showed partial reduction in the size of skin lesions during the period. There was reduction in the intensity of pruritus during the follow up period-from severe to mild itching in both the cases. The result indicated that common contact sensitizer(s) could contribute as the primary cause and /or aggravating factor in the aetiopathogenesis of PN, at least in some of the investigated patients suffering from PN.

Conclusion

Patch test being safe, simple and cheap can be used for the etiological diagnosis of PN under the guidance of an experienced dermatologist, before putting those patients under exorbitant expensive investigation. Since the present study is a clinic based study and the study group taken was small sized, a further multicentric study comprising data of a large number of patients with longer follow up would be more authentic and informative.

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