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Indian Journal of Skin Allergy

Letter to Editor

Study of association of prurigo nodularis and atopy

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Sir,

It is a prospective study involving patients diagnosed with prurigo nodularis (PN) and who satisfied the inclusion criteria were studied over a period of 2–years. Study included 30 patients of PN and 30 age-matched healthy controls above 18 years of age of both sexes willing to undergo investigations. Atopic history was recorded.

Cutaneous and systemic examination was carried out. Hematological, biochemical investigations, thyroid profile, serum IgE, and absolute eosinophil count (AEC) were done. Skin biopsy was done in all patients. Serum IgE and AEC were done in all controls. Data were statistically analyzed using the Chi-square test.

A total of 30 patients with PN were studied. Maximum (46.7%) were in 3rd decade. A total of 30 healthy controls were studied. A maximum (46.7%) were in the 3rd decade. Although PN is known to occur commonly in the older age group, our study comprised more patients (33.2%) with an early age onset. This could be due to higher rates of psychological stress among the younger age group. It has been observed that PN in atopic individuals has an earlier onset.[1]

Of the 30 cases, 83.3% were females and 16.7% were males with female-to-male ratio of 5:1. Of the 30 controls, 46.7% were females and 53.3% were males. The female to male ratio was 1.1:1. The female preponderance in our study is in concert with the study by Ständer *et al.*[2] One possible explanation could be that women have higher rates of neuropathic and psychosomatic diseases underlying chronic pruritus. About 33.3% cases were positive for history of atopy. Out of these, 13.3% had h/o allergic rhinitis, 13.3% had recurrent attacks of upper respiratory tract infection (URTI), 3.3% had h/o of atopic eczema, and 3.3% had h/o asthma. About 6.7% controls revealed positive history of atopy, and both revealed h/o allergic rhinitis. About 33.3% cases gave a positive history of atopy in the family. In the control group, 6.7% had positive history of atopy in the family. Half of the patients had skin lesions of PN over lower limbs, 43.3% had lesions over both upper and lower limbs [Figure 1], while 3.3% had lesions only on the lower limb, and 3.3% had lesions on both upper limbs. Similarly, Iking *et al.* observed extremities as the commonest site of PN.[1] Extremities are usually involved due to easy accessibility, and areas that are difficult to reach, such as the upper mid-back, are spared. Ijima noticed sensitivity to insect bites in their study of PN.[3] About 6.7% patients complained of aggravation during psychological stress. Stress is known to aggravate PN lesions since it induces release of ACTH by pituitary and causes release of catecholamines and cortisol from adrenals, which inhibit IL-12 and IL-18 and mediate the differentiation of T helper cells toward TH-2 constellation with increased production of IL-4, 5, 13, which activate B-cells, mast cells, neutrophils causing increased inflammatory response and aggravation of lesions. Notably, Tan and Tey have reported the influence of psychological cofactors such as habitual picking, depression, anxiety, stress, and impulse control disorder in 30% of patients with PN.[4]

Skin biopsy from all cases in our study revealed features consistent with the histopathological features of PN [Figures 2 and 3]. These are comparable with histopathological study of PN by Weigelt *et al.*[5]

Positive history of atopy was noted in 33.2% of PN. Out of these, 13.3% had a history of allergic rhinitis, 13.3% had recurrent attacks of URTI, 3.3% was a known case of atopic dermatitis, and 3.3% was a known asthmatic. In the control group, only 6.7% offered a positive history of allergic rhinitis. Therefore, the incidence of atopy in cases was higher compared to controls. Positive family history of atopy was noted in 33.3% cases, while 6.7% controls gave a positive family history. Serum IgE and AEC were raised in 30% and 26.7% cases, respectively, whereas only 6.7% each showed

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Received: 15 December 2022 **Accepted:** 15 January 2023 **EPub Ahead of Print:** 20 February 2023 **Published:** 30 March 2023 **DOI**: 10.25259/IJSA_24_2022

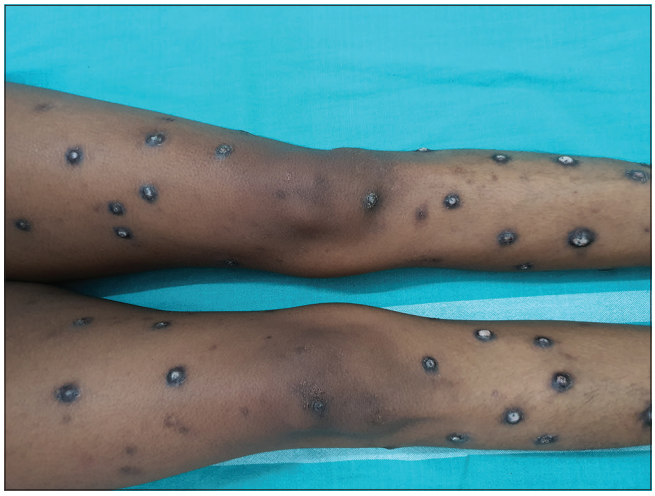

Figure 1: (Original) Hypertrophic and hyperpigmented nodules on both lower limbs.

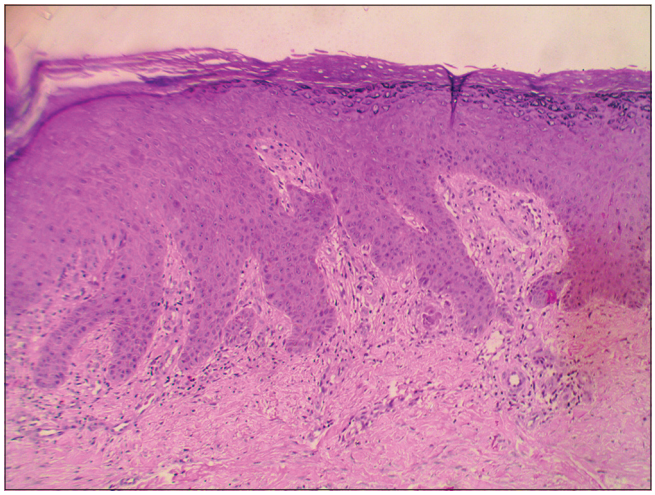

Figure 2: (Original) Histopathological examination of nodule; hyperkeratosis, irregular elongation of the rete ridges, and focal or broad hypergranulosis in epidermis. Dermal shows fibrosis of the papillary dermis with the vertical arrangement of collagen fibers and an increased number of capillaries (H and E stain ×10).

raised AEC and IgE. In our study, only 6.7% controls were atopic.

P value with respect to cases and controls: 0.0098. ($P < 0.05$ is statistically significant) Family h/o atopy was present in 33.3% and absent in 66.7% cases, whereas family h/o atopy was negative in 93.3% and positive in 6.7%. *P* value with respect to cases and controls is 0.00983. ($P < 0.05$ is statistically significant) [Table 1].

The results of this study show that the incidence of atopy in PN patients is higher than the incidence of atopy in the control group. This implies that atopic background is one of the important factors in the etiopathogenesis of PN.

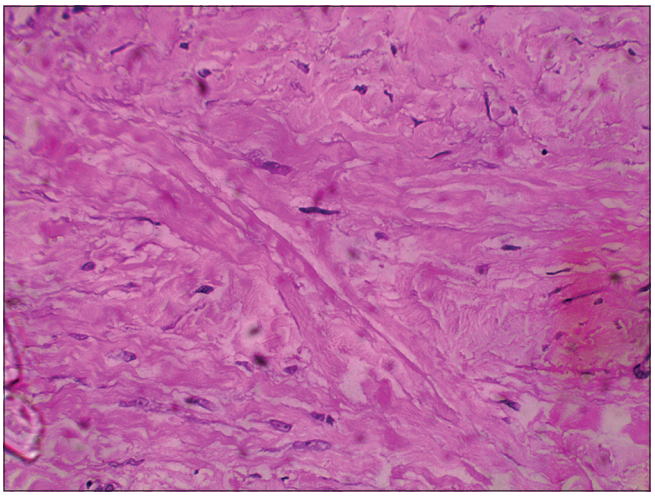

Figure 3: (Original) Histopathological examination of nodule; fibrosis of the papillary dermis with the vertical arrangement of collagen fibers and an increased number of capillaries (H and E stain ×40).

Table 1: (Original) history of atopy in prurigo nodularis cases versus controls.

History of atopy	Cases	Controls
Absent	20	28
Present	10	2

Applying Chi-square test, P=0.0098 (P<0.05), which implies that there is statistically significant difference exists between cases and controls with respect to history of Atopy

Family history of atopy	Cases	Controls
Absent	20	28
Present	10	2

Applying Chi-square test, P=0.00983 (P<0.05), which shows that there is statistically significant difference exists between cases and controls with respect to family history of Atopy

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Rao AG, Tejal M. Study of association of prurigo nodularis and atopy. Indian J Skin Allergy 2023;2:36-8.