

## CASE REPORT

# Unilateral Nevoid Acanthosis Nigricans with a Submammary Location

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Unilateral nevoid acanthosis nigricans (AN) is an exceedingly rare form of AN, which is a benign disorder of keratinization. The lesions of unilateral nevoid AN are distributed unilaterally while the histopathologic findings are similar to the common form of AN, and this is characterized by hyperkeratosis, papillomatosis and moderate acanthosis. A 19-year-old female presented with asymptomatic brownish pigmented plaques on the medial side of the left submammary area. Based on her clinical and histopathologic findings, a diagnosis of unilateral nevoid AN was made. She was treated with topical tretinoin and her skin lesions were almost cleared 9 months after her first visit to our clinic. Various previous reports have described the localization of this disorder, but there has been no previous case report with the clinical manifestations on the unilateral submammary area. Therefore, we herein report the first case of unilateral nevoid AN with an unusual submammary location. (*Ann Dermatol* 23(1) 95~97, 2011)

**-Keywords-**

Acanthosis nigricans, Submammary, Unilateral

## INTRODUCTION

Acanthosis nigricans (AN) is a mucocutaneous eruption that is characterized by hyperpigmented papillomatous thickening with a velvety texture. AN can be classified

into 8 variants, including the benign, obesity-associated, syndromic, malignant, acral, unilateral, medication-induced and mixed-type AN<sup>1</sup>. It usually affects the flexural area with a symmetrical distribution, but unilateral AN does not show a pattern similar to the other variants of AN<sup>2</sup>. Unilateral nevoid AN may be localized as a solitary lesion or along the line of Blaschko. Submammary involvement is quite frequent in the other variants of AN, but this has not been described in the unilateral nevoid form. We herein report the first report of submammary involvement of unilateral nevoid AN.

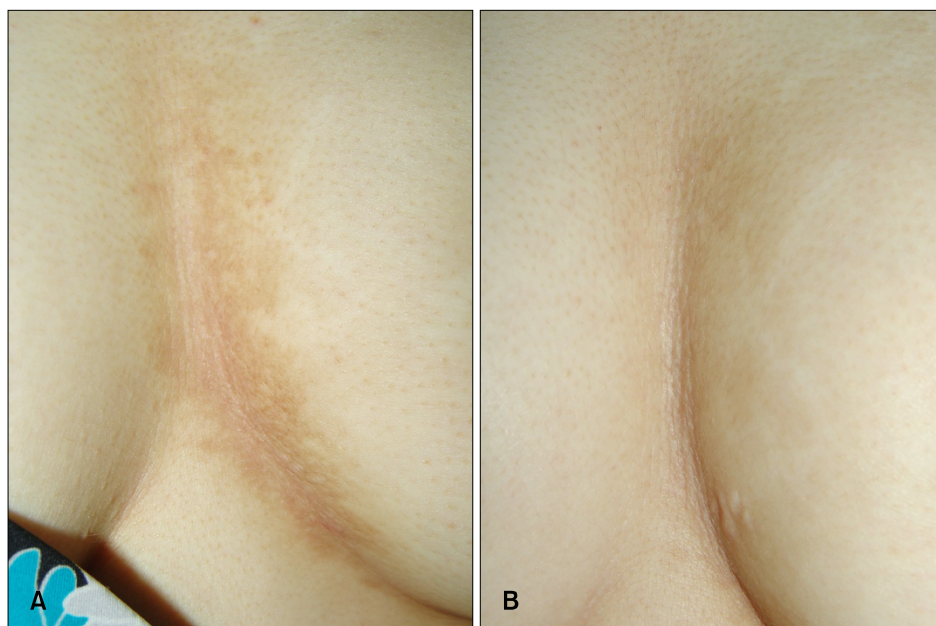
## CASE REPORT

A 19-year-old female presented with asymptomatic brownish pigmented plaques on the medial side of the submammary area. Her skin lesions appeared since the age of 16 without any erythematous component and they slowly increased in size over a 3-year period. Her familial and past medical histories were unremarkable. She was neither obese nor hirsute and she had a normal menstrual cycle. On the dermatologic examination, broad linear hyperpigmented verrucous plaques were asymmetrically distributed on the intermammary to left submammary area (Fig. 1A). There were no other remarkable cutaneous or mucosal lesions. Histopathologic examination revealed hyperkeratosis, papillomatosis and moderate acanthosis in the epidermis and a slight perivascular lymphocytic infiltration in the superficial dermis (Fig. 2A). Immunohistochemical studies showed the epidermis was negative for receptors of estrogen, progesterone and androgen (Fig. 2B~D). Based on the clinical and histopathologic findings, a diagnosis of unilateral nevoid AN was made. She was treated with topical 0.025% tretinoin cream for 2 months. The skin lesions were gradually improved and they almost cleared 9 months after her first visit to our clinic (Fig. 1B).

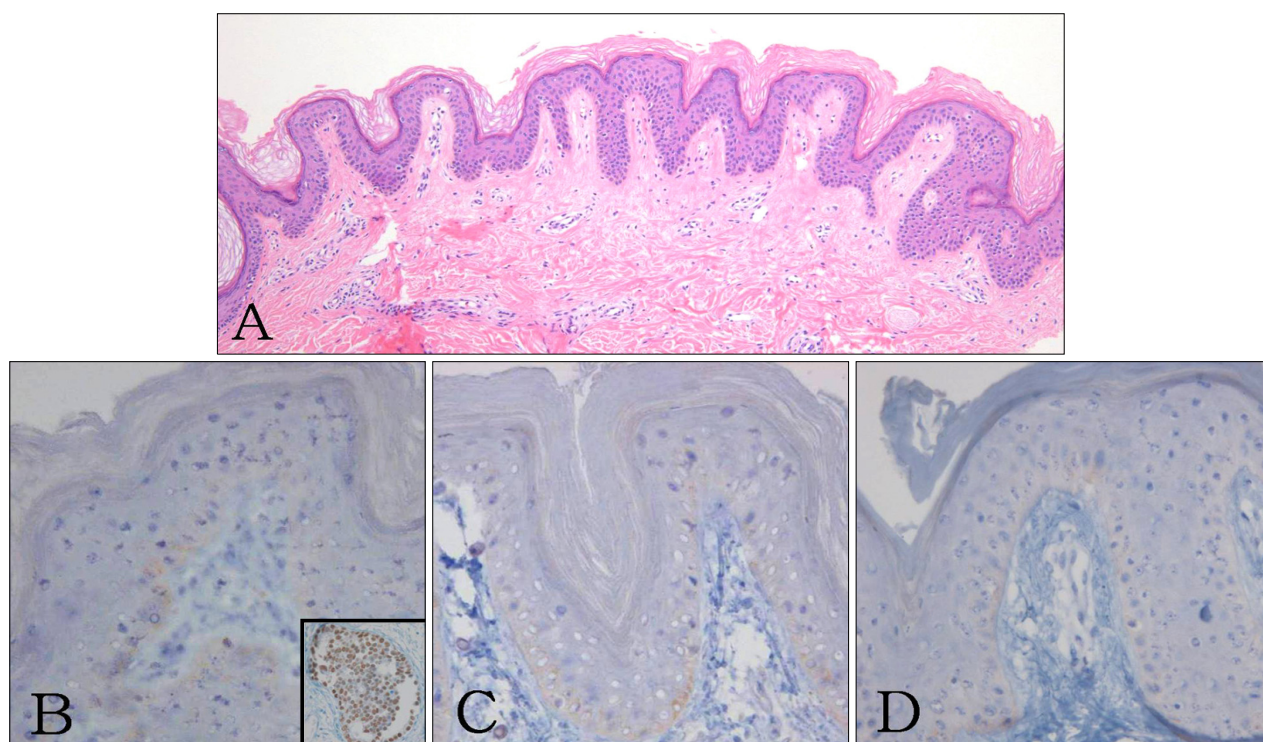
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**Fig. 1.** (A) Linear verrucous brownish plaques on the intermammary to left submammary area and (B) substantial clearance 9 months after the initiation of topical tretinoin treatment.



**Fig. 2.** (A) Hyperkeratosis, papillomatosis and moderate acanthosis are seen in the epidermis (H&E,  $\times 100$ ). All the immunoreactivities for estrogen receptor (B), progesterone receptor (C) and androgen receptor (D) are negative in the epidermis (immunoperoxidase,  $\times 400$ ). (B) Inset: immunohistochemistry for estrogen receptor in the ductal carcinoma cells of the breast as the positive control (immunoperoxidase,  $\times 400$ ).

## DISCUSSION

Unilateral nevoid AN is an exceedingly rare form of AN and it was first reported as an epidermal nevus that

resembled AN by Curth in 1976<sup>3</sup>. Some authors have also described this dermatosis as an AN form of epidermal nevus because the lesions usually tend to be distributed unilaterally along the line of Blaschko<sup>2,3</sup>. Like our case,

however, AN lesions usually have a more velvety consistency than epidermal nevus and they histopathologically show mild hyperkeratosis, papillomatosis and limited hyperplasia. Some cases of unilateral nevoid AN may be inherited in an irregular autosomal dominant manner, and the lesions manifest at birth, childhood, puberty or early adulthood. Unilateral nevoid AN has not been related to an endocrinopathy in most of the previous reports, except for two cases that were associated with Hashimoto's thyroiditis and obesity, respectively. The clinical course is unpredictable because unilateral nevoid AN can remain constant or can undergo regression<sup>1,2</sup>. The histopathologic findings are the same as the other forms of AN and the pathogenesis has been remained uncertain<sup>1-3</sup>.

Unilateral nevoid AN may simulate a hyperpigmented nevus, such as Becker's nevus and melanocytic nevus. The differential diagnosis of nevoid AN also includes confluent and reticulated papillomatosis and Dowling-Degos disease<sup>4</sup>. Yet it is not difficult to exclude these other diseases based upon the clinical and histopathologic features of unilateral nevoid AN.

Various locations of unilateral nevoid AN have been reported, including the face and scalp, chest and abdomen, and especially the periumbilical area, back and thigh<sup>2,8</sup>. However, to the best of our knowledge, no case has been described submammary involvement, which is relatively common for the other variants of AN. Because a submammary location had been observed in endocrine-related AN and the skin lesions of our case had appeared during adolescence with a clinical resemblance to Becker's nevus, we studied the expression of sex hormone receptors in the lesions to elucidate the association between sex hormones and the development of unilateral nevoid AN. It was previously reported that hyperandrogenemia played a role in the syndrome of severe insulin resistance with endocrine-related AN<sup>9</sup> and the level of androgen receptor proteins was increased in the lesions of Becker's nevus<sup>10</sup>. In the present case, immunohistochemical studies showed the epidermis was negative for receptors of androgen, estrogen and progesterone. Our data for the sex hormones corresponds with that of most previous reports, which suggested that unilateral nevoid AN is generally not correlated with an endocrinopathy. But further studies on unilateral nevoid AN are necessary to determine the pathogenesis.

Although no guideline or consensus for the treatment of unilateral nevoid AN has been proposed due to its rare

incidence, a case of ordinary AN treated with topical tretinoin was reported in 1991<sup>11</sup>. Moreover, Lee et al.<sup>5</sup> achieved clinical improvement with topical tretinoin treatment in a patient with unilateral nevoid AN. So we selected tretinoin for treating our case. The lesions were gradually flattened and the brownish pigmentation was decreased after topical treatment with tretinoin. This was probably due to shedding of hyperkeratotic squamæ, as was suggested in a previous report<sup>11</sup>.

In summary, we herein report a case of unilateral nevoid AN that was distributed on the intermammary to left submammary area of a young female. Our case is the first report of submammary involvement of unilateral nevoid AN. Since sex hormone receptors were not observed on the immunohistochemical analysis, we agree with previous reports that unilateral nevoid AN is generally not associated with endocrinopathy. Furthermore, topical tretinoin is recommended as the first choice of treatment although the mechanism of action remains uncertain.

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