Erythrokeratodermia variabilis with hypertrichosis on the lesions

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To the Editor: Erythrokeratodermia variabilis (EKV, Online Mendelian Inheritance in Man [OMIM] #133200) is a rare genodermatosis characterized by migratory erythema and fixed hyperkeratosis. The lesions have a predilection for the distal extremities, buttocks, and trunk.[1] However, abnormal hair growth on EKV lesions has rarely been reported.

A 26-year-old Chinese man presented with widespread reddish-brown patches on his skin that had been present since the age of 5 months. The lesions regressed spontaneously and then appeared elsewhere, gradually progressing to hyperkeratotic plaques with increasing numbers of hairs. The lesions worsened in lower ambient temperatures, especially in winter. The patches and hyperkeratotic plaques were relieved obviously and the hypertrichosis almost disappeared during the summer without treatment; in particular, no topical steroids were used on the lesions. No triggering factors were identified, and none of the patient's family members were affected. Physical examination showed that the sharply demarcated reddish-brown patches and hyperpigmented hyperkeratotic plaques were symmetrically distributed over the back, extremities and waist, and abnormal hairs grew on the lesions of the arms and waist [Figure 1A–C]. Most lesions had a geographic or figurate-shaped appearance. Additionally, the patient had palmoplantar keratoderma. No other abnormalities of the mucous membranes, teeth, or nails were found, and the patient had no neurological deficits. Histopathologic examination of the lesions revealed hyperkeratosis with moderate papillomatosis and acanthosis in the epidermis [Figure 1D and 1E]. The results of routine laboratory tests were normal, including routine blood and urine tests, liver and kidney function tests, and sex hormone measurement. Ultrasound examination of the adrenal glands showed no abnormalities. Genetic testing was not performed because of the lack of an in-house facility and the high cost. A diagnosis of EKV was made based on the characteristic clinical manifestation, and treatment with emollients, oral retinoids, and vitamin A was applied.[2]

EKV, a type of erythrokeratodermia, is a rare autosomal dominant or recessive genetic skin disease caused by mutations in *GJB3* or *GJB4*, which encode connexin 31 and connexin 30.3, respectively.[3] The manifestation of EKV varies from transient, changeable red patches to persistent sharply demarcated, reddish-brown hyperkeratotic plaques. However, there are very few reports of abnormal hair hyperplasia in patients with EKV. Interestingly, Gupta *et al*[4] found prominent hair growth over gluteal and leg lesions in an Indian patient with progressive symmetric erythrokeratodermia (PSEK), another type of erythrokeratodermia. Our patient showed features typifying the clinical presentation of EKV. Because the patient had not used topical steroids to treat the patches, this hypertrichosis was not an adverse effect of steroids. However, it was difficult to explain the abnormal hair hyperplasia on the lesions. Shimizu *et al*[5] found that changes in the expression patterns of connexin suggested a close association among connexin expression, gap junction formation, and hair follicle morphogenesis. Our case may represent a new clinical manifestation of EKV. However, the exact mechanisms of increasing hairy patches in patients with EKV and PSEK remain to be elucidated.

Declaration of patient consent

The authors certify that they have obtained the appropriate patient consent form. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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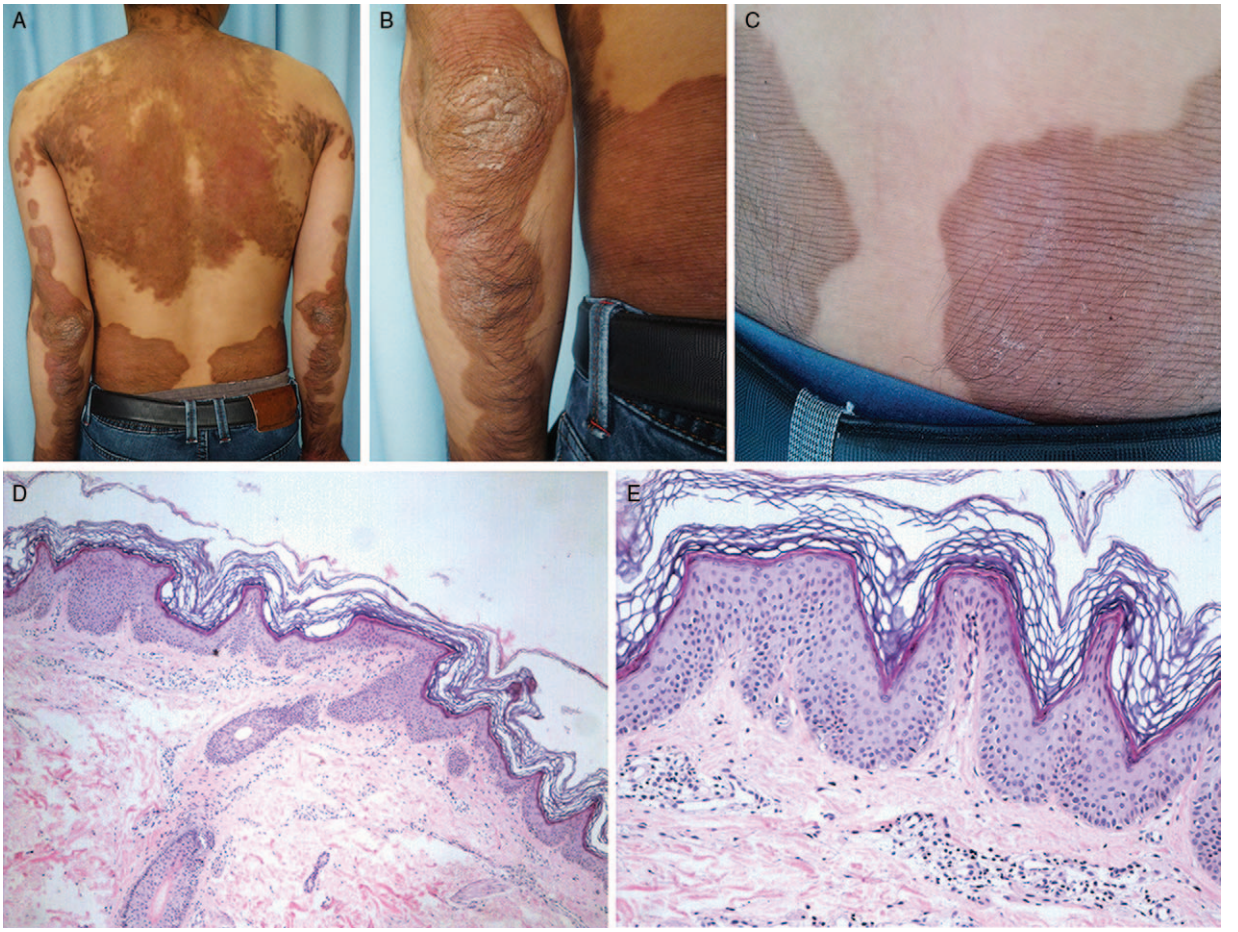

Figure 1: The clinical manifestation and pathological findings of the patient. (A) Sharply demarcated reddish-brown hairy patches and hyperpigmented hyperkeratotic plaques on back, extremities, and waist. (B) Abnormal hairs on the lesions of the arm. (C) Abnormal hairs on the lesions of the waist. (D, E) Hyperkeratosis with moderate papillomatosis and acanthosis in the epidermis (hematoxylin-eosin staining, original magnification ×40 and 100, respectively).

Conflicts of interest

None.

References

1. Common JE, O'Toole EA, Leigh IM, Thomas A, Griffiths WA, Venning V, *et al*. Clinical and genetic heterogeneity of erythrokeratoderma variabilis. J Invest Dermatol 2005;125:920–927. doi: 10.1111/j.0022-202X.2005.23919.x.
2. Shizukawa H, Hiragun M, Hiragun T, Sugita Y, Hide M. Case of erythrokeratodermia variabilis successfully treated with oral vitamin A. J Dermatol 2015;42:1124–1125. doi: 10.1111/1346-8138.13056.
3. Takeichi T, Sugiura K, Hsu CK, Nomura T, Takama H, Simpson MA, *et al*. Erythrokeratoderma variabilis caused by p.Gly45Glu in connexin 31: importance of the first extracellular loop glycine residue for gap junction function. Acta Derm Venereol 2016;96:557–559. doi: 10.2340/00015555-2307.
4. Mahajan VK, Khatri G, Chauhan PS, Mehta KS, Raina R, Gupta M. Progressive symmetric erythrokeratoderma having overlapping features with erythrokeratoderma variabilis and lesional hypertrichosis: is nomenclature "erythrokeratoderma variabilis progressiva" more appropriate? Indian J Dermatol 2015;60:410–411. doi: 10.4103/0019-5154.160499.
5. Arita K, Akiyama M, Tsuji Y, McMillan JR, Eady RA, Shimizu H. Gap junction development in the human fetal hair follicle and bulge region. Br J Dermatol 2004;150:429–434. doi: 10.1046/j.1365-2133.2004.05775.x.

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