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BRIEF REPORT

Focal CK7 Positivity in Pagetoid Bowen's Disease: A Mimic of Extramammary Paget's Disease

Jae-Ho Lee*, Soo-Kyung Lee*, Joong-Ho Kim, Ho-Young Kim, Joong-Heon Suh, Myoung-Shin Kim, Un-Ha Lee

Department of Dermatology, Sanggye Paik Hospital, Inje University College of Medicine, Seoul, Korea

Dear Editor:

An 85-year-old woman presented with an erythematous scaly patch on her left cheek (Fig. 1A). The lesion occurred 5 years previously. The patient had no specific medical history. Biopsy of the specimen showed parakeratosis with crust formation in the horny layer, full epidermal thickness atypical keratinocytes, nests of pagetoid cells with vacuolated, pale cytoplasm, and mitotic figures in the epidermis (Fig. 1B, C). The atypical cells were positive for CK7 and negative for HER2 (CerbB2), HMB-45, and Melan-A (Fig. 1D). Given the biopsy reports of EMPD, additional immunohistochemical stains were performed. The neoplastic cells were positive for p63 and negative for CK20 and Mucicarmine (Fig. 1E, F). On the basis of these findings, we established the diagnosis of pagetoid Bowen's disease. The patient was treated with cryotherapy once a month for 6 months and the lesion showed clear improvement.

About 5% of Bowen's disease cases show a pagetoid growth pattern with atypical keratinocytes arranged singly and in nests[1]. Pagetoid Bowen's disease is an intraepidermal pagetoid neoplasm that is histologically characterized by the pagetoid spreading of atypical cells with vacuolated, pale cytoplasm in epidermis[1]. The most common diagnoses of intraepidermal pagetoid neoplasms are pagetoid Bowen's disease, extramammary Paget's disease (EMPD), and melanoma *in situ*[1,2]. There were some previous reports for differentiating these diseases using histological characteristics, including types of corneum, presence of crushed basal keratinocytes, presence of atypical clear cells in epidermis, presence of large cells with pale cytoplasm, and level of pagetoid atypical cells within the epidermis, as visualized with routine hematoxylin and eosin-stained sections[1]. Although these criteria reduce reliance on immunohistochemical stainings, immunohistochemistry is required for clear distinction in some cases. CK7 has been used for differentiating EMPD from pagetoid Bowen's disease because CK7 is absent in normal and malignant keratinocytes and expressed in secretory cells of eccrine or apocrine glands. However, some previous reports of pagetoid Bowen's disease showed CK7 positivity[3]. Our case also expressed focal CK7, resulting in the need for additional immunohistochemical analysis for clear distinction (Table 1). The exact reason behind CK7 expression in pagetoid Bowen's disease is still unclear; however previous studies have suggested that bidirectional stem cell differentiation to squamous or secretory cells is the main contributor[4]. Other studies attribute the heterogeneity of CK7 expression to phenotypic changes of squamous cell carcinoma tumor cells toward Toker's cells-like phenotype[4]. In our case, some tumor cells showed positivity for CK7, and not for p63 staining (Fig. 1D, E). If on one way, this may be a consequence of a technical issue of tissue processing, on the other, our results support the bidirectional stem cell differentiation hypothesis. Some studies showed the usefulness of newer immunohistochemical stains, including cystic fibrosis transmembrane conductance regulator, monoclonal antibody Ber-EP4, and p63, for

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*These authors have equally contributed to the article.

Corresponding author: Un-Ha Lee, Department of Dermatology, Sanggye Paik Hospital, Inje University College of Medicine, 1342 Dongil-ro, Nowon-gu, Seoul 01757, Korea. Tel: 82-2-950-1131, Fax: 82-2-931-8720, E-mail: woods75@hanmail.net
ORCID: https://orcid.org/0000-0003-1626-5583

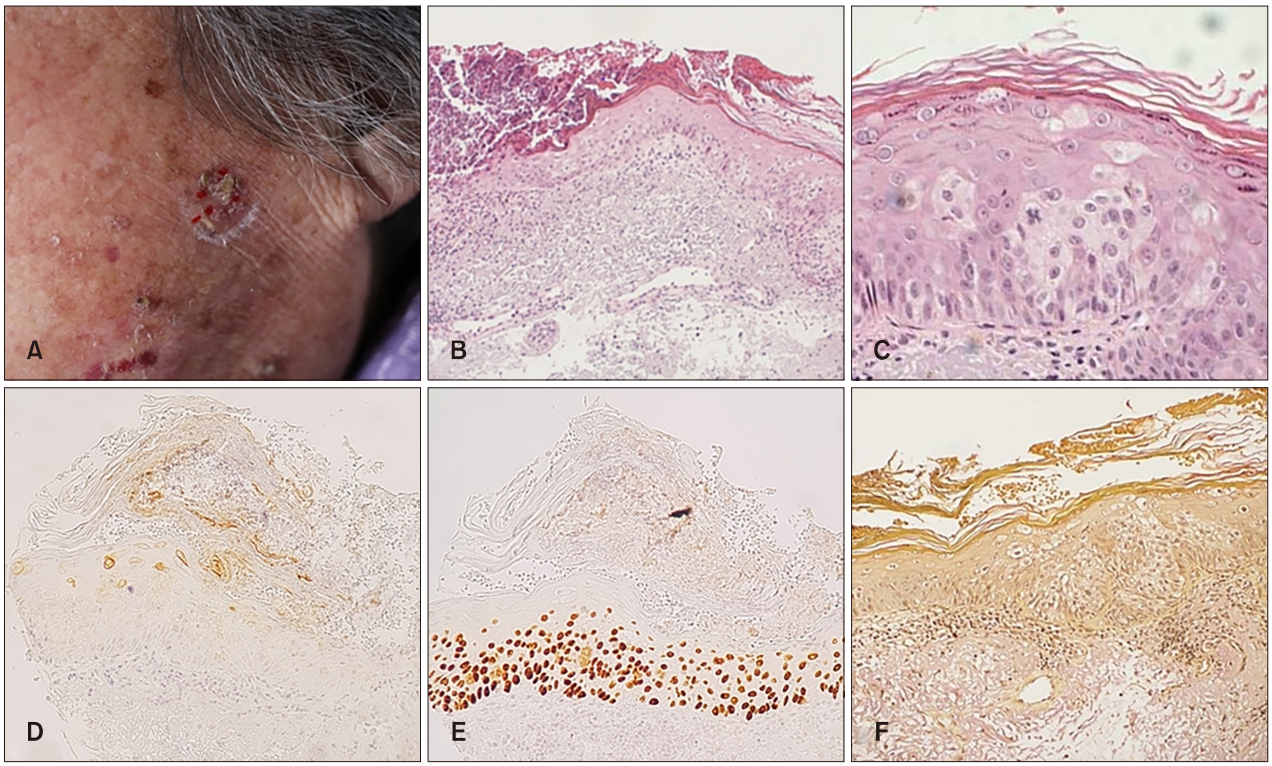

Fig. 1. (A) Clinical picture of the case. Erythematous scaly patch on the cheek. (B∼F) Histological picture of the case. (B) Parakeratosis with crust formation in the horny layer and cellular infiltration in the dermis (H&E, ×100). (C) Nests of pagetoid cells with a pale eosinophilic cytoplasm and mitotic figure (H&E, ×400). (D) Tumor cells in the epidermis showed focal positivity for CK7 (CK7, ×200). (E) Both normal keratinocytes and tumor cells showed positivity for p63 (p63, ×200). (F) Immunohistochemical stain was negative for Mucicarmine (Mucicarmine, ×200). We received the patient's consent form about publishing all photographic materials.

Table 1. Summary of immunohistochemical stains

Variable	This case	Bowen's disease	EMPD	Malignant melanoma
CK7	Focal+	+/−	+	−
Melan-A	−	−	−	+
HMB-45	−	−	−	+
C-erbB2 (HER2)	−	−	+/−	−
p63	+	+	−	−
CK20	−	−	+/− †	−
Mucicarmine	−	−	+	−

EMPD: extramammary Paget's disease. †Secondary EMPD.

distinction between pagetoid Bowen's disease and EMPD[3,5]. Our case also showed a positive p63 stain. To our knowledge, reports of CK7 positive pagetoid Bowen's disease are rare in Korea. Herein, we report a case of pagetoid Bowen's disease exhibiting focal staining with CK7, this unusual immunophenotype leading to misdiagnosis as EMPD.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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ORCID

Jae-Ho Lee, https://orcid.org/0000-0002-3872-0527
Soo-Kyung Lee, https://orcid.org/0000-0002-7460-5657
Joong-Ho Kim, https://orcid.org/0000-0002-5979-6811
Ho-Young Kim, https://orcid.org/0000-0002-1029-3287
Joong-Heon Suh, https://orcid.org/0000-0002-1046-0487
Myoung-Shin Kim, https://orcid.org/0000-0002-0660-8098
Un-Ha Lee, https://orcid.org/0000-0003-1626-5583

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A Calculating Method for Nail Growth Using CO_2 Laser Drilling and Dermoscopy

Chihyeon Sohng, Jun Young Kim

Department of Dermatology, School of Medicine, Kyungpook National University, Kyungpook National University Hospital, Daegu, Korea

Dear Editor:

Some patients with nail dystrophy complain that their dystrophic nails do not grow (Fig. 1A). These patients ask whether their nails are actually growing. However, this is not easy to confirm with the naked eye because fingernails and toenails normally grow at rates of 3.5 mm/month and 1.6 mm/month, respectively, in healthy people[1]. It is often difficult to notice a difference in nail length, even if you take a picture and compare it with the nail 1～2 months later or mark the nail with a pen, as the mark is easily removed. In such a case, to show that the nail is growing, a fixed reference point around the nail and an indelible mark on the nail are required. The proximal nail fold is a good reference point, but it is often difficult to find an indelible mark. If there is no indelible mark on the nail, CO_2 laser drilling is useful. Small holes can be made with the CO_2 laser in continuous mode at 1-W power (Fig. 1B). Drilling too deep may hurt the nail bed, and a hole that is too shallow is easily blurred by external friction. The procedure is stopped just before the patient feels a little pain or after 0.5 seconds. Positioning the holes 1 to 2 mm away from the distal end of the lunula is safe and keeps them indelible. Drilling too close to the proximal nail fold may injure the nail matrix during the procedure, and if the holes are too distal from the proximal nail fold, they may disappear owing to external friction and tiny foreign material that can easily get into the holes. Pictures are captured using dermoscopy in polarized mode immediately after the procedure and again 6 weeks later and are compared. A ruler placed in the dermoscopy window parallel to the direction of nail growth makes it easy to detect fine changes in length (Fig. 1C). This is an easily accessible and definite procedure to confirm nail growth. Although there are several methods to assess nail growth, including special marks on the nail plate with ink, nitric acid, or a razor blade and magnifying lens with fine calibration[2-4], the marks are easily removed and the methods

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Corresponding author: Jun Young Kim, Department of Dermatology, Kyungpook National University Hospital, 130 Dongdeok-ro, Jung-gu, Daegu 41944, Korea. Tel: 82-53-420-5838, Fax: 82-53-426-0770, E-mail: 198kjy@hanmail.net
ORCID: https://orcid.org/0000-0002-2999-1018