SHORT COMMUNICATION

A Rare Case of Primary Cutaneous Basaloid Squamous Cell Carcinoma of the Finger

Ho Sung KIM, Won Gyu CHOI, Soo-Kyung LEE, Un Ha LEE and Myoung Shin KIM*
*Department of Dermatology, Inje University Sanggye Paik Hospital, Inje University College of Medicine, Seoul, South Korea. *E-mail: etihwevol@naver.com*
Submitted Sep 10, 2023. Accepted after review Dec 19, 2023
Published Feb 5, 2024. Acta Derm Venereol 2024; adv24071. DOI: 10.2340/actadv.v104.24071

Basaloid squamous cell carcinoma (BSCC) is a rare and highly aggressive subtype of squamous cell carcinoma (SCC), characterized by the presence of distinctive atypical basaloid-appearing cells (1). Histologically, it may be challenging to distinguish between tumours that exhibit characteristics of both SCC and basal cell carcinoma (BCC). However, accurate differentiation is crucial because of differences in disease progression and prognosis. Primarily found in the mucocutaneous and anogenital regions, BSCC is infrequently encountered as a primary skin malignancy. The existing literature has documented few instances of primary cutaneous BSCC (2–5). We present here a case of primary cutaneous BSCC of the finger.

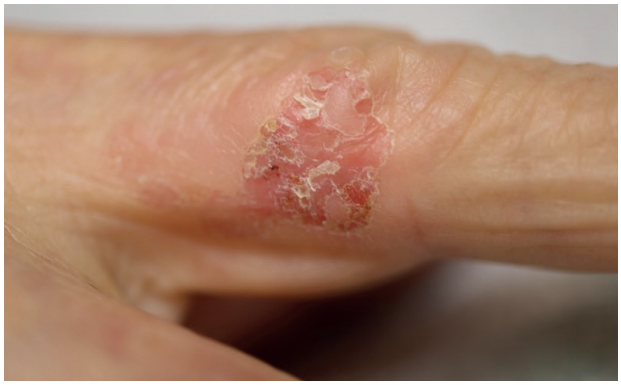

Fig. 1. Clinical image. An erythematous scaly patch, 1 cm in size, on the right index finger.

CASE REPORT

An 85-year-old man with a medical history of hypertension and hyperlipidaemia presented with an erythematous scaly patch on the right index finger (**Fig. 1**). This patch, 1 cm in size, has persisted for 2 years. He stated that he received topical treatment for eczema, but did not show any improvement. A potassium hydroxide preparation test revealed no evidence of fungal infection. A punch biopsy revealed basaloid tumour nests and cords extending throughout the dermis (**Fig. 2**A). Under high-power magnification, these basaloid tumour cells exhibited an exaggerated nuclear-to-cytoplasm ratio, reminiscent of BCC-like features; however, they notably lacked the characteristic tumour-stroma retraction observed in typical BCCs (Fig. 2B). To confirm the diagnosis, and as treatment, wide local excision with a 0.5-cm surgical margin was performed in consultation with the plastic surgery department, and the total resected tissue was obtained (**Fig. 3**A). The specimen had basaloid tumour nests, some of which were connected to the epidermis, while others were separated (Fig. 3B). Within the epidermis, the tumour cells exhibited pleomorphic and atypical nuclei along with squamous eddy-like keratinizing component- features consistent with SCCs (Fig. 3C). Immunohistochemical (IHC) staining of the excised specimen was negative for p16 and bcl-2, and HPV genotyping analysis. The patient was diagnosed with BSCC. The patient was followed-up for 4 months for wound assessment, during which no signs of recurrence were observed. Written informed consent for publication was obtained from the patient.

DISCUSSION

Non-melanoma skin cancers include BCC and SCC (1). In some cases, skin cancers can exhibit pathological characteristics involving more than 1 tumour type or encompass multiple subtypes of a single tumour, such as metatypical tumours, including BSCC and metatypical BCC (MBCC) (7). BSCC is a distinctive, high-grade variant of SCC with distinct histological characteristics and aggressive clinical behaviour (1, 6). It primarily manifests within the upper

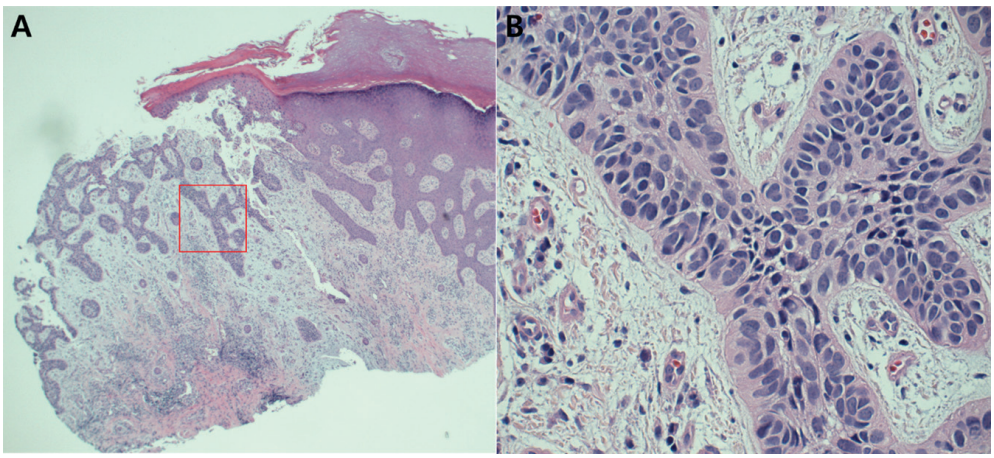

Fig. 2. Histological findings (punch biopsy). (A). Low-power view of the punch biopsy tissue showing basaloid tumour nests and cords extending throughout the dermis (haematoxylin and eosin staining: HE ×40). (B). High-power view of the area inside the *red square* of (A) showing basaloid tumour cells with an exaggerated nucleus-to-cytoplasm ratio without tumour-stroma retraction (HE ×400).

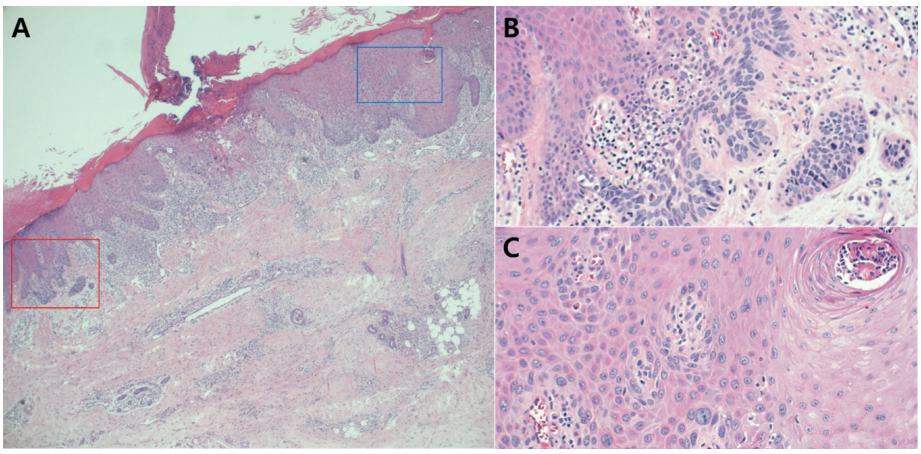

Fig. 3. Histological findings (excisional biopsy). (A) Low-power view of the excisional biopsy tissue (HE ×40). (B) High-power view of the area within the *red square* in (A) showing basaloid tumour nests, with some connected to the epidermis and others separate (HE ×200). (C) High-power view of the area within the *blue square* in (A) showing tumour cells with pleomorphic atypical nuclei and squamous eddy-like keratinization (*right upper quadrant*) (HE ×200).

aerodigestive tract, including the supraglottic larynx, base of the tongue, palate, and buccal cavity. However, primary cutaneous BSCC remains exceedingly rare, with only 8 documented cases reported, occurring in various anatomical locales, such as the inguinal crease, forearm, face, occipital scalp, chest wall, and scapular area (2–5). To our knowledge, there have been no reported cases of primary BSCC of the finger.

Histologically, BSCC is characterized as a solid epithelioid cell tumour that exhibits at least a focal connection to the surface epithelium. It comprises nests and cords of compact basaloid cells with focal keratinization. The exaggerated nuclear-to-cytoplasmic ratio of tumour cells contributes to their basaloid features (6). While peripheral palisading, typically observed in BCC, may be present, it is not as extensively developed as in BCC (1). The mucomyxoid stroma or retraction of tumour cell groups from the matrix, typically found in BCCs, is not present (7). Notably, BSCC is consistently linked with an SCC component, which can manifest as either an *in situ* carcinoma or an invasive keratinizing SCC. In addition, it may present as focal squamous differentiation within basaloid tumour nests (4).

In contrast, MBCC, also known as basosquamous carcinoma, is a subtype of BCC that includes SCC components and displays typical BCC features, such as peripheral palisading, mucomyxoid stroma, and retraction structures (7). In addition, histopathologically, adenoid cystic carcinoma (ACC) comprises islands of basaloid cells and may appear similar to BSCC. However, the distinction lies in the hyaline stroma surrounding the tumour cells of ACC.

Both BCC and ACC can be distinguished from BSCC through standard haematoxylin and eosin (H&E) morphology; however, when differentiation is challenging, IHC markers serve as valuable tools. BSCCs typically exhibit positivity for cytokeratin (CK) stains, notably CK 5/6 and CK 34βE12 (903), as well as *Ulex europaeus 1* (UEA-1), whereas BCCs primarily demonstrate positivity for bcl-2 and Ber-EP4 (7). In addition, ACC tumour cells have a phenotype suggestive of myoepithelial cell differentiation, showing positivity for smooth muscle actin and S100, which are negative in BSCC (8). In the current case, the absence of bcl-2 expression in the excised specimen further supported the diagnosis of BSCC.

BSCC often manifests strong and diffuse positivity for p16, and *in situ* hybridization typically reveals high-risk HPV, particularly HPV16 (5, 9). While immunohistochemical markers, such as p16 and HPV genotyping, play supportive roles in achieving a diagnosis, our case demonstrated negativity for both markers, potentially indicating the presence of an alternative cause or contributing factor to the development of this condition. While no reports discussing HPV-negativity in primary cutaneous BSCC have been documented, in an analysis of 53 head and neck BSCC cases, the authors found a significant correlation between the absence of HPV16 and decreased overall survival, implying a potential connection with poor prognosis in the current specific case (10).

Due to the rarity of cutaneous BSCC, the optimal treatment remains unclear. However, considering its aggressive behaviour, surgical intervention is preferred over topical or superficial therapies. Reported cases have utilized Mohs surgery or wide local excision with a 4–6-mm surgical margin, consistent with the approach for cutaneous SCC (2–5). Some authors suggest that, given BSCC's aggressiveness, combining radiotherapy and chemotherapy with surgical treatment may be advisable (4). In addition, considering sentinel lymph node biopsy and imaging studies could help determine the extent of treatment.

The typical prognosis for individuals with BSCCs is generally unfavourable. This is emphasized by the fact that up to 75% of patients with BSCC present with advanced nodal or metastatic condition, resulting in an overall mortality rate of approximately 60% (2). Given its aggressive nature, early detection and intervention are crucial in managing BSCC. A thorough evaluation of its metastatic potential and consistent post-treatment monitoring is imperative. Although it remains uncertain whether BSCCs located within the upper aerodigestive

tract demonstrate greater aggressiveness than cutaneous BSCCs, an illustrative instance reported by Vu et al. (5) sheds light on this aspect. They presented a case of cutaneous BSCC with cerebral metastasis, suggesting the potential for aggressive behaviour within the context of cutaneous BSCCs. The examination of our patient's specimen revealed tumour infiltration of the reticular dermis with an absence of lymphovascular invasion, indicating an incipient tumour stage.

The current case emphasizes the critical role of accurate diagnosis for appropriate clinical management and underscores the necessity of considering rare entities in dermatological presentations. Early recognition and intervention are pivotal in enhancing outcomes, considering the aggressive nature of BSCC. This report adds to the limited body of evidence on primary cutaneous BSCC, providing insights into its atypical presentation and approach in dealing with unusual skin malignancies. Further research and increased awareness are necessary to comprehend the clinical behaviour and optimal management strategies for such rare manifestations of BSCC.

The authors have no conflicts of interest to declare.

REFERENCES

1. Motaparthi K, Kapil JP, and Velazquez EF. Cutaneous Squamous Cell Carcinoma: Review of the Eighth Edition of the American Joint Committee on Cancer Staging Guidelines, Prognostic Factors, and Histopathologic Variants. Adv Anat Pathol 2017; 24: 171–194.
2. Boyd AS, Stasko TS and Tang Y-W. Basaloid squamous cell carcinoma of the skin. J Am Acad Dermatol 2011; 64: 144–151.
3. Joglekar S, Daneshvar S, Sinha A, Saxena P. Metastatic primary cutaneous basaloid squamous cell carcinoma: transformation after 20 years of neglect. ANZ J Surg 2018; 88: E87–E88.
4. Javid M, Swaminathan SP, Jebasingh AV, Velayutham M, Kawarat V. A rare presentation of primary cutaneous basaloid squamous cell carcinoma of scalp. Int Surg J 2018; 5: 2636–2638.
5. Vu TT, Soong L, Hung T, Fiorillo L, Joseph K. Cutaneous HPV16 and p16 Positive basaloid squamous cell carcinoma with brain metastasis: a case report. SAGE Open Med Case Rep 2020; 8: 2050313X20935260.
6. Wain SL, Kier R, Vollmer RT, Bossen EH. Basaloid-squamous carcinoma of the tongue, hypopharynx, and larynx: report of 10 cases. Hum Pathol 1986; 17: 1158–1166.
7. Webb DV, Mentrikoski MJ, Verduin L, Brill LB 2nd, Wick MR. Basal cell carcinoma vs basaloid squamous cell carcinoma of the skin: an immunohistochemical reappraisal. Ann Diagn Pathol 2015; 19: 70–75.
8. Ramakrishnan R, Chaudhry IH, Ramdial P, Lazar AJ, McMenamin ME, Kazakov D, et al. Primary cutaneous adenoid cystic carcinoma: a clinicopathologic and immunohistochemical study of 27 cases. Am J Surg Pathol 2013; 37: 1603–1611.
9. Cubilla AL, Reuter VE, Gregoire L, Ayala G, Ocampos S, Lancaster, WD, et al. Basaloid squamous cell carcinoma: a distinctive human papilloma virus-related penile neoplasm: a report of 20 cases. Am J Surg Pathol 1998; 22: 755–761.
10. Begum S, Westra WH. Basaloid squamous cell carcinoma of the head and neck is a mixed variant that can be further resolved by HPV status. Am J Surg Pathol 2008; 32: 1044–1050.