Solitary plantar basal cell carcinoma*

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Abstract: Basal cell carcinoma is the most frequent skin cancer, generally located in hair-bearing, sunlight-exposed areas. Basal cell carcinoma usually occurs on the head and neck, but very rarely on extra-facial locations. We report a case of a 65-year-old woman presenting with a solitary non-healing ulcer on the sole of the right foot for two years. Histopathological examination showed a typical nodular basal cell carcinoma, confirmed by positivity to Ber-EP4 on immunohistochemistry. There was no history of trauma, exposure to noxious agents, basal cell nevus syndrome, or xeroderma pigmentosum.
Keywords: Carcinoma, basal cell; Case reports; Foot ulcer; Immunohistochemistry; Skin neoplasms

INTRODUCTION

Non-melanoma skin cancers, mainly basal cell carcinoma (BCC) and squamous cell carcinoma, are the most common cancers seen worldwide and represent 40% of all malignancies.[1-3]

Chronic sun exposure is the cause of most of these malignancies, but they also develop on unexposed areas. [2,3]

A report by *Scrivener et al.* representing the largest study on BCC showed extra-facial sites accounting for 17% of all BCC. In a recent case series of Korean patients, the relative tumor frequency on extra-facial sites was highest in the genital area, followed by the axilla. The extremities showed much lower numbers, with no reports of BCC on the hands or feet.[3]

BCC of the palms and soles have been linked to other pathogenic factors such as arsenic exposure, ionizing radiation, repeated trauma, and hereditary syndromes such as Gorlin syndrome, Bazex-Dupré-Christol syndrome, and xeroderma pigmentosum.[4]

In a recent review of 10-year skin biopsy results, from 11,775 biopsies performed on suspected keratinocyte proliferation or pigmented lesions to rule out or diagnose malignancy, 27.5% were basal cell carcinomas. The most common subtypes in this study were nodular, infiltrative, micronodular, and superficial, and several of these BCCs showed more than one morphology in the biopsy.[1]

CASE REPORT

A 65-year-old woman was referred to the dermatology clinic to treat a non-healing ulcer on the sole of the right foot that had been present for 2 years. There was no history of trauma, exposure to noxious agents (especially arsenic or tar), nevoid basal cell carcinoma syndrome, or xeroderma pigmentosum. There was no family history of skin tumors or hereditary diseases.

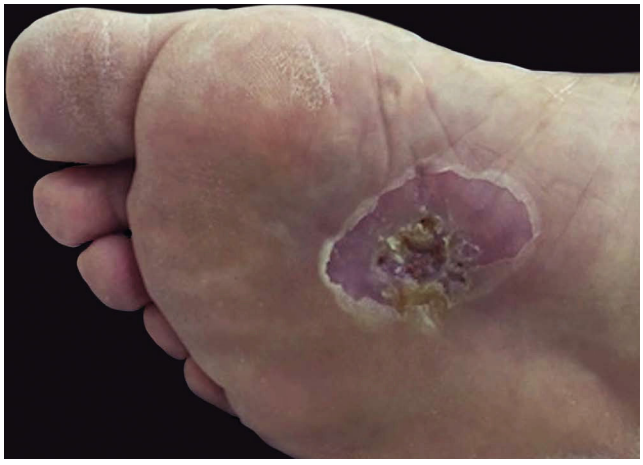

Figure 1: Ulcerated plaque on the cavum of the right sole

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Clinically, a 2 x 2cm round normochromic ulcerated plaque with distinct edges was found on the cavum of the right sole (Figure 1).

We performed the excision with surgical margins. Histopathological examination showed a typical nodular basal cell carcinoma, with no angiolymphatic or neural invasion (Figures 2-4). Immunohistochemistry staining was performed, and positivity for Ber-EP4 confirmed the diagnose (Figure 5).

DISCUSSION

Due to almost exclusive occurrence on hair-bearing skin, it has been long postulated that the original cell population of BCC

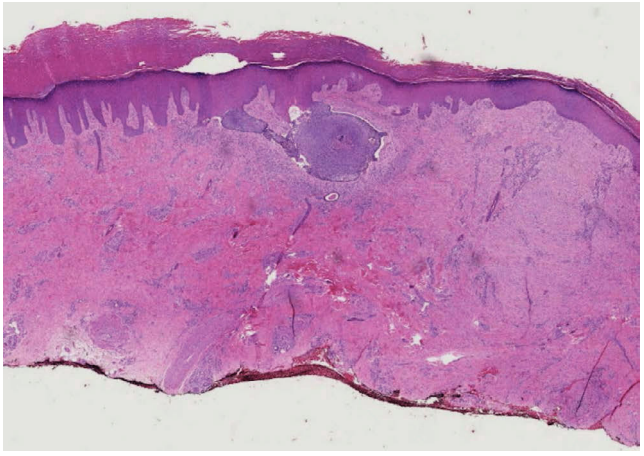

Figure 2: Panoramic photomicrograph of histological section demonstrating basaloid neoplasm in a nodular arrangement adjacent to the squamous epithelium and surrounded by inflammatory reaction. Note the presence of ulceration on the lesion's surface. (Hematoxylin & eosin, X40)

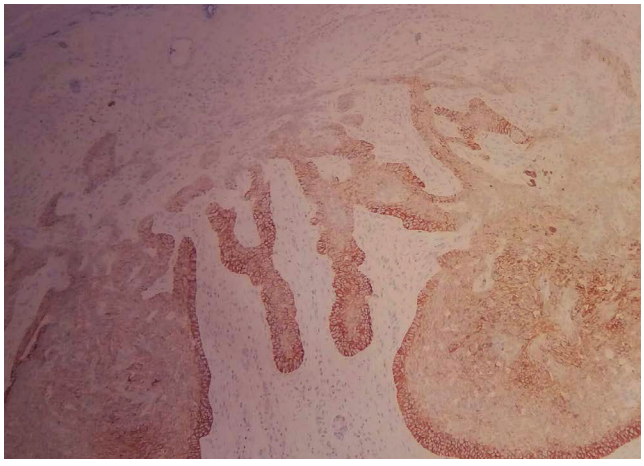

Figure 5: Positive staining for Ber-EP4 (X100)

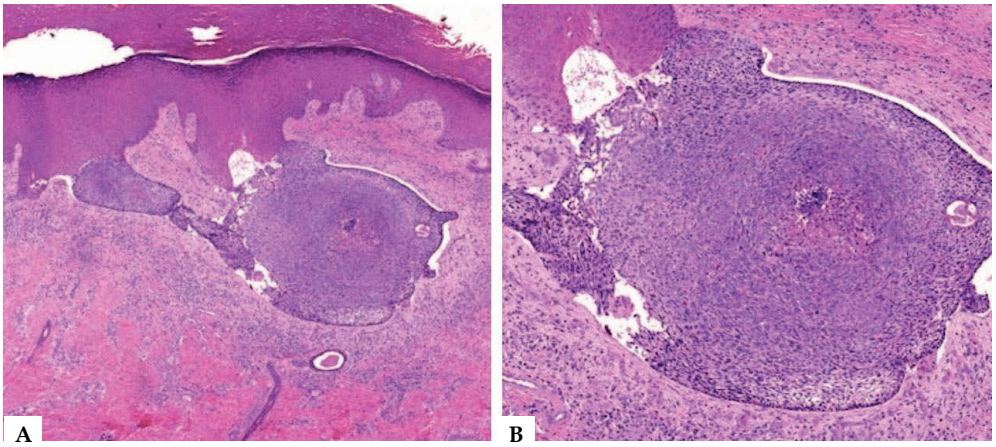

Figure 3: A) Histological section photomicrograph showing basaloid tumor in nodular arrangement adjacent to the squamous epithelium and surrounded by inflammatory reaction (Hematoxylin & eosin, x100). **B)** Basaloid neoplasm nodular arrangement, with slight anaplasia and peripheral palisade. Lymphocytic inflammatory reaction surrounding the neoplasm (Hematoxylin & eosin, x400**)**

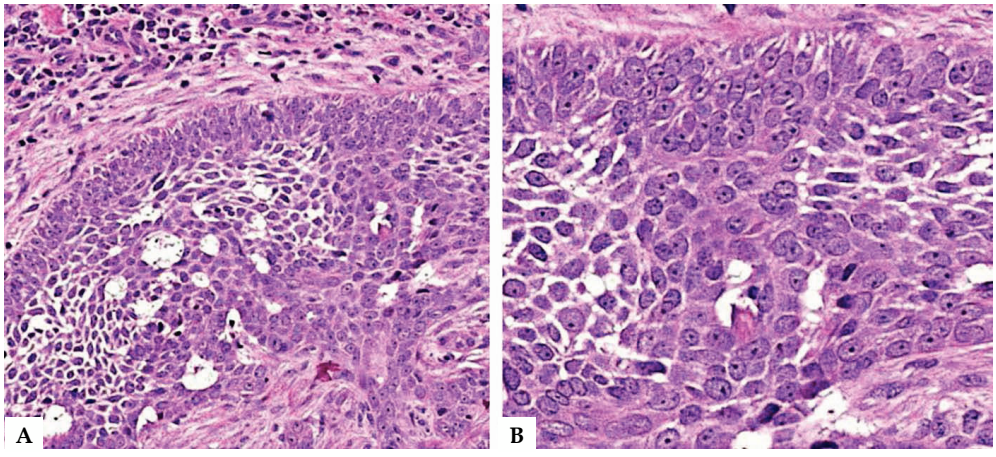

Figure 4: Photomicrographs of the histological section in detail demonstrating **A -** the typical peripheral palisade of the tumor nest (Hematoxylin & eosin, X400) and **B -** the basaloid cells (Hematoxylin & eosin, X1000)

could be found in the keratinocytes of the hair follicle's outer root sheath. This theory fails to explain the rare occurrence of BCC on hairless palmar and plantar skin. Proliferative signals via the sonic hedgehog signaling pathway (SHH) have been clearly demonstrated as the molecular cause of the development of BCC.[5]

Youssef *et al.* showed in a murine model that BCC can originate not only from fully developed hair follicles but also from interinfundibular stem cells of the epidermis; tumors only secondarily take on differentiated characteristics of hair follicles. Other local factors on the palms and soles must be responsible for the rarity of BCC in these anatomic regions.[5]

Basal cell carcinoma strictly limited to the sole is very rare[2,6]. With the exception of the nevoid basal cell carcinoma syndrome, the plantar location can be considered highly unusual.[6] Previous reports have shown a frequency of 3% of BCCs occurring on the foot.[7] To date, only six patients with isolated BCC on the sole have been reported in the literature, by Rupec in 1982[5] , Ee *et al.* in 2004[8], Gubianti *et al.*[7] and Betti *et al.* in 2005[6] , Albedaño *et al.* in 2006[9], and Sumimura *et al.* in 2012.[10] There have also been reports of BCC occurring on the sole with the tumor possibly developing as a secondary effect of radiation from a fluoroscope used as a shoe-fitting aid[2]. There have been only 27 reported BCCs involving the sole of the foot, and they showed histological patterns characteristic of fibroepithelioma of Pinkus.[2,6]

Differential diagnoses for this case were squamous cell carcinoma, keratoacanthoma, and malignant melanoma. The nodular subtype found here is reported to be the most common on extra-facial locations, although various authors have previously reported superficial BCC as the most common subtype in lower extremities.[3,7] Our patient also illustrates the typical presentation of plantar BCC: female, sixth decade of life, and absence of a pearly edge and telangiectasias that are characteristic of classical BCC in the head and neck region.[8]

We described this case because of its rarity and the limited reports of BCC on areas devoid of pilosebaceous units and apocrine glands.[8] We also aimed to report on positive staining for Ber-EP4 to differentiate BCC from other adnexal tumors. ❑

REFERENCES

1. DeMarco SS, Vos P, Green H, Defazio J, Davis N, Fiz L, et al. A 10-year review of outpatient skin biopsy results and skin cancer subtypes. Dermatol Online J. 2016;22. pii: 13030/qt85b5h3m5.
2. Smullen MJ, Bertler DE. Basal cell carcinoma of the sole: possible association with the shoe-fitting fluoroscope. WMJ. 2007;106:275-8.
3. Roh SG, Park J, Song KH, Nam KH, Yun SK, Kim HU. Clinical and histopathological characteristics of extra-facial basal cell carcinoma: analysis of 35 patients at the Chonbuk National University Hospital in Korea. Australas J Dermatol. 2014;55:e65-8.
4. Alonso-Corral MJ, Gómez-Avivar MP, Berenguel-Ibañez MM, Ruiz-Villaverde R. Palmar basal cell carcinoma: an unusual site? Actas Dermosifiliogr. 2014;105:623-4.
5. Mleczko A, Franke I, Pokrywka A, Gollnick H, Leverkus M. BerEP4-negative basal cell carcinoma on the palm: case report and review of the literature. J Dtsch Dermatol Ges. 2011;9:140-3.
6. Betti R, Facchetti M, Menni S, Crosti C. Basal cell carcinoma of the sole. J Dermatol. 2005;32:450-3.
7. Gubianti ML, Madrid M, Romagnoli LE, Pinardi BA. Lesión crónica en región plantar. Dermatol Argent. 2012;18:68-71.
8. Ee HL, Tan SH, Kumarasinghe SP. Plantar basal cell carcinoma: a possible eccrine origin. Clin Exp Dermatol. 2004;29:678-9.
9. Abeldaño AM, Tiscornia J, Cendeño LP, Brea P, Chouela EN. Basal cell carcinoma in palm and sole. Skinmed. 2006;5:40-2.
10. Sumimura Y, Imai N, Akamatsu K,Hinogami H, Ohata C. A case of basal cell carcinoma on the sole. Skin Research. 2012;11:170-72.

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Erratum

In the manuscript "Solitary plantar basal cell carcinoma", com número de DOI: 10.1590/abd1806-4841.20187079, published in the Anais Brasileiros de Dermatologia, 2018;93(3):419-21., in the page 421.

Where it reads:

"To date, only six patients with isolated BCC on the sole have been reported in the literature, by Rupec in 19825 , Ee *et al.* in 20048 , Gubianti *et al.*7 and Betti *et al.* in 20056 , Albedaño *et al.* in 20069 , and Ohata *et al.* in 2012.10"

"10. Ohata C, Imai N, Hinogami H, Akamatsu K, Sumimura Y. A case of basal cell carcinoma on the sole. J Cutan Pathol. 2012;39:56-62"

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