Doi: 10.47572/muskutd.1675295

Basal Cell Carcinoma of The Hand with Bone Involvement; Report of An Extraordinary Case

Elde Kemik Tutulumu olan Bazal Hücreli Karsinomu; Sıra Dışı Bir Vakanın Sunumu

Sukru KASAP, Muhammed Said AYDIN, Mustafa NISANCI

Muğla Sıtkı Koçman University Faculty of Medicine Department of Plastic, Reconstructive and Aesthetic Surgery, Muğla, Turkey

Öz
Bazal hücreli karsinom (BCC), epidermisin bazal tabakasından ve adneksal yapılardan kaynaklanan melanom dışı cilt kanserinin en yaygın türüdür. BCC'ler genellikle cildin güneşe maruz kalan bölgelerinde, çoğunlukla yüz ve boynu içerir.

Abstract
Basal cell carcinoma (BCC) is the most common type of non-melanoma skin cancer that originates from the basal layer of epidermis and adnexal structures. BCCs usually appear on the sun-exposed areas of the skin, mostly involving face and neck.

Anahtar Kelimeler: BCC, Kemik, İnvazyon, Tümör, El

Keywords: BCC, Bone, Invasion, Tumor, Hand

Introduction

Basal cell carcinoma (BCC) is the most common type of non-melanoma skin cancer that originates from the basal layer of epidermis and adnexal structures. BCCs usually appear on the sun-exposed areas of the skin, mostly involving face and neck (1). They can be diagnosed clinically based on dermoscopic evaluation which is also used to help in differential diagnosis within BCC subtypes (2). BCC development was shown to be caused by the patched hedgehog signaling pathway. Most common BCC mutation development occurs when PTCH1 mutation is inactivated while SMO mutation is activated. Defect in P53 tumor suppressor gene has been reported as a common finding among the BCC cases (3). UV exposure, ionizing radiation, and arsenic exposure are referred as environmental risk factors for BCC development (4). Having a light skin color, old age, immunosuppression, and certain genetic syndromes including Nevoid Basal Cell Carcinoma and Xeroderma Pigmentosum are known to associate with possible BCC development. Ultraviolet exposure, particularly ultraviolet B (UVB), is regarded as the primary environmental risk factor for both malign melanoma and non-melanoma and skin cancers (5). Histological findings revealed different patterns of BCC consisting of nodular, micronodular, infiltrative, superficial, and morpheaform. Low-risk tumors can be treated with local excision topical imiquimod, cryotherapy, photodynamic therapy, and radiation (6). The goal of surgical treatment is removal of the tumor completely with safe surgical margins. The recommended surgical margin for excision of a low-risk BCC lesion is 4 mm while it is at least 6 mm for a high-risk lesion. The advantages of wide surgical excision are short treatment time, high cure rate, and low recurrence rate while obtaining clean surgical margin (7).

	ORCID No
Sukru KASAP	0000-0002-7885-2655
Muhammed Said AYDIN	0009-0001-0502-8243
Mustafa NISANCI	0000-0003-4377-7197

Başvuru Tarihi / Received: 13.04.2025
Kabul Tarihi / Accepted : 01.08.2025

Adres / Correspondence : Sukru KASAP
Muğla Sıtkı Koçman University Faculty of Medicine Department of Plastic, Reconstructive and Aesthetic Surgery, Muğla, Turkey
e-posta / e-mail : drsukrukasap@gmail.com

Case

An 88-year-old female patient, seeking for treatment of an 8x4 cm recurrent ulcerated mass involving radial side of her left wrist and hand, was referred to our clinic (Figure 1).

Figure 1. 8x4 cm recurrent ulcerated mass involving radial side of her left wrist and hand

Figure 2. Bone erosions and resorptions involving trapezium and first metacarpal, indicating tumoral infiltration.

Regarding patient's history; prior to her admission she had undergone surgeries on the existing lesion 5 times at an external center, but the mass had appeared again with a more aggressive recurrent form each time. Histopathological examination had revealed that the tumor is an infiltrative variant of BCC. On physical examination, a large ulcerative wound on the radial side of the wrist, extending up to MP joint level on the hand with exposed carpal and metacarpal bones was observed. The thumb and second finger were noted to be deformed and nonfunctional. Radiological evaluation showed bone erosions and resorptions involving trapezium and first metacarpal, indicating tumoral infiltration (Figure 2). Surgery was accomplished under general anesthesia. Arm tourniquet was employed to prevent excessive bleeding. When preparing the surgical field, the tumor was covered with drape to prevent tumor seeding. En block resection of the tumor was carried out with amputation of the first ray leaving at least 6 mm safe skin-margins. Since the tumor infiltration predominantly involved the first metacarpal while sparing the distal part of the thumb, amputation was realized in a manner that distal soft tissue of the thumb, which was deemed to be free from tumor, was dissected off as a fillet flap upon princeps polices pedicle (Figure 3). This flap was utilized to cover upon the exposed bony parts in the resulting defect. The remaining part of the defect was replaced by the split thickness skin grafts harvested from the lateral thigh.

Discussion

BCC is most common tumor of the skin and generally occur on the sun exposed area of human body. Even though the hand is also a body part exposed to sun, it is known as a very uncommon location for BCC development. Squamous cell carcinoma is known as the most common skin tumor of the hand. The scarcity of pilosebaceous structures in the skin of the hand is suggested to be the essential reason why BCC is low on the dorsum of the hand despite the sun exposure. Hair follicles and sebaceous glands are accused of being the sources of BCC development. Although there are many hair follicles on the dorsum of the hand, the sebaceous units are rare, resulting in rare development of BCC on that part of the body. Nodular BCC is the most common type of tumor when it occurs on the dorsum of the hand.

Figure 3. Distal site of the defect closure with fillet flap after excision of 1st metacarpal bone which was invaded by invasive BCC.

Although many treatment modalities have been recommended for BCC treatment, surgical excision with clean surgical margin is referred to be the treatment of choice. Mohs micrographic surgery was reported to have the lowest recurrence rate whereas isolated radiotherapy has the highest recurrence ratio and poor cosmesis (8).

Unlike SCC and malign melanoma, BCC, known as a slow-growing tumor with very rare metastatic or local aggressive behaviors, has generally good prognosis. On the other hand, delay in the treatment or ignoring the tumor may result in massive tissue destruction leading to the functional impairment and severe cosmetic concerns (9). In all BCC cases, local aggressive behaviors have been reported to account for only 0.8 %.Local aggressive forms of BCC are considered to be able to invade the deeper structures like bones.

In the case presented above, the subtype of the tumor was reported to be infiltrative one which is known to have aggressive behavior that caused the destruction of the first metacarpal bone we observed. Functional evaluation of the hand disclosed the total loss of thumb function due to tissue destruction and bone invasion of the tumor. BCCs with bone involvement have been reported to be mostly seen in the older-age male patients with recurrent tumors larger than 4 cm in diameter.Scalp was referred to be the most common location of tumor invasion while infiltrative, morpheaform, sclerosing types were the

most common types of BCC associated with deep tissue invasion. Surgical excision with clear margins is the most common treatment modality for eradication of the tumor. On the other hand, tumor recurrence, progression and BCC-related deaths remain high especially in local aggressive, mistreated and recurrent BCCs (10). In regard to our patient, it was noted that infiltrative variant of BCC had been reported in previous histopathological investigations; and in her history, she described five recurrences after each of which she had undergone surgical excision with reported clear margins. On her referral, we were faced with large defect of an ulcerated tumor over the radial side of her left hand with a nonfunctional and deformed thumb. Detailed physical examination revealed that floor of ulcer comprised of exposed bone, radiologically which was shown to be eroded first metacarpal due to anticipated tumor infiltration. This case may be considered as a proof for possible severely aggressive behavior of BCC, albeit in rare cases, and its potential to involve rarely occurring body parts like hand with debilitating results.

Conclusions

Basal cell carcinoma is a slow growing tumor that almost never metastasizes, less aggressive than SCC and melanoma, and seen mostly in places with high sun exposure area like head and neck on the human body. The main reason why BCC was 'extraordinary' in our case was that the tumor behaved in a way that would invade bone severe enough to require amputation in a rare location such as the hand.

Conflict of interest statement

None declared

Written consent: Consent to the writing of the article was given by the patient on 7 January 2025.

Funding: None

References

1. Tanese K. Diagnosis and management of basal cell carcinoma. Curr Treat Options Oncol. 2019;20(2):13.
2. Krakowski AC, Hafeez F, Westheim A, et al. Advanced basal cell carcinoma: What dermatologists need to know about diagnosis. J Am Acad Dermatol. 2022;86(6S):1-13.
3. Kim DP, Kus KJB, Ruiz E. Basal cell carcinoma review. Hematol Oncol Clin North Am. 2019;33(1):13-24.
4. Marzuka AG, Book SE. Basal cell carcinoma: pathogenesis, epidemiology, clinical features, diagnosis, histopathology, and management. Yale J Biol Med. 2015;88(2):167-79.
5. Teng Y, Yu Y, Li S, et al. Ultraviolet radiation and basal cell carcinoma: An environmental perspective. Front Public Health. 2021;9:666528.
6. Ilyas EN, Leinberry CF, Ilyas AM. Skin cancers of the hand and upper extremity. J Hand Surg Am. 2012;37(1):171-8.
7. Sari M, Shavira PH, Kusumaputra BH, et al. Wide excision of basal cell carcinoma on the upper extremity: A case report. Qanun Medika-Medical Journal Faculty of Medicine Muhammadiyah Surabaya. 2023;7, 2 (Jul. 2023).
8. Mortada H, Aldihan R, Alhindi N, et al. Basal cell carcinoma of the hand: A systematic review and meta-analysis of incidence of recurrence. JPRAS Open. 2022;35:42-57.
9. Loh TY, Rubin AG, Brian Jiang SI. Basal cell carcinoma of the dorsal hand: An update and comprehensive review of the literature. Dermatol Surg. 2016;42(4):464-70.
10. Russell E, Udkoff J, Knackstedt T. Basal cell carcinoma with bone invasion: A systematic review and pooled survival analysis. J Am Acad Dermatol. 2022;86(3):621-7.