Case Report

A Giant Basal-Cell Carcinoma: A Rare Subtype at a Rare Site

Abstract

Giant basal-cell carcinoma (BCC) is a rare subtype of BCC which is characterized by aggressive biological behavior with extensive local invasion, frequent metastasis, and poor prognosis. It arises almost exclusively on hair-bearing skin. It has been rarely reported on sole. Various pathogenic factors such as arsenic exposure, ionizing radiation, repeated trauma, and hereditary syndromes have been implicated. A combination of optical coherence tomography and reflectance confocal microscopy can provide useful information for both depth and horizontal extension of tumor and could be used before surgery to explore subclinical extension. Wide local excision of the lesion with histologically confirmed negative margins for the reconstruction of the defect, followed by adjuvant chemoradiation gives a better outcome compared to radiotherapy or chemotherapy alone. Chemotherapy with cisplatin-based treatment is the most common regimen. We report a case of giant BCC on the sole in an elderly male. After excision, the defect was treated with skin grafting.

Keywords: *Basal cell, carcinoma, giant, sole*

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Introduction

Basal-cell carcinoma (BCC) is the most common type of skin cancer. It arises almost exclusively on hair-bearing skin, especially of the head and neck, followed by the trunk and very rarely, foot. Only 25 cases of BCC of the dorsal foot and about 40 cases of BCC of the foot sole have been published.[1,2] The major risk factor is considered to be sun exposure and fair complexion. It has been reported at other sites such as the perianal and genital region, nail unit, and palm. The incidence worldwide is rising, with an estimated 4 million cases worldwide in 2019 with the highest rates in Australia, and the lowest in parts of Africa. In the past decade, the largest increase in incidence occurred in the United States with unexpected increases in East Asia and tropical Latin America and decreases in Brazil and some African countries.[3] Giant BCC is a rare invasive subtype of BCC which has the longest axis, measuring more than 5 cm, independent of histological subtype, local invasion, or metastasis.[4,5] BCC on palms and soles has been linked to various pathogenic factors such as arsenic exposure, ionizing radiation, repeated trauma, and hereditary syndromes.[6] It has been rarely reported on sole. We are tempted to report a case of giant BCC in a 65-year-old male who had nodulo-ulcerative lesion on his sole for the past 4 years.

Case Report

A 65-year-old male residing in tribal area came to the surgical outpatient unit with nodulo-ulcerative lesion on the left sole spreading laterally, medially, and on the dorsal surface in the ankle region [Figure 1a] for the past 4 years. He had no major illness in the past or any history of trauma at that site. He developed a small nodule on the sole at the same site which grew over 4 years into large nodulo-ulcerative lesion, measuring 14 cm × 6 cm. The X-ray of the left ankle revealed soft-tissue thickening along the posterior aspect of the calcaneum with normal bony alignment and bony density [Figure 1b]. Magnetic resonance imaging of the left ankle revealed an irregular exophytic hypointense lesion arising from the epidermis of skin in the heel region posteriorly and extending medially and laterally up to the subcutaneous plane. There was no ankle joint effusion or synovial thickening. The osseous structure of the ankle joint was normal [Figure 1c and d]. Ultrasonography of the inguinal region showed few bilateral subcentimetric inguinal lymph nodes.

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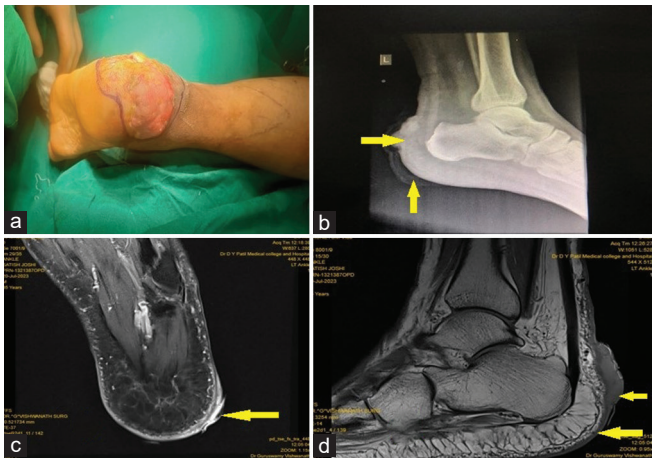

Figure 1: Giant basal-cell carcinoma. (a) Nodulo-ulcerative lesion on the left sole spreading in dorsal surface in the ankle region, (b) The X-ray of the left ankle revealed soft-tissue thickening along the posterior aspect of calcaneum, (c and d) Magnetic resonance imaging of the left ankle revealed irregular exophytic hypointense lesion arising from epidermis of skin

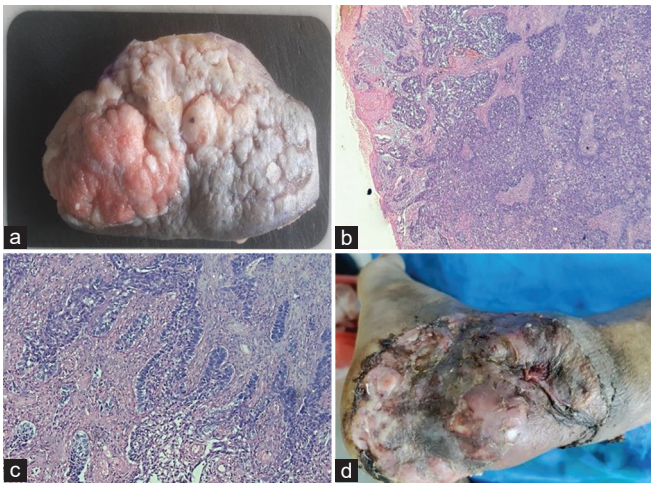

Figure 2: (a) Excised specimen of nodulo-ulcerative mass, (b) Ulcerated epidermis and dermis which showed islands of basaloid cells in fibromyxoid stroma (H and E, ×100), (c) Peripheral palisading of tumor cells and retraction spaces between the tumor islands and stroma (H and E, ×400), (d) postoperative skin graft

A wedge biopsy from the ulcerated lesion was received for histopathological examination. Microscopy revealed ulcerated epidermis and dermis which showed islands of basaloid cells having hyperchromatic nuclei with peripheral palisading surrounded by fibromyxoid stroma [Figure 2c]. At few places, retraction spaces between the tumor islands and stroma were seen [Figure 2a and b]. A diagnosis of nodular BCC was made.

Intraoperative frozen section from all the margins and base were free from tumor. Received excised specimen of nodulo-ulcerative mass measuring 11.5 cm × 7.5 cm × 2 cm with attached skin flap [Figure 2d]. Skin grafting was done to fill the defects [Figure 2d]. Sections from the mass confirmed the diagnosis of nodular BCC. There was no lymphovascular or perineural invasion. All the resection margins including the base were free from tumor on histopathology examination.

Discussion

BCC is considered to be the most common malignancy in the white population with the highest incidence in Australia and lowest in Africans from Kenya. Pathogenesis of BCC involves the activation of the hedgehog intracellular signaling pathway which is responsible for growth and division. Several mutations of different genes have been identified. Some have suppressive/inhibiting roles (PTCH1, SUFU, p53) while others activate tumor formation (SMOm).[7]

Although ultraviolet radiation exposure is the most important risk factor for BCC carcinogenesis, other factors such as ionizing radiation, systemic arsenic exposure, repeated trauma, and hereditary syndromes such as Gorlin syndrome, Bazex–Dupre–Christol, syndrome, and xeroderma pigmentosum. Organ transplant recipients develop 10 times more BCC than the general population.[7]

Commonly affected sites are the face, back, and upper extremities. There are few case reports and small-to-medium-sized case series on giant BCC. They have been rarely described on sole.[4,5,8]

BCC is slow-growing, less aggressive, and rarely metastasizes. Giant BCC has more aggressive biological behavior with the tendency for deep tissue invasion and infiltration beyond the dermis as well as for distant metastasis. They are often nodular or infiltrative subtypes of BCC which can metastasize to regional lymph nodes or distant organs.[8,9] There was no lymph node metastasis in our patient. Fine-needle aspiration from inguinal lymph nodes in our patient revealed reactive lymph node hyperplasia.

According to National Comprehensive Cancer Network (NCCN) clinical practice guidelines, all giant BCCs are considered high-risk BCC. Although BCC rarely metastasizes, giant BCC has a greater tendency to metastasize, particularly in lesions larger than 10 cm.[9] Archontaki *et al*.[8] in their study of 50 cases of giant BCC suggested that many cases arose from previously treated BCC or delay in seeking treatment or high-risk histological subtype. A similar observation was made in our patient.

With the development of modern medical engineering, the correct diagnosis and appropriate size of BCC in terms of depth and surface area can now be evaluated even before the surgical excision, which can reduce significantly the relapse rate in the case of BCC. Niculet and Tatu[10] suggested that combination of optical coherence tomography and reflectance confocal microscopy (RCM) can provide useful information for both depth and horizontal extension of tumor and can be used before surgery to explore subclinical extension. RCM also offers information about blood vessels at the level of BCC in terms of density, size, and flow intensity.

For giant BCC, wide local excision of the lesion with histologically confirmed negative margins for the reconstruction of the defect, followed by adjuvant chemoradiation gives a better outcome compared to radiotherapy or chemotherapy alone. Chemotherapy with cisplatin-based treatment is the most common regimen.[9,11] For high-risk BCC, the NCCN recommends standard excision with more than 6 mm peripheral margins while the European Dermatology Forum and Cancer Council Australia and Australian Cancer Network recommend surgical excision using up to 10-mm peripheral margin.[8,9,11] Skin grafting may be easier to perform but esthetic results after skin graft are inferior to local flap.

Mohs micrographic surgery can be considered if there is a risk of disfigurement, large tumors with aggressive histopathological subtype, and tumors with poorly defined margins.[9-11] However, it bears very high cost. For unresectable BCC or metastatic BCC, vismodegib, a kinase inhibitor, remains the primary option for treatment.[7]

Conclusion

Giant BCC is a rare subtype of BCC. It arises almost exclusively on hair-bearing skin, especially of the head and neck, it can occur on the sole. Although various pathogenic factors such as arsenic exposure, ionizing radiation, repeated trauma, and hereditary syndromes have been implicated for etiology, it can arise from previously treated BCC or delay in seeking treatment. Wide local excision of the lesion with histologically confirmed negative margins is the choice of treatment.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names 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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Conflicts of interest

There are no conflicts of interest.

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