Wide Excision of Basal Cell Carcinoma on The Axilla

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Abstract

Basal cell carcinoma (BCC) is a malignant neoplasm arising from the basal layer of the epidermis and is the most common type of skin cancer, yet it is rarely found in the axillary region due to minimal ultraviolet exposure. Wide local excision is the main therapeutic option to achieve tumor-free margins and prevent recurrence. We report a case of a 46-year-old man presenting with a tumor in the left axilla that had gradually enlarged over one year and developed ulceration within the last three months. The initial lesion appeared as a small pruritic nodule that progressively enlarged and ruptured due to scratching. Physical examination revealed a 5 × 2 × 2 cm tumor with a necrotic base, regular margins, elevated edges, and firm consistency. A clinical diagnosis of BCC was established and confirmed by histopathological examination as nodular type. The patient underwent wide local excision with adequate margins. One-month postoperative evaluation showed good wound healing without signs of recurrence. Repeated trauma and chronic inflammation are considered potential risk factors for BCC in sun-protected areas such as the axilla. BCC rarely metastasizes and has a favorable prognosis when diagnosed and treated early. Adequate wide local excision plays a crucial role in reducing recurrence, with a recurrence rate of approximately 1% when completely excised.

Keywords: Axilla, basal cell carcinoma, wide excision

Eksisi Luas Karsinoma Sel Basal Pada Aksila

Abstrak

Karsinoma sel basal (basal cell carcinoma/BCC) merupakan neoplasma ganas yang berasal dari sel basal epidermis dan merupakan jenis kanker kulit tersering, namun sangat jarang ditemukan pada area aksila karena minimnya paparan sinar ultraviolet. Salah satu terapi utama BCC adalah eksisi bedah luas untuk mencapai margin bebas tumor dan mencegah kekambuhan. Dilaporkan seorang pria berusia 46 tahun dengan keluhan tumor pada aksila kiri yang membesar perlahan selama satu tahun dan mengalami ulserasi dalam tiga bulan terakhir. Lesi awal berupa benjolan kecil disertai rasa gatal, kemudian membesar dan mengalami ruptur akibat garukan. Pemeriksaan fisik menunjukkan tumor berukuran 5 × 2 × 2 cm dengan dasar nekrotik, tepi rata, dinding meninggi, dan konsistensi keras. Diagnosis klinis BCC ditegakkan dan dikonfirmasi melalui pemeriksaan histopatologi yang menunjukkan tipe nodular. Pasien menjalani eksisi bedah luas dengan margin adekuat. Evaluasi satu bulan pascaoperasi menunjukkan luka operasi sembuh baik tanpa tanda kekambuhan. Faktor trauma berulang dan peradangan kronis diduga berperan sebagai faktor risiko terjadinya BCC pada lokasi yang jarang terpapar sinar matahari seperti aksila. BCC jarang bermetastasis dan memiliki prognosis yang baik apabila dilakukan diagnosis serta penatalaksanaan dini. Eksisi bedah luas yang adekuat penting untuk menurunkan angka kekambuhan, dengan angka kekambuhan sekitar 1% bila tumor dieksisi secara tuntas.

Kata kunci: Aksila, eksisi luas, karsinoma sel basal

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Introduction

Basal cell carcinoma (BCC) is the most common form of skin cancer. However, its incidence varies significantly depending on anatomical location. The axilla is one of the most sun-protected areas of the body and is considered a rare site for BCC development.[1]In 2017, a study in Japan reported only six cases of axillary BCC out of a total 333 BCC cases. The true incidence may be underestimated, as no systematic studies on axillary BCC have been conducted to date.[2] In the United States, the estimated annual incidence in 2012 was reported to range between 2.7 and 4.3 million cases. The lifetime probability of developing BCC exceeds 20% in the general population and rises to more than 30% among individuals of white ethnicity. Moreover, age-adjusted incidence rates of BCC in the United States have more than doubled over the past two decades. A similar upward trend in the annual incidence of BCC has also been documented

globally.[3] A retrospective study conducted at Dr. Cipto Mangunkusumo National General Hospital in Jakarta, Indonesia, from 2014 to 2017, found that BCC accounted for approximately 66,9% of 263 diagnosed skin cancer cases.[4] Patients with an initial basal cell carcinoma have a markedly increased risk of developing subsequent lesions compared with the general population. Several studies reported that approximately one-third of patients will develop additional BCCs, with higher risk observed in older age, male sex, truncal involvement, and superficial histological subtype.[5] Additionally, a predisposition to basal cell carcinoma, particularly truncal involvement and multiple lesions, has been associated with genetic polymorphisms affecting detoxification enzymes such as glutathione S-transferase and cytochrome P-450.[6] Individuals with Fitzpatrick skin type I, characterized by fair skin that burns easily and light hair and eye color, have been reported to have an increased risk of developing basal cell carcinoma compared with darker phototypes.[7] The occurrence of basal cell carcinoma has been reported to be more common among individuals with a history of childhood freckling or recurrent severe sunburns during childhood. Recreational sun exposure during childhood and adolescence has been identified as a critical determinant of lifetime basal cell carcinoma risk, whereas cumulative or occupational sun exposure in adulthood shows a weaker or inconsistent association with BCC development.[8] Ultraviolet radiation is considered the most significant risk factor for BCC. However, given the location of the lesion in this case namely the axilla, which is rarely exposed to sunlight UV radiation is unlike to be a major contributing factor. Other risk factors include arsenic exposure, coal tar derivatives, ionizing radiation, scars or trauma, chronic inflammation, burn sites, ulcers, and immunodeficiency. Genetic syndromes such as xeroderma pigmentosum and basal cell nevus syndrome have also been associated with BCC. In this case, chronic inflammation and a history of trauma in the axilla were identified as risk factors. Since the axilla is an area that patients often overlook, diagnosis and treatment may be delayed. Therefore, wide surgical excision is required to reduce the risk of recurrence.[9] Basal cell carcinoma rarely occurs in sun-protected areas; however, it may still develop and therefore a complete skin examination should be part of routine physical assessment. Wide surgical excision remains the preferred treatment due to its low recurrence rate and the ability to confirm complete tumor removal histopathologically. BCC has a very low metastatic potential, with reported incidence ranging from 0.0028% to 0.55%. A recent review demonstrated that patients with distant metastases had a median survival of approximately 24 months, whereas those with regional metastases showed longer survival.[10]

The primary clinical concerns in BCC are local tissue destruction and the potential for recurrence, while disease-related mortality remains low. The likelihood of recurrence is influenced by several factors, including tumor location particularly lesions in the facial H-zone histopathological subtype, presence of perineural invasion, immunosuppression, and a history of previous recurrences. Severe or advanced forms of BCC are uncommon and heterogeneous in nature. Retrospective studies from the United States have reported that severe BCC constitutes approximately 0.8% of all BCC cases, while another study estimated an incidence of 10 per 100,000 individuals. Currently, no standardized TNM classification exists for BCC, and a grading system for difficult-to-treat cases is under development. These advanced tumors are often not adequately assessable using standard response criteria and may cause extensive local tissue destruction without significantly impacting overall survival.[11]

Histopathological classification of basal cell carcinoma is clinically relevant because it correlates with tumor behavior. Aggressive subtypes include infiltrative, micronodular, morpheaform, basosquamous and mixed variants, whereas nodular and superficial types generally demonstrate a more indolent clinical course. Several uncommon variants such as keratotic, clear-cell and granular-cell types have also been described. This case highlights the essential role of early diagnosis and prompt management in reducing morbidity related to basal cell carcinoma. Although BCC has a low metastatic potential, its increasing incidence emphasizes the importance of skin cancer awareness and early detection programs to facilitate appropriate treatment and prevent

lesion progression. In regions where skin cancer is relatively uncommon, patients may be less likely to seek medical evaluation for enlarging skin lesions; therefore, comprehensive skin examinations should be routinely performed by dermatologists.[12]

Case Report

A 46-year-old male presented with a progressively enlarging, painful, and ulcerated mass in the left axilla that had been developing over the past year. The lesion was prone to bleeding, purulent discharge, and discomfort. Initially, the mass was small and occasionally itchy, leading the patient to scratch it frequently. This resulted in rupture and development of a wider ulcerated wound. The patient had no prior history of skin cancer or other significant dermatological or systemic medical conditions. There was no evidence of immunodeficiency, prior exposure to ionizing radiation or arsenic, and no family history of skin cancer or related skin diseases. The patient had not sought early medical attention due to low socioeconomic status, poor hygienic practices, and limited awareness regarding skin tumors. Dermatological examination revealed a 5 x 2 x 2 cm tumor in the left axilla with a necrotic base, erythematous exudate, well-defined margins, elevated borders, and indurated edges resembling a wire-like consistency. A clinical diagnosis of basal cell carcinoma (BCC) was made. Histopathological examination showed a section of tissue lined by complex squamous epithelium with nests of proliferating tumor cells composed of round to oval hyperchromatic nuclei, scant cytoplasm, and mild pleomorphism. Palisading of peripheral tumor cells with peritumoral clefting and infiltration into submucosal fat were noted. The tumor was 3 mm from the lateral margins and 2 mm from the deep (muscle and fat) margin. The final diagnosis confirmed nodular-type basal cell carcinoma. The patient underwent wide local excision of the tumor in the left axilla. Sutures were removed at one week postoperatively. Follow-up evaluations at the second and fourth weeks post-surgery showed normal scar formation with hypopigmented macules. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Figure 1. Clinical photograph on day one showing a 5 x 2 x 2 cm tumor in the left axilla with a necrotic base and reddish exudate, well-defined margins, elevated borders, and a firm, wire-like induration along the tumor edges.

Figure 2. Tumor excision performed using the wide local excision technique. The elliptical incision was designed based on the Relaxed Skin Tension Lines (RSTL), resulting in a surgical

wound length of 10 cm and closed with 10 sutures.

Figure 3. Clinical photograph at 4 weeks post-operation showing normal scar formation and hypopigmented macules.

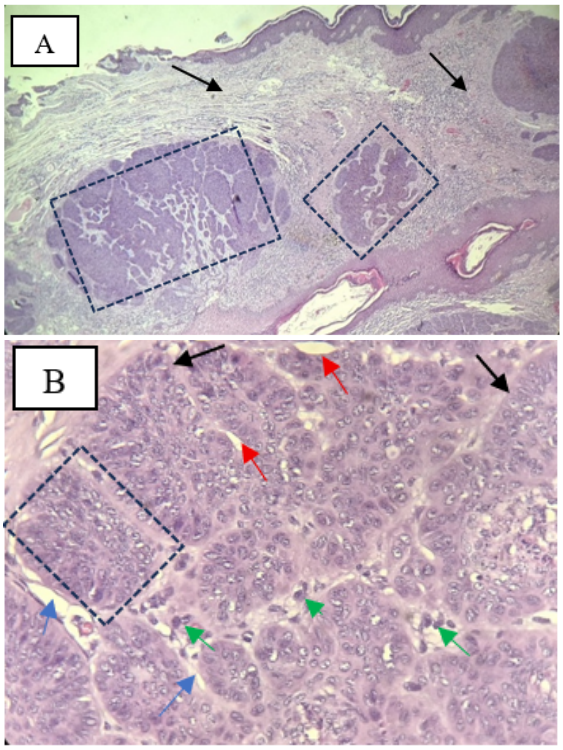

Figure 4. Histopathological examination with haematoxylin dan eosin (H&E) staining. A. Tissue margin showing normal cells (▲) (H&E, x40), nests of basaloid cells forming lobules extending from the basal membrane to the subcutaneous tissue (⬚) (H&E, x40). B. Solid lobular nests of basaloid cells with peripheral palisading (▲) (H&E, x100), blood vessels (▲) (H&E, x100), basaloid cells with round to oval hyperchromatic nuclei ( ) (H&E, x100), peritumoral cleft ( ) (H&E, x100).

Discussion

Basal cell carcinoma (BCC) is the most common type of skin cancer, originating from basaloid epithelial cells located in the follicular bulge, anagen hair bulb, follicular matrix cells, and specific basaloid cells of the interfollicular epidermis. Basal cell carcinoma (BCC) predominantly involves sun-exposed areas of the body; however, it may also develop in atypical and covered regions, which can lead to diagnostic uncertainty. These atypical locations include the axilla, palm, nipple–areola complex, umbilicus, buttocks, perineal, and genital areas. The term “unusual site” itself lacks a standardized or universally accepted definition, but generally refers to rare and infrequently affected anatomical locations based on the incidence of BCC. Therefore, regardless of how these unusual sites are defined, their documentation is strongly recommended to enrich the existing literature and improve the understanding of BCC pathogenesis, diagnosis, and management. To date, the exact factors influencing the anatomical distribution of BCC remain unclear.[1] The occurrence of BCC in the axilla is extremely rare, as demonstrated in this case. The nodulocystic variant is the most common type of BCC.[13] Nodular basal cell carcinoma represents the most common clinical variant and typically presents as a pearly papule or nodule with surface telangiectasia and a raised rolled border, sometimes accompanied by central ulceration or crusting.[14] Histopathological features of nodular BCC typically reveal basophilic malignant cell nodules with stromal retraction and peripheral palisading. The histopathological findings in this case are consistent with the nodular subtype of BCC. Ultraviolet (UV) radiation is considered the most significant risk factor for BCC. Other contributing risk factors include arsenic exposure, coal tar derivatives, radiation, scars, burn sites, chronic inflammation, ulcers, and immunodeficiency. Genetic syndromes such as xeroderma pigmentosum and basal cell nevus syndrome are also associated with BCC development.[15,16] In this case, risk factors included a history of trauma or scarring and chronic axillary

inflammation caused by repeated scratching due to pruritus, which eventually led to lesion rupture and the development of BCC.[9] Generally, BCC rarely metastasizes and is best treated with wide local excision if detected early. Wolf et al. suggested that larger tumors and more aggressive histological subtypes should be treated with wide surgical excision, ensuring 2 - 4 mm clear margins. Recurrence is typically associated with incomplete excision: when BCC is completely excised, the recurrence rate is only 1%, compared to 33%–39% with incomplete removal. In this case, the tumor was excised using wide local excision. The surgical margins were 3 mm laterally and 2 mm at the base (muscle and fat). Histopathological examination confirmed negative surgical margins. The elliptical incision design was based on the Relaxed Skin Tension Lines (RSTL), which are generally oriented perpendicular to the direction of muscle pull. This approach provides good cosmetic outcomes by minimizing tissue removal, skin movement, and incision length. The patient had a 10 cm surgical wound closed with 10 sutures. Four weeks postoperatively, the results were cosmetically favorable, with no sign of recurrence. Given that the axilla is a location often overlooked by patients, delayed diagnosis and treatment may occur. Therefore, wide local excision remains a preferred treatment option to reduce recurrence risk.[16,17] Surgical excision remains the most commonly employed treatment approach for basal cell carcinoma (BCC). This method is straightforward, highly effective, and capable of achieving complete tumor removal. Metastatic spread of BCC is rare, and recurrence rates are low following adequate excision. Consequently, the overall prognosis for patients with BCC is generally favorable.[1,18] The American Cancer Society recommends a skin examination by a doctor every three years for those aged 20-39 and annually for those over 40. Additionally, you can perform a Skin Self-Examination (SAKURI), a routine monthly self-examination for early detection of skin cancer under adequate lighting.[19] Prevention of basal cell carcinoma primarily involves behavioral modifications aimed at lowering skin cancer risk, particularly through strategies that minimize ultraviolet radiation exposure. These measures include avoiding prolonged direct sunlight during peak hours (10:00–16:00) and refraining from the use of tanning beds, as well as adopting appropriate photoprotective practices such as the regular application of sunscreen, wearing wide-brimmed hats, and using long-sleeved clothing. In addition, efforts to enhance early detection play an essential role in BCC prevention.[20]

Basal cell carcinoma can occur in sun-protected areas such as the axilla and is often diagnosed late because of its uncommon location. Chronic irritation, repeated trauma, and long-standing inflammation may contribute to the development of basal cell carcinoma in non–sun-exposed sites. Persistent axillary lesions, especially those that ulcerate or fail to respond to standard treatment, should raise suspicion for malignancy and require histopathological evaluation. Wide local excision with adequate margins provides effective tumor control and a low risk of recurrence in axillary basal cell carcinoma. Comprehensive skin examination should include intertriginous areas to reduce the risk of delayed diagnosis.

Summary

This case report describes a rare presentation of nodular basal cell carcinoma (BCC) occurring in the axilla, a sun-protected anatomical site where BCC is infrequently observed. A 46-year-old male presented with a progressively enlarging ulcerated tumor in the left axilla that had developed over one year. Histopathological examination confirmed nodular-type BCC. The patient underwent wide local excision with adequate surgical margins, resulting in good postoperative healing and no evidence of recurrence during follow-up. Chronic irritation, repeated trauma, and inflammation were considered contributing factors to tumor development in this unusual location. BCC typically arises in sun-exposed areas, making axillary involvement uncommon and potentially leading to delayed diagnosis. Early recognition and prompt surgical management are essential to prevent local tissue destruction and recurrence. Wide local excision remains the gold standard treatment for BCC due to its effectiveness in achieving complete tumor removal and low recurrence rate when adequate margins are obtained. This case highlights the importance of considering

BCC in atypical, sun-protected areas and emphasizes the role of comprehensive skin examination, early diagnosis, and appropriate surgical intervention in ensuring favorable clinical outcomes and preventing recurrence.

Follow-up evaluations at the second and fourth weeks post-surgery showed normal scar formation with hypopigmented macules. Written informed consent was obtained from the patient for publication of this case report and accompanying images. Patient anonymity was maintained throughout the publication process.

Conclusion

This report presented a rare case of basal cell carcinoma occurring in the axilla, successfully treated with wide local excision. The axilla is one of the least sun-exposed areas of the body, making basal cell carcinoma in this location uncommon and potentially overlooked. Basal cell carcinoma rarely metastasizes and is best managed with wide local excision when detected early. Complete excision is associated with a low recurrence rate of approximately 1%, making wide local excision an effective therapeutic option for preventing recurrence while preserving both functional and cosmetic outcomes.

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