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CASE REPORT

Metastatic Basal Cell Carcinoma in the Axilla: Reconstruction with a Lateral Pectoral Island Flap

A. Martorell-Calatayud,[a,*] V. Sanz-Motilva,[b] D. Candelas,[c] I. Sanchez-Carpintero,[c] Y. Delgado,[c] R. Ruiz-Rodríguez[c]

[a]*Departamento de Dermatología, Instituto Valenciano de Oncología, Valencia, Spain*
[b]*Departamento de Dermatología, Hospital 12 de Octubre, Madrid, Spain*
[c]*Departamento de Dermatología, Hospital Ruber, Madrid, Spain*

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KEYWORDS
Basal cell carcinoma;
Metastasis;
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Abstract Although basal cell carcinoma (BCC) is one of the most common forms of cancer worldwide, it rarely occurs in the axilla. Only 31 cases have been reported in the literature. The incidence of metastatic BCC, particularly in areas not exposed to the sun, is very low. We present a new case of axillary BCC with lymph node metastases and the results of an extensive review of cases previously reported in the literature.

BCC in the axilla is rare and metastasis is exceptional. Factors other than UV radiation probably contribute to its development. The lateral pectoral island flap was used for surgical closure. This method is useful for the reconstruction of axillary defects, obtaining excellent cosmetic and functional results. This flap should therefore be considered for the repair of large surgical defects in the axilla.
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PALABRAS CLAVE
Carcinoma basocelular;
Metástasis;
Axila;
Colgajo en isla;
Colgajo pectoral

Carcinoma basocelular metastásico en la axila: reconstrucción mediante un colgajo en isla pectoral lateral

Resumen A pesar de que el carcinoma basocelular (CBC) es una de las formas más comunes de cáncer, esta neoplasia cutánea raramente ocurre en la axila, con sólo 31 casos recogidos en la literatura. La incidencia del CBC metastásico es excepcional, siendo aún más infrecuente en áreas no fotoexpuestas.

*Corresponding author.
E-mail address: antmarto@hotmail.com (A. Martorell-Calatayud).

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Se presenta un nuevo caso de CBC axilar con metástasis nodal y se realiza una revisión extensa de la literatura de aquellos casos publicados previamente. El CBC localizado en la axila es un raro evento, pero el desarrollo de metástasis es excepcional. Otros factores diferentes a la radiación ultravioleta probablemente contribuyan a su desarrollo.

El colgajo en la isla pectoral lateral fue la técnica aplicada en el cierre quirúrgico. Este resulta útil en la reconstrucción de defectos quirúrgicos axilares y obtiene excelentes resultados tanto estéticos como funcionales. Por estas razones, la realización de este colgajo debería considerarse ante importantes defectos quirúrgicos en la región axilar.
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Introduction

Basal cell carcinoma (BCC) is the most common malignant skin tumor, accounting for 80% of nonmelanoma skin cancer, and its incidence has increased in recent years. The large majority of BCCs arise on sun-exposed skin, and the incidence in photoprotected areas is considerably lower. Distant metastases are very rare, particularly in patients in whom the primary tumor is in the axilla.

We report a new case of BCC in the axilla that developed lymph node metastases. The tumor was treated by wide excision with axillary lymph node dissection and reconstruction using a lateral pectoral flap.

Case Description

The patient, a 67-year-old white man with Fitzpatrick skin type III, was referred for treatment of a slowly but progressively enlarging lesion in the right axilla.

The patient stated that the lesion had been present for 2 years and had been completely asymptomatic. There was no past history of skin cancer and no other medical or surgical history of interest.

Physical examination revealed the presence of a clearly delimited brown plaque with a fine, pearly border. The lesion was situated in the right axilla and measured 1 cm by 1.5 cm (Figure 1). In the same area as the primary tumor, there was a firm, immobile mass of 0.5 cm diameter.

Biopsy revealed changes compatible with infiltrative BCC (Figure 2A). Magnetic resonance imaging of the area showed a 0.4-cm nodule close to the primary tumor with no other findings of interest (Figure 3).

Complete excision was performed using Mohs micrographic surgery with examination of the fresh tissue. Frozen-section study of the tissue of the first stage of Mohs surgery demonstrated the presence of a primary nodular BCC in the papillary and midreticular dermis (Figure 2B). Invasion of a lymph node by nests of malignant basaloid cells was detected as an incidental finding; the node was separated from the primary tumor by a band of normal stroma. The nests of basaloid cells had the same features as the primary tumor (Figure 4, A and B).

A diagnosis of metastatic BCC (MBCC) was made, and computed tomography of the head, thorax, abdomen, and pelvis revealed no associated visceral involvement.

Treatment was completed by wide excision of the margins of the primary defect and dissection of the superficial lymph node chain of the affected axilla.

Figure 1 Clinical image showing a poorly defined, brownish, indurated plaque with a pearly border.

Light-microscope study was performed on the tissue fixed in 4% formalin and embedded in paraffin. Three of 5 nodes were found to be infiltrated by metastases with the same histological pattern as the primary tumor.

Reconstruction of the axillary defect was performed using an island flap irrigated by the lateral pectoral vessels and the lateral cutaneous branches of the intercostal vessels (Figure 5, A and B).

The patient remains disease free after 2 years of follow-up, and the functional results have been satisfactory (Figure 6, A and B).

Discussion

BCC is the most common skin tumor, and there has been a progressive increase in its incidence in recent years. Ultraviolet radiation is considered to be the principal

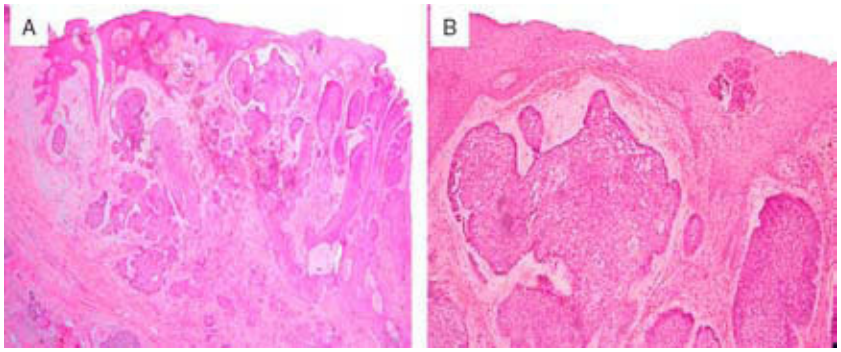

Figure 2 A and B, Nodular tumor formed of islets of basaloid cells with peripheral palisading and numerous mitoses and apoptotic figures. Hematoxylin-eosin: A, original magnification ×40; B, original magnification ×100.

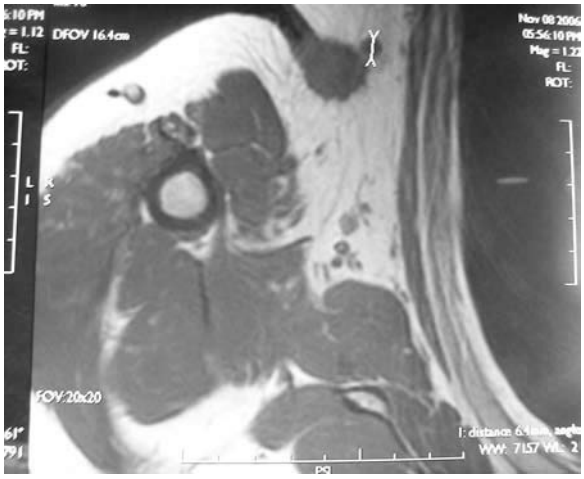

Figure 3 Magnetic resonance image showing a nodule of 0.4 cm close to the primary tumor.

independent risk factor as BCC occurs most frequently in sun-exposed areas, mainly on the face.[1,2]

Only 31 cases have been reported in the literature since 1917, when Hazen described the first case of BCC in the axilla.[3-6] As the pathogenesis of BCC is typically linked to exposure to UV radiation, there is no clear reason why tumors should appear in the axilla. One possible explanation is the presence of mutations in tumor suppressor and regulatory genes, such as the *p53* suppressor gene.[7] Others include exposure to ionizing radiation or chemical substances such as arsenic, alterations of immune status, and certain hereditary diseases such as Gorlin syndrome and xeroderma pigmentosum. Recently, Heckmann and Leusseur suggested that an altered arrangement of cells in the connective tissue in areas of the skin folds could be a cofactor in the appearance of BCC in regions such as the axilla.[7,8]

BCC in the axilla, as at other sites, is characterized by a slow and progressive growth. However, there are a small number of BCCs that present a more aggressive clinical course.[6,8-10] More aggressive tumor behavior is seen with certain histological subtypes, particularly the basosquamous, metatypical, and morpheaform subtypes, linear BCC, and scrotal BCC.[11]

Metastases from BCC are extremely rare, with approximately 220 cases reported in the literature[12-14] and an incidence of between 0.0028% and 0.5%.[1] In 1951, Lattes and Kessler established 3 criteria for the diagnosis of MBCC: *a)* the primary tumor must be cutaneous and not arise from mucosal or glandular tissue; *b)* the primary tumor and the metastatic lesion must have the same histological features; and *c)* metastases must be clearly separated from the primary tumor.[12]

The large majority of MBCCs occur in white men, with a male-to-female ratio of 2 to 1.[13] The mean age at presentation is 45 years, with a mean interval of 9 years between detection of the primary tumor and the appearance of metastases.[15] The majority of primary tumors arise on the head and neck, and the most common sites for MBCC

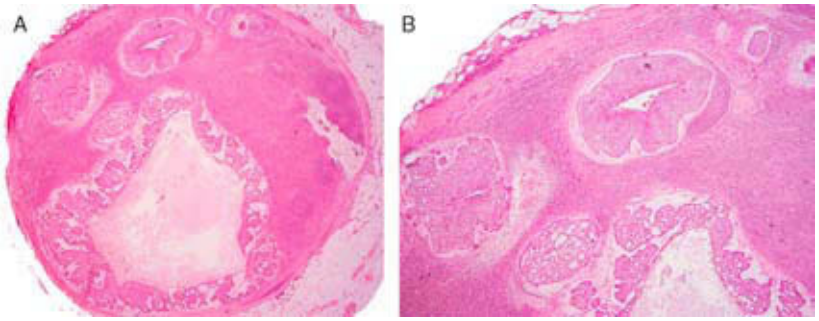

Figure 4 A and B, Lymph node infiltrated by atypical basaloid cells arranged in an identical pattern to those of the primary tumor. Hematoxylin-eosin: A, original magnification ×40; B, original magnification ×100.

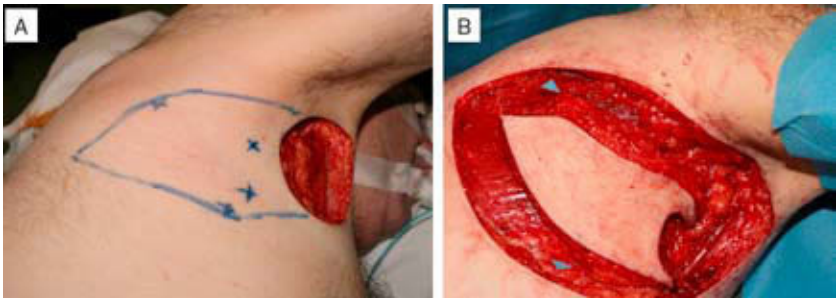

Figure 5 A, Lateral pectoral island flap supplied by the lateral pectoral vessels and lateral cutaneous branches of the intercostal arteries. B, The cutaneous vascular supply of the island flap. The lateral thoracic vessels (upper blue arrow) penetrate the flap at a site proximal to the lateral cutaneous branches of the adjacent intercostal vessels (lower blue arrow).

are the auricle of the ear and, less frequently, the scalp and the perineum.[14] Metastatic tumors in the axillary skin fold are exceptional, with only 3 cases reported to date.

There are a number of factors associated with an increased risk of MBCC: a tumor diameter greater than 2 cm, a tumor thickness greater than 1 cm, the presence of local ulceration, recurrent tumor, and a history of radiation to the area involved.[13,15] Various histological subtypes have been reported, though none predominates.[13,12]

BCC usually metastasizes to the lymph nodes (70% of cases), and less frequently to the lungs, bone, or skin.[16] Metastases from BCC are rare due to the dependence of the tumor on the surrounding stroma, as demonstrated by the inability to transplant BCC without associated stroma to other animals or to humans.

When metastatic dissemination is diagnosed, 5-year survival is less than 10%.[13] Mean survival among patients with metastatic disease limited to the lymph nodes is 3.6 years.[14,17] When distant metastases are present, mean survival falls to 8 months.[13]

The small number of cases of MBCC has made it difficult to conduct prospective studies to evaluate the efficacy of the different therapeutic modalities available: chemotherapy, radiation therapy, and surgery. Surgical treatment is indicated for localized metastases.[4] In the case of distant metastases, surgery should be followed by adjuvant chemotherapy or radiation therapy.

The most widely used chemotherapeutic agents are bleomycin, cyclophosphamide, 5-fluorouracil, vinblastine, and cisplatin, this last cytostatic agent being the most effective.[15,18-21] While the success of chemotherapy remains a subject of discussion, Goldberg et al[19] have reported cure rates of 94% to 98% with radiation therapy. In recent studies it has been suggested that electrochemotherapy, mainly using bleomycin sulfate, and cetuximab could be therapeutic options in MBCC in view of their effectiveness and good tolerability.[20,21] Blockade of the sonic-hedgehog (SH) pathway is currently under research as a target in the treatment of many cancers, including BCC. Clinical trials, for example, are being carried out on the use of SH-pathway antagonists (GDC-0449 and IPI-926) in BCC, and the results to date have been encouraging.[22,23]

Our patient, who presented invasion of an adjacent lymph node with no distant metastases, was treated by wide excision of the primary tumor and superficial axillary lymphadenectomy. There are few conventional flaps designed for the reconstruction of large defects in the axilla. It was finally decided to perform an island flap, and tissue irrigated by the lateral thoracic and lateral pectoral vessels was transferred to the axilla (Figure 5, A and B). The short-term and long-term cosmetic and functional results were excellent (Figure 6, A and B), supporting the use of this reconstruction technique in large defects of this region.

In summary, we present a new case of MBCC with the primary tumor in the axilla, a very rare site for this neoplasm. The excellent results obtained with the postsurgical reconstruction using a lateral pectoral island

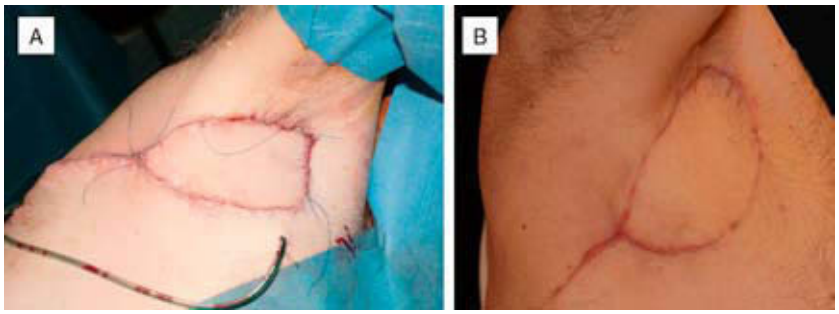

Figure 6 A, Immediate postoperative result. B, Appearance 2 years after the operation. The cosmetic and functional results were excellent.

flap make this technique worth considering for the repair of large defects in this region.

Conflict of Interest

The authors declare that they have no conflict of interest.

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