CASE REPORT

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

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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 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.

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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 basaloïd cells was detected as an incidental finding; the node was separated from the primary tumor by a band of normal stroma. The nests of basaloïd 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.

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
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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 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.

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.
are the auricle of the ear and, less frequently, the scalp
and the perineum. 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. Various histological subtypes have
been reported, though none predominates.
BCC usually metastasizes to the lymph nodes (70% of
cases), and less frequently to the lungs, bone, or skin.
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%. Mean survival among patients
with metastatic disease limited to the lymph nodes is 3.6
years. When distant metastases are present, mean
survival falls to 8 months.
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. 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. While the success of chemotherapy remains
a subject of discussion, Goldberg et al 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. 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.
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 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 (blue arrow) penetrate the flap at a site proximal to the lateral cutaneous branches of the adjacent intercostal vessels (lower blue arrow).

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.

**References**