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## Case Report

# Male breast: An unusual case of metastasis of squamous cell carcinoma of the skin ☆

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## ABSTRACT

Breast metastasis from extra-mammary neoplasm is a rare condition, accounting for approximately 1.2%-2% of all breast malignancies. Melanoma, lung cancer, gynecological, and hematological cancers can metastasize to the breast. Male breast metastasis is extremely rare and, no evidence of metastasis from cutaneous squamous cell carcinoma in a male breast have been reported to our knowledge. We describe a case of an 81-year-old man who came to our attention for a palpable solid mass in the upper-outer aspect of the left breast with the final histological diagnosis of breast metastasis from non-keratoblastic cutaneous squamous cell carcinoma.

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## Introduction

Breast metastasis from extra-mammary neoplasm is a rare condition, accounting for approximately 0.3%-2.7% of all breast malignancies [1]. In women, the most common malignancy that metastasizes to the breast are melanomas, sar-

comas, lung cancers, ovarian tumors, renal carcinomas, and thyroid tumors [2,3]. In men, metastases to the breast are extremely rare and more frequently caused by prostate cancer [4]. One case of male breast metastasis from ureteral cancer has been reported [2] but no evidences of metastasis originating from cutaneous squamous cell carcinoma (cSCC) in a male breast have been described to our knowledge. We describe a

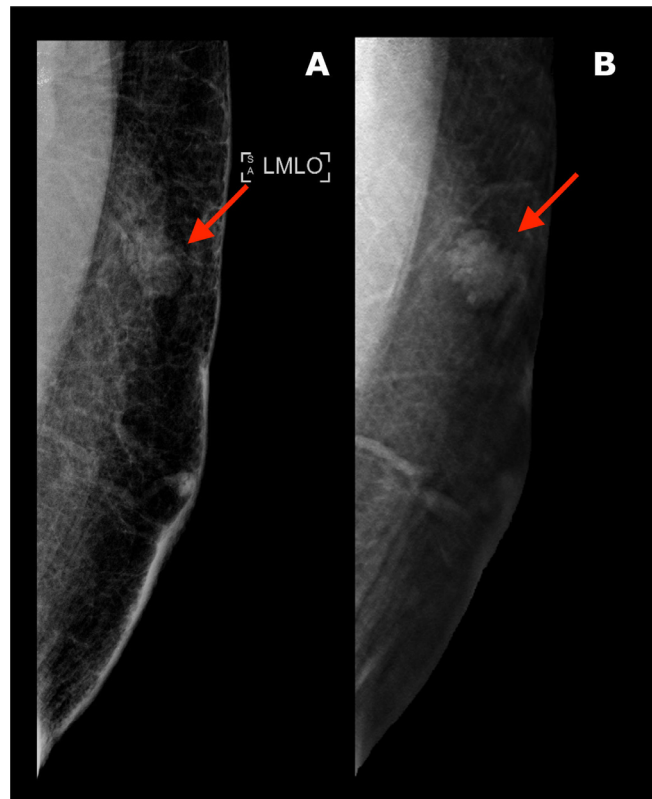
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**Fig. 1 – (A) Digital mammography and (B) digital breast tomosynthesis of the left breast in medio-lateral oblique (MLO) views. The breast is predominantly fatty. There is in the upper-outer quadrant a 3.5 cm oval mass, with microlobulated margins. No microcalcifications or associated findings are found. This appears to represent a mammographic correlate to the clinical lump. Final BI-RADS score 4C: High suspicion for malignancy.**

case of an 81-year-old man presenting with a palpable mass of the left breast with final histological diagnosis of breast metastasis of non-keratoblastic cSCC.

### Case report

An 81-year-old man presented to the Breast Clinic with a breast lump that in the last 2 months was increasing in size. On clinical examination, a deep firm and painless mass was detected in the upper-outer quadrant of the left breast (clinical size 5 cm). No palpable lymph nodes were present in the left axilla. The patient had a personal history of parotid gland carcinoma 11 years before and multiple cSCC of the face, scalp, and both elbows from the last 10 years. Two view bilateral mammography and digital breast tomosynthesis of the left breast in medio-lateral oblique projection were performed. A 3.5 cm oval mass, with microlobulated margins and no associated microcalcifications was depicted in the upper-outer quadrant of the left breast (Fig. 1). On ultrasound (US), the lesion appears as a 4 cm irregular hypoechoic mass with not-circumscribed margins, mild posterior shadowing, anti-parallel orientation, located at 2 o'clock position.

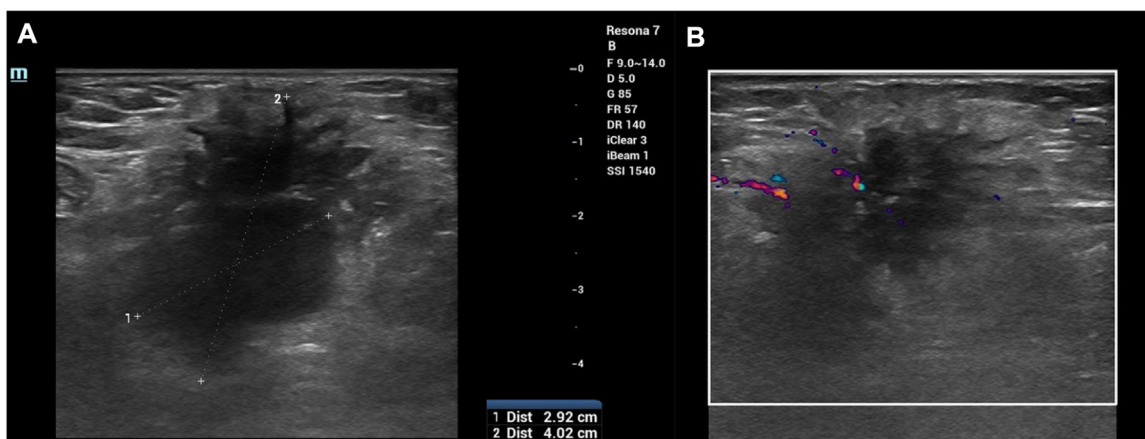
Color Doppler demonstrated internal and peripheral signals. Shear-wave elastography showed an intermediate

stiffness. The lesion was considered highly suspicious for malignancy (BI-RADS 4C) (Fig. 2). A single enlarged lymph node suspicious for metastatic involvement was detected in the left axilla (Fig. 3). A US-guided core needle biopsy was performed of the breast lesion with pathological results of metastasis of non-keratoblastic cSCC (p63+) with a MIB-1  $\geq$  30% (Fig. 4). CT chest abdomen and pelvis was performed for staging purpose. Multiple sub-centimetric left axillary lymph-nodes (levels I, II, and III) (Fig. 5) were detected with no evidence of further distant metastasis.

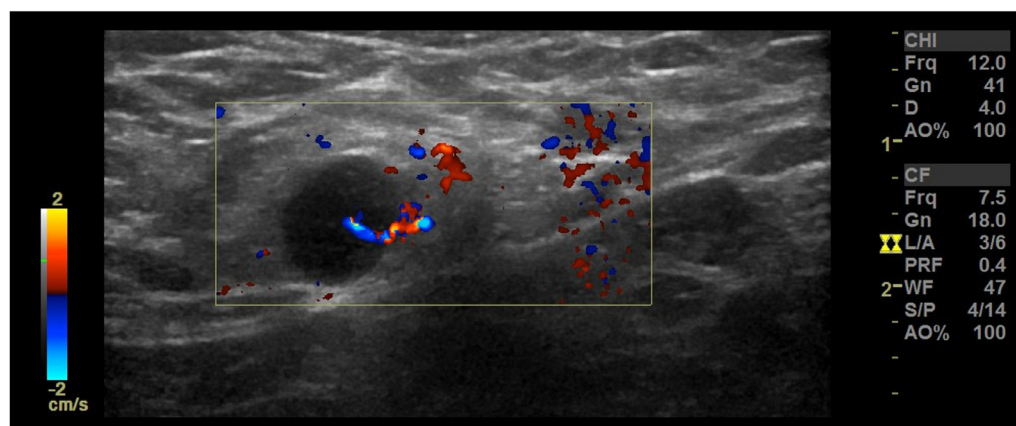
The patient underwent a wide local excision and axillary dissection which confirmed the pathological diagnosis with associated a single pathologic lymph node. No complication occurred after surgery. Due to patient comorbidities (renal and heart failure), the multidisciplinary team opted for annual clinical follow-up only and no sign of local recurrence was identified after 1 year at the first follow-up.

### Discussion

Breast metastasis from extra-mammary primary neoplasms is very rare in women and, extremely rare in men. Male breast malignancy is about 1% of all breast malignancies [5,6]. Different theories to explain the cause of breast metastasis



**Fig. 2 – Diagnostic ultrasound of the left breast: (A) B-mode and (B) color Doppler. (A) There is a 4 cm irregular hypoechoic mass with not-circumscribed margins and associated mild posterior shadowing, anti-parallel orientation. (B) At the color Doppler assessment there is internal and peripheric vascularization. The lesion is highly suspicious for malignancy (BI-RADS 4C) and correlates with the mammographic findings.**



**Fig. 3 – The targeted ultrasound of the left breast is extended to the left axilla. There is a single enlarged lymph-node with sonographic morphologic characteristics that are suspicious for metastatic involvement. These include a round shape, loss of the fatty hilum and abnormal blood flow.**

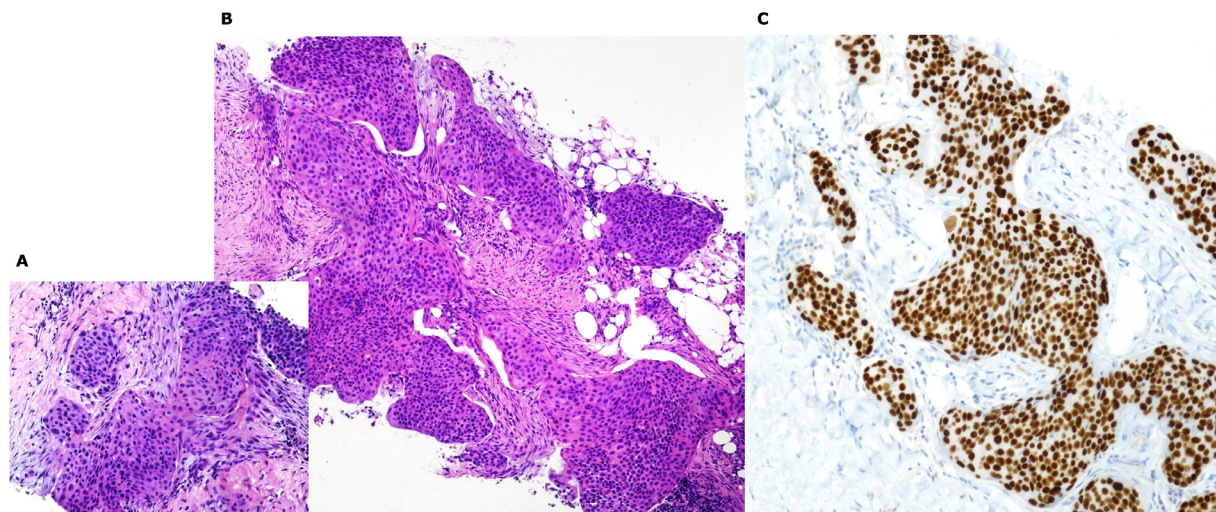
have been investigated. Some authors have suggested that the hormonal status plays an important role in the metastatic spread considering the high incidence of breast metastases in puberty, lactation, and pregnancy [7,8]. Others believe that systemic, lymphatic, or trans-coelomic spread of stem cells is responsible for the metastatic dissemination [1,9,10]. Different theories have suggested that the intrinsic characteristics of the breast tissue or the transfection phenomenon of the cancer genome are responsible for this rare entity [9–11].

There have been no reports in the literature of breast metastasis from cSCC in females as well as in males. This case is the first, to the best of our knowledge, to describe a metastatic cSCC within the breast in a male patient. cSCC is the second most common non-melanoma cancer, representing 20% of all skin cancers [12]. Only a minor subset of cSCC develops aggressive features associated with a higher likelihood of recurrence, metastasis, and death [13]. Reported metastatic rate range is 1.2%–5% with some data suggesting

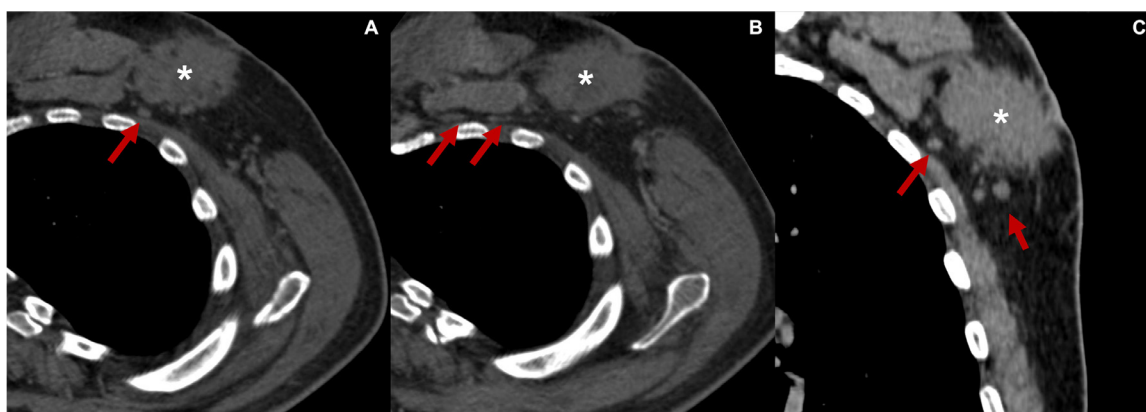
that the metastasis rate for cSCC is underreported in the literature [14,15].

The American Joint Committee on Cancer (AJCC) and the National Comprehensive Cancer Network (NCCN) describe high-risk criteria for metastasis of cSCC: depth of the tumor >2 mm, tumor diameter >2 cm, poor differentiation, perineural invasion, ear or lip mucosa involvement, location within the “mask areas” of face, chin, mandible, ear, genitalia, hands, and feet [16–18]. Other risk factors for the development of aggressive cSCC include older age, UV exposure, immunosuppression, and fair skin [12,19]. cSCC involves regional lymph nodes in up to 80% of cases. Less frequently cSCC can metastasize to skin, lungs, liver, brain, and bones [20].

Although imaging plays an important role in the differential diagnosis between primary and secondary breast cancer, it is often difficult to discern even in cases with a personal history of another primary malignancy, and diagnosis is crucial for the correct management of the patient.



**Fig. 4** – Ultrasound-core needle biopsy specimens revealed a moderately differentiated squamous cell carcinoma infiltrating the fibro-adipose tissue (A, hematoxylin and eosin stain, original magnification 10×) composed by (B) elements arranged in cords and nests, with large hyperchromatic nuclei, cytoplasmic keratin formation and increased mitotic activity (in set, hematoxylin and eosin stain, original magnification 20×). (C) Diffuse nuclear p63 expression confirming the squamous differentiation of the tumor (Mayer’s hemalum counterstain, original magnification ×20).



**Fig. 5** – Body CT scan (Philips iQon 256 Dual CT scan), unenhanced phase in axial (A, B) and coronal view (C) of the left anterior chest wall and axilla. The images show the mass in the left breast (white star) and multiple sub-centimetric lymph-nodes (red arrows) at the I, II, and III levels of the left axilla.

Metastatic lesions tend to be multiple and/or bilateral; they are not associated with skin or nipple retraction, while diffuse skin thickening has been reported [4]. Typical malignant imaging features of primary breast cancer, such as irregular shape and spiculation, are infrequent findings in breast metastasis. In fact, metastases usually appear as round well-circumscribed masses with possible ill-defined margins; associated microcalcifications are present in only up to 10% of cases [21].

In our case, the patient had a solitary lesion in the left breast, with oval shape and micro-lobulated margins and associated single pathologic axillary node. The differential diagnosis between cSCC and a primary SCC of the breast cannot be exclusively made on tissue sampling or on the postopera-

tive pathological sample. Nevertheless, in most of the cases reported in literature, the primary SCC of the breast is associated with *in situ* (ductal/lobular) component [22]; therefore, the lack of these morphological findings together with the personal history of the patient with multiple previous cSCC of the face, scalp, and elbows appeared more supportive of a metastatic cSCC.

Multidisciplinary team effort, carefully gathering all the information on clinical pathological history, imaging features, revision of pathological diagnosis allowed to finally reach the diagnosis of metastasis from cSCC.

Prognosis of patients with breast metastasis from extramammary disease is poor. It has been reported that the median survival time from diagnosis of breast metastasis is about

10 months, which can be significantly improved in patients with surgical resection of breast lesion [23].

## Conclusion

We described an extremely rare case of breast metastases from squamous cellular cancer of the skin. In a male patient presenting with a breast lesion and a known history of extra-mammary cancer, a metastatic localization in the breast should be considered.

## Patient consent

Written informed consent to publish this case and use anonymized radiologic material was obtained from the patient.

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