

Breast squamous cell carcinoma: Case report and review of the literature

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Abstract

Squamous cell carcinoma (SCC) of the breast is a rare and aggressive form of breast cancer, classified as a metaplastic carcinoma. Diagnosis of this carcinoma is challenging due to the absence of distinctive clinical or radiological features. Histopathological conformation is essential, and immunochemistry typically shows negativity for hormone receptors and HER2, with positive markers such as CK5/6 and P40. Treatment strategies are not well defined, but platinum-based chemotherapy has shown promising results in some cases. Radiotherapy can serve both curative and palliative purposes depending on disease stage. We report the case of a 57-year-old patient treated in our department with chemotherapy and radiotherapy.

Keywords: Squamous cell carcinoma; Breast; Radiotherapy; Senegal.

1. Introduction

Breast cancer is the most common cancer among women in Africa. In Senegal, it ranks second in incidence and represents the third leading cause of cancer mortality among women [1]. Histologically, non-specific infiltrative carcinoma accounts for over 85% of cases. However, rare histological types include metaplastic carcinoma, including squamous cell carcinoma (SCC) exist [2].

SCC of the breast is characterized by a predominance of squamous components and represents less than 0.1% of breast cancers. Typically, these carcinomas are negative for estrogen receptors (ER), progesterone receptors (PR), or HER2 (Human Epidermal Receptor 2). The treatment of this rare entity is not yet well codified, although several studies suggest that the addition of platinum-based chemotherapy could provide clinical benefits [3].

Here we report a case of breast SCC and provide a review of the literature to highlight its clinical features and discuss therapeutic options available for this rare form of breast cancer.

2. Observation

A 57-year-old post-menopausal woman with a history of two pregnancies, the first one at the age of twenty, presented with a left breast mass that had evolved over 12 months. Initial symptoms included a palpable nodule in the inferomedial quadrant of the left breast, which progressed to a large, ulcerated mass with associated ipsilateral axillary lymphadenopathy. Following clinical and paraclinical investigations (ultrasound mammography, biopsy, anatomopathological examination), the diagnosis of well-differentiated infiltrating and keratinising squamous cell carcinoma without a metaplastic component was made. Immunohistochemical analysis revealed a triple-negative profile with positivity for P40 and cytokeratins 5 and 6 (CK5/6) markers.

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A Thoraco-abdominal-pelvic CT scan showed a central necrotic tumor in the left breast with extensive skin ulceration, measuring 103 x 47 x 170 mm, and lymph node metastasis to the axillary, mediastinum, lungs, as well as bone metastasis to the left iliac crest. Pre-treatment laboratory tests and cardiac assessments were normal.

Based on these findings, the patient was classified as cT4dN1M1 with WHO performance status of one.

The multidisciplinary consultation meeting (MCM) opted for palliative chemotherapy followed by evaluation of the therapeutic response.

The patient therefore received six courses of chemotherapy with carboplatin AUC5 and paclitaxel (175 mg/m²) every 21 days. During treatment, there was considerable loss of breast tissue, which was adequately managed with local dressings. Chemotherapy was well tolerated, with only grade 1 hematological toxicity reported. Inter-treatment intervals were respected. Post-chemotherapy evaluation showed complete healing of the breast ulceration and disappearance of the left axillary masses. A CT scan showed resolution of the mediastinal and bone lesions, but nodular pulmonary lesions persisted.



Figure 1 Clinical response of the left breast after the first chemotherapy

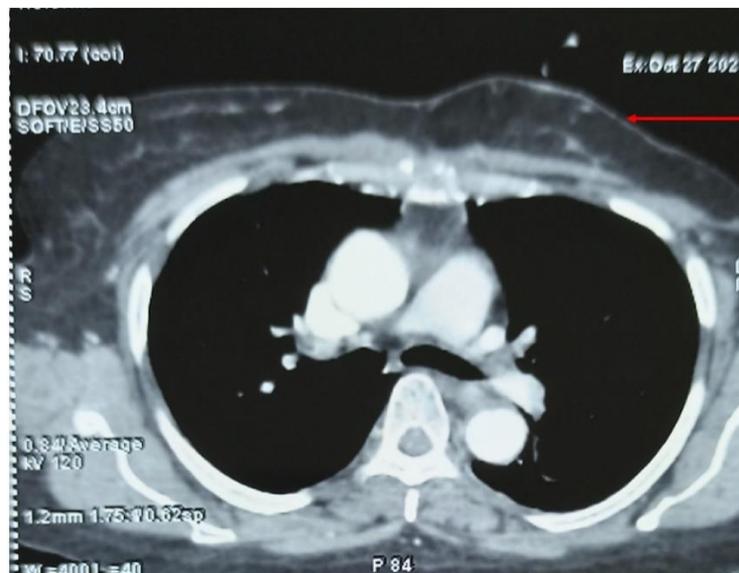


Figure 2 CT image in mediastinal window axial section passing the left mammary gland showing an absence of tumor lesion in the left breast (red arrow).

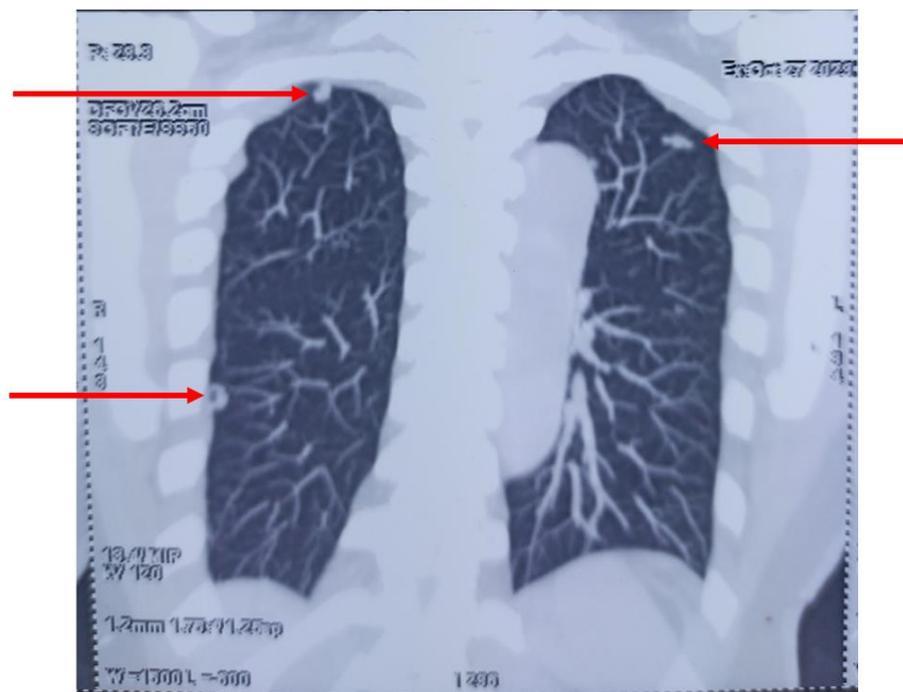


Figure 3 CT image in coronal section of the lung window with demonstration of bilateral nodular lesions of variable size, including two on the right and one on the left (arrows in red) persisting after chemotherapy.

Given the partial response to treatment, the MCM recommended palliative radiotherapy to the remaining left breast lesion and a second line of chemotherapy with oral capecitabine (825mg/m²) taken twice daily for 2 weeks.

Radiotherapy treatment planning was conducted using MONACO software, in accordance with ESTRO guidelines, and a hypofractionated treatment regimen of 26 Gy in five fractions of 5.2 Gy/fraction, was delivered.

During the radiotherapy course, the patient developed progressive left hemiparesis and facial asymmetry. A brain magnetic resonance imaging revealed a cerebral metastasis located in the aqueduct of Sylvius, compressing the third ventricle and the right midbrain. The patient's DS-GPA prognostic score was 0.5, indicating a poor prognosis. High-dose corticosteroids were initiated, with prednisolone and whole-brain radiotherapy was administered (20 Gy in five fractions over one week). Despite these efforts, the patient's condition worsened, and she succumbed to multiple organ failure three weeks after the end of brain radiotherapy.

3. Discussion

SCC of the breast is a rare form of breast cancer for which the literature is still limited despite its high relative prevalence among breast carcinomas. The first documented case was reported by Troeler et al. over a century ago [4]. Recent data from Han et al. identified 382 cases between 2004 and 2016 [5], while Grabowski et al. found 177 cases in the Californian cancer registry between 1988 and 2006, giving an annual frequency of 9.31 cases [6].

The mean age of diagnosis varies: Grabowski et al. reported a mean age of around 64 years [6], while Han et al. estimated it to be around 66 years [5]. Predisposing factors remain poorly understood, although Dejager et al. suggest that trauma may be a potential factor [7].

The average parity of diagnosed patients is 3.3, and all were diagnosed after menopause, with no personal or family history of cancer [8]. SCC of the breast affects post-menopausal women.

Diagnosis of this carcinoma is challenging due to the absence of distinctive clinical or radiological features. Clinically, breast SCC presents similarly to other breast malignancies, with symptoms such as mastodynia, inflammatory signs, nipple discharge and breast masses that are often abscessed or encysted [9]. Axillary adenopathy may also be involved, and the disease may be unilateral or bilateral. SCC is considered an aggressive tumor, often revealed by synchronous or metachronous metastases, to the lungs [9].

On mammography, the lesion usually presents as a non-spiculated mass without specific microcalcifications, which may be a potential indicator of squamous cell carcinoma. Breast ultrasound may show a hypoechoic mass with cystic components [5].

The etiopathogenesis of breast SCC is controversial, with some authors considering them to be a distinct entity, while others believe they result from squamous metaplasia of an adenocarcinoma [10]. Diagnoses are confirmed by biopsy, showing malignant squamous cells with eosinophilic cytoplasm and keratinous debris. Immunohistochemistry typically shows negativity for hormone receptors and HER2, with positive markers such as CK14, CK5/6 and CK17[3].

Treatment strategies for breast SCC remain poorly codified due to the rarity of cases but platinum-based chemotherapy have shown promise in some cases as evidenced by this case report [7].

Locoregional radiotherapy for SCC of the breast follows similar principles to other types of breast carcinoma. Reinhorn et al. concluded that locoregional external radiotherapy in metastatic breast cancer does not improve overall survival but does improve local control [12]. For brain metastases, whole-brain radiotherapy remains the standard, although stereotactic radiotherapy is preferable for resectable brain metastases of less than 3 cm [13].

Prognostic scores such as the DS-GPA or the Recursive Partitioning Analysis (RPA) guide treatment decisions and predict survival outcomes [13, 14]. The DS-GPA score of 0.5 for our patient estimated her survival at 2.6 months, and whole brain irradiation at 20 Gy may be recommended in cases with a poor prognosis [13].

4. Conclusion

Squamous cell carcinoma of the breast is a rare and aggressive malignancy with a poor prognosis. It is classified as a heterogeneous metaplastic carcinoma. Its diagnosis is complicated by non-specific clinical and radiological features, and treatment protocols are not yet standardized. Chemotherapy combining platinum-based and 5-fluorouracil has shown promising therapeutic results. Radiotherapy, although aimed at palliation, is a valid treatment option, helping to improve local control and progression-free survival. Further research, particularly large prospective trials, is necessary to optimize management and improve clinical outcomes of this rare tumor.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have declared no conflict of interest.

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