Squamous Cell Carcinoma of the Breast: A Case Report and Literature Review

R Arrangoiz, A Nigliazzo, K Apelgren, A Saxe

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Abstract

Squamous cell carcinoma of the breast (SCCB) is an extremely rare malignant neoplasm. The diagnosis is established when the malignant cells are entirely of squamous type, and overlying skin malignancies or other primary sites of squamous cell carcinoma have been excluded. These tumors are extremely aggressive and refractory to treatment. We report a case of a 58 year old white female with SCCB managed to date successfully with a extensive partial mastectomy and close observation.

INTRODUCTION

Squamous cell carcinoma of the breast (SCCB) is a rare malignant neoplasm. Criteria for diagnosis include 1) greater than 90% of the malignant cells of squamous cell origin (1,2) 2) tumor independent of the overlying skin and nipple, 3) other sites of primary squamous cell carcinoma excluded (3).

These tumors are thought to represent less than 0.1 % (0.04% to 0.075%) of all breast malignancies (4,5,6,7). Clinical and radiographic characteristics are not specific, and tumors are usually hormone receptor negative. In general, these are very aggressive, treatment-refractory tumors, with a poor prognosis. We report a case of this rare breast malignancy and review the literature for current strategies for management.

CASE REPORT

CLINICAL PRESENTATION

A 58 year-old, previously healthy white female presented with a mass in the right breast of four months duration. Mammography revealed a new tumor (without microcalcifications) that had not been present on a previous screening mammography performed one year ago. A biopsy was performed which demonstrated poorly differentiated squamous cell carcinoma. Estrogen receptors were weakly positive and progesterone receptors were negative. Metastatic disease to the breast was ruled out. The patient had no history of skin cancer, nor did she have any skin, oral pharynx, or anal lesions. The patient refused complete mastectomy, sentinel lymph node biopsy, axillary node dissection, and adjuvant chemotherapy. An extensive partial mastectomy was performed. She returned for follow up 10 months later and had calcifications in the left breast. A stereo core biopsy was recommended but the patient elected to take homeopathic medications. She was seen at a different breast center 13 months postoperatively and had another mammogram. Completion right mastectomy and stereo core biopsy of the left breast were again recommended but the patient refused. The patient was contacted 22 months postoperatively and was doing well but refused further follow up.

Figure 1

Figure 1: Ulcerated lesion of the right breast in a patient with SCC.

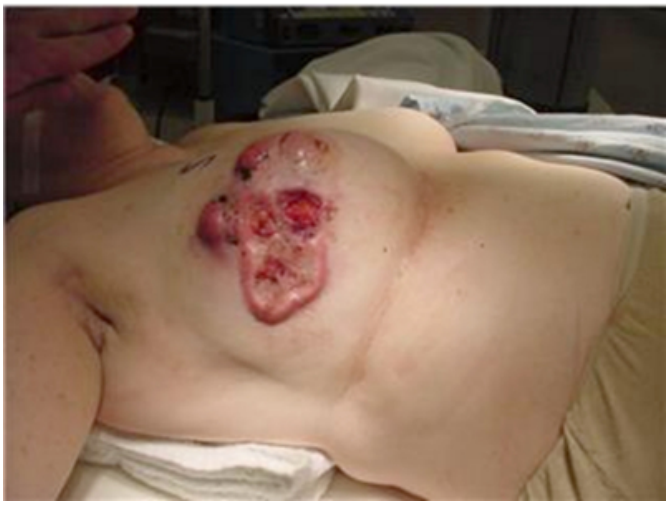


Figure 2

Figure 2: Photograph after an extensive partial mastectomy of the right breast.

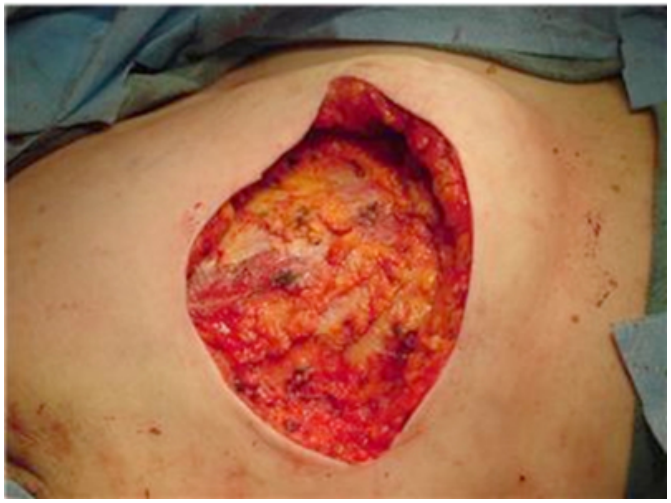
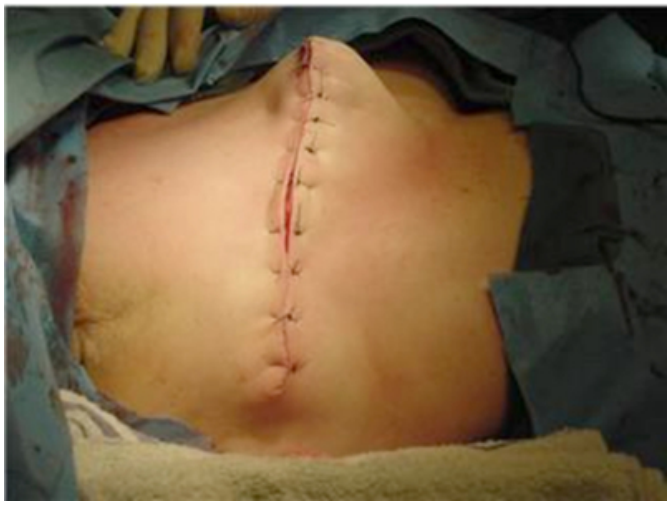


Figure 3

Figure 3: Photograph after the mastectomy.

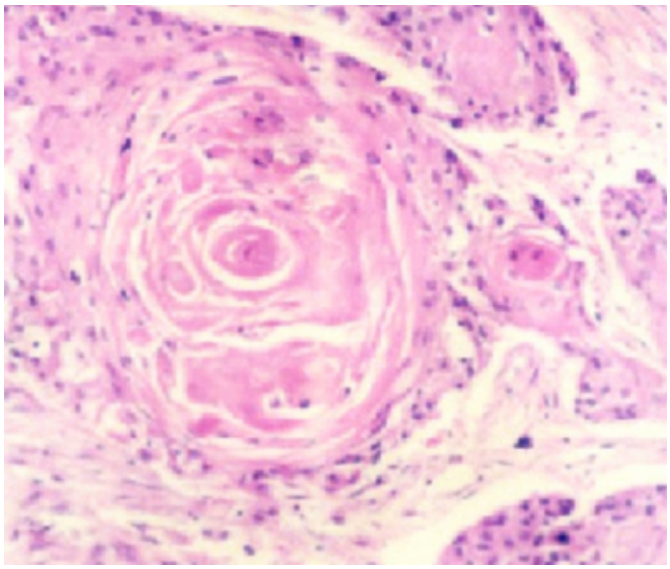


PATHOLOGY

The primary tumor measured 9.0 x 7.5 x 6.0 cm. It was centrally located and involved all four breast quadrants. The cut surface of the mass was tan-pink to pale-yellow, lobulated, and exhibited extensive necrosis. The portion of the mass within the lower outer quadrant contained a cavity predominantly filled with hematoma. The tumor mass extended to and ulcerated the skin surface. Microscopically the tumor was composed entirely of poorly differentiated squamous cells. Throughout the specimen there were entrapped ducts, areas of necrosis, foci of keratinization, and intercellular bridges. No angiolymphatic invasion was identified (Figure 4). Immunohistochemical staining revealed a weakly estrogen receptor-positive and progesterone receptor-negative tumor. The F.I.S.H. test for Her2/neu2 gene amplification was negative.

Figure 4

Figure 4: Haematoxylin and Eosin photomicrograph.



DISCUSSION

The histogenesis of this rare malignancy is unclear (4,5,6,7). Theories include malignant growth of intrinsic epidermal elements (epidermal or dermoid cysts) and metaplasia from breast parenchyma (benign disease, e.g., cystosarcoma phylloides, fibroadenomas, or breast malignancies, e.g., intraductal carcinoma,) or from chronic abscess (8). The World Health Organization categorizes these tumors as metaplastic carcinomas (9,10).

Perhaps not surprisingly, these tumors have varying degrees of homogeneity. A tumor is considered “pure SCC” if it meets the criteria of Macia et al (11), including: 1. no other neoplastic components are present, such as ductal or mesenchymal elements in tumor, 2. the tumor is independent of adjacent cutaneous structures, 3. no other primary epidermoid tumors are present in the patient (oral cavity bronchus, esophagus, renal pelvis, bladder, ovary, and cervix) (11,12).

Squamous cell carcinoma of the breast is rare. Stevenson et al reviewed 1,647 cases of malignant breast tumors indexed between 1945 and 1993 in the Oncology Data Center of Metro Health, identifying only eight cases of SCC or squamous metaplasia (13). “Pure” SCC is even more uncommon. Among 1000 cases of invasive breast carcinoma, Fisher et al found no cases of pure SCCB (14). Makarem summarized findings from a MEDLINE literature

search that included articles published between January 1996 to October 2004 and reported only 89 cases of primary, pure squamous cell carcinoma (15). Similarly, a literature review by Gupta et al in 2005 using strict diagnostic criteria identified only 47 cases of pure SCCB (16). We performed a literature search of publications between 2005 and 2007 and identified eight additional case reports of pure SCCB (11,12,15,16,17,18,19,20).

Excluding "pure" SCCB the other histological types mentioned constitute approximately 3% to 4% of breast malignancies (21). Primary SCCB has been reported to arise from capsules surrounding the silicone breast prostheses in three cases (22,23), and one case has been reported during pregnancy (24). It has also been reported to occur in the context of a breast abscess. (28).

SCCB has been diagnosed in adult women of ages ranging from 29 years to 90 years (20), with a median of 52 years of age (21). In contrast to most breast cancers these tumors are unusually rapidly growing. Patients typically report a breast mass that enlarged over a period of 2 to 3 weeks, or in some cases for as long as 18 months (4,20)

Primary tumors tend to be relatively large (range 2 to 5 cm, median 4 cm). (4,13,16). Approximately two thirds of these tumors are cystic or have a cystic component with central necrosis (12,21).

Axillary lymph node metastasis occurs rarely and when it does is usually associated with metaplastic SCCB arising in an invasive ductal carcinoma.

Estrogen and progesterone receptors are negative in more than 90% of the cases of pure SCCB (18,19,20,25). Our patient was weakly estrogen receptor positive. The only case of HER-2/neu over expression in SCCB was reported by Karamouzis et al (18). There is only one reported case of a BRCA 1 gene mutation in a patient with SCCB (19). There is also a single report of a patient with invasive intraductal carcinoma who developed a recurrence that qualified as a SCC (6). These case supports the hypothesis that at least some SCCB arise as metaplasia of breast parenchymal tumors.

SCCB does not have characteristic mammographic features. Some tumors have been reported to have irregular, indistinct borders, whereas others have been reported to have well circumscribed borders (26). The most consistent feature of SCCB on mammogram is the lack of microcalcifications (4,6). Only one reported case of SCCB has shown microcalcifications on mammogram (27). Our case followed the norm by not showing microcalcifications on mammogram.

Prognosis appears to be dependent upon several factors, most importantly tumor size and tumor stage (25,26). The SEER database from 1988 to 2001 included 137 cases of SCCB with a 5 year survival rate of 64% (1,2).

The initial management of SCCB has generally been modified radical mastectomy with adjuvant radiotherapy and or chemo/hormonal therapy. Breast conservation therapy is not usually possible because most patients present with locally advanced disease (1,2). Because squamous cell cancers are often radiosensitive Hennessy et al proposed early adjuvant radiotherapy despite being unable to demonstrate a difference (presumably because of small numbers) in the loco-regional relapse-free rate of 45% among those receiving vs 33% among those not receiving radiotherapy (1).

Adjuvant and neoadjuvant chemotherapy regimens used at M.D. Anderson Cancer Center include 5-flourouracil alone, 5-flourouracil/cisplatin, 5-flourouracil/taxane, 5-flourouracil/cisplatin followed by pacitaxel, and cyclophosphamide plus methotrexate plus luorouracil (1,2,3). Hennessy et al reported no benefit to neoadjuvant therapy (1).

CONCLUSION

Squamous cell carcinoma of the breast is a rare, generally aggressive disease associated with locoregional and distant relapses. Current surgical management is similar to that for the more common adenocarcinoma. However because effective adjuvant or neoadjuvant therapy is not available, future research should focus on the molecular biology, (e.g., epidermal growth factor receptor), to develop tumor-specific therapy.

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Author Information

Rodrigo Arrangoiz, M.D
Department of Surgery, Michigan State University College of Human Medicine

Anthony Nigliazzo, M.D
Department of Surgery, Michigan State University College of Human Medicine

Keith Apelgren, M.D
Department of Surgery, Michigan State University College of Human Medicine

Andrew Saxe, M.D
Department of Surgery, Michigan State University College of Human Medicine