PRIMARY SQUAMOUS CELL CARCINOMA OF THE BREAST:
A CASE REPORT

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Abstract: Primary squamous cell carcinoma of the breast is a rare entity. We treated a 55-year old woman who came to us with bleeding from the left breast tumor. The tumor was 7 × 8 × 10 cm in size with ulceration and surgical biopsy results showed it to be squamous cell carcinoma of the breast, while metastatic work-up findings ruled out other sources of primary tumor. She also complained of nausea and vomiting, and brain CT disclosed cerebellar metastasis. The metastatic brain tumor was surgically removed, however, the symptoms became gradually exacerbated. The patient died 67 days after admission.

Key words: breast neoplasms, breast carcinoma, squamous cell carcinoma

INTRODUCTION

Primary squamous cell carcinoma of the breast is rare, as it accounts for only 0.04% to 0.075% of all breast malignancies. Nearly all cases are regarded as squamous metaplasia that occurs in other types of breast carcinoma and the pure type of squamous cell carcinoma is not commonly encountered, though it seems to merely represent an extreme form of squamous metaplasia within adenocarcinoma. Due to the rarity of this disease, no data concerning to definition, diagnosis and treatment has been reported. Herein, we describe a case of primary squamous cell carcinoma of the breast that presented metastasis and a fatal course.
CASE REPORT

A 55-year old woman was admitted to Jusendo General Hospital at the beginning of June 2004 complaining of bleeding from a breast mass, which she had noticed at the beginning of the year and had been growing rapidly for the past 4 months. A physical examination revealed a $7 \times 8 \times 10$ cm tumor in size in the upper half of the left breast with ulceration (Fig. 1) and the overlying skin showed peau d'orange appearance (Fig. 2). The left axillary lymph nodes and supraclavicular lymph nodes were positively palpable. The patient noticed bleeding from the left tumor when she coughed and decided to visit our hospital. An incisional biopsy of the tumor revealed squamous cell carcinoma (large cell keratinizing variant type) of the breast, with no other histological tumor types found in this specimen (Fig. 3). The tumor was negative for estrogen receptor (ER), progesterone receptor (PgR), and human epidermal growth factor receptor type 2 (HER2) by immunohistochemical staining. The serum level of tumor marker CEA was 2.1 ng/ml (normal: <5.0), CA15-3 was 264.2 U/ml (<30.0), NCC-ST-439 was 4.0 U/ml (<7.0) and serum LDH was 661 IU/l (213–463). No metastases were seen in bone, lungs and liver. She had anemia and complained of nausea and vomiting after admission, after which brain computed

Fig. 1. Chest CT scan revealed a protruding tumor with ulceration on the left chest wall.
Fig. 2. A breast tumor located in the left AC-portion with edema of the skin of the breast due to carcinoma.

Fig. 3. Magnetic resonance imaging scanning revealed a tumor in the cerebellum.
tomography (CT) and magnetic resonance imaging (MRI) scanning disclosed cerebellar tumor (Fig. 4). Brain edema was shown surrounding cerebellar tumor and various symptoms of brain tumor increased. To undergo the brain surgery, the patient was transferred to the Division of Neurosurgery and total removal of a tumor was performed. Histologically, the brain tumor was also squamous cell carcinoma which was compatible with metastasis of the breast tumor (Fig. 5). She recovered from neurological symptoms, though complained of impaired hearing 11 days after the operation. Cytologic analysis of the cerebrospinal fluid which was aspirated from the subcutaneous space of the operated lesion showed class V, which
is suggestive of meningeal carcinomatosis. The impaired hearing gradually exacerbated and sight loss was also demonstrated. The patient received a single course of anticancer chemotherapy (epirubicin, cyclophosphamide, 5-fluorouracil), after which her general status declined and died 47 days from admission. A postmortem autopsy was not done.

DISCUSSION

Squamous cell carcinoma rarely occurs in the breast and the histogenesis is controversial. This type of carcinoma is considered to mostly represent squamous metaplasia within adenocarcinoma\textsuperscript{2,4,5} because the disease shows varying degrees of squamous metaplasia and glandular features. A review of these cases revealed a heterogenous group of infiltrating carcinomas of the breast with variable degrees of squamous differentiation, though a number of studies reported no evidence of any other histology type\textsuperscript{6}. Therefore, squamous cell carcinoma of the breast is divided into pure squamous cell carcinoma and that mixed with adenocarcinoma. Eggers\textsuperscript{7} identified two cases of pure squamous cell carcinoma of the breast along with five cases of adenosquamous cell carcinoma among a total of 4351 malignant breast lesions.

When encountered with an apparent squamous cell carcinoma in the breast, it is necessary to exclude the presence of metastasis from an extramammary primary or a possible occult primary on detailed clinical assessment\textsuperscript{8}. A diagnosis of pure squamous cell carcinoma must fulfill 3 conditions: no other neoplastic elements in the tumor; the tumor is independent from adjacent cutaneous structures; and no other primary epidermoid tumor exists in the patients. In our case, squamous cell carcinoma elements were shown in the incised lesion and the level of CA15-3, which is a specific tumor marker for breast cancer or ovarian cancer, was extraordinarily high. Common sources of metastatic squamous cell carcinoma in the breast are the lung, esophagus, uterine cervix, and urinary bladder\textsuperscript{2}, but chest CT and abdomen CT disclosed no findings of a primary lesion in these organs. The most common form of primary cancer for the brain metastases are lung, breast and melanoma\textsuperscript{9}. Thus it is consistent with a squamous cell carcinoma of the breast as far as we examined though the excised lesion does not always represent the whole figures of the disease.

Squamous metaplasia can also occur in inflammatory lesions and squamous cell carcinomas occur in breast abscesses, thus chronic inflammation is a contributing factor to the development of this type of tumor\textsuperscript{10}. Fine needle aspiration cytology or incisional biopsy is recommended to confirm the diagnosis. Cytology often provides a good information for a diagnosis if malignant cells possessing squamous features are identified\textsuperscript{11,12}. However, a surgical biopsy procedure is usually required to firmly establish the diagnosis of squamous cell carcinoma.

Squamous cell carcinoma of the breast tends to be somewhat larger at presentation than other types of breast carcinoma, with more than half of the reported cases
in excess of 5cm in diameter\textsuperscript{13}). A large tumor size and positive lymph node status are known to be prognostic indicators of poor outcome. In spite of the aggressiveness of the tumor, some investigators have noted only rare involvement of the lymph nodes\textsuperscript{14,15,16}). Recently, reported cases of squamous cell carcinoma of the breast have been evaluated for ER activity and usually found to be either negative or weakly positive with levels below those necessary for therapeutic response\textsuperscript{4,16)}, though most have been reported to be ER negative\textsuperscript{1,8,13,17,18)}, which is histologic evidence of poor tumor differentiation. There is no treatment recommendations, because the number of patients with such a squamous cell carcinoma is few. Most patients undergo a mastectomy if possible. Most researchers recommend treating squamous cell carcinoma of the breast like infiltrating ductal carcinoma\textsuperscript{1,4,7}). However, Menes et al.\textsuperscript{14)} reported that squamous cell carcinoma of the breast is a distinct entity and should not be automatically treated according to the protocol used for invasive ductal carcinoma. Chemotherapy has not been used consistently in the adjuvant setting for squamous cell carcinoma of the breast, though it has recently been used in treating widespread disease\textsuperscript{8}). Cisplatin and 5-Fu, used together in a neoadjuvant setting, were reported to cause tumor shrinkage and a complete pathologic response\textsuperscript{19}). On the other hand, another review has suggested that squamous cell carcinoma is not sensitive to chemotherapeutic agents commonly used for ductal carcinoma\textsuperscript{18}). Radiation therapy has shown little benefit\textsuperscript{21)}, despite the fact that squamous cell carcinoma are generally radiosensitive. The lack of response in squamous cell carcinoma may reflect the presence of a mixed type.

There is no specific prognostic correlation with the morphologic characteristics of squamous cell carcinoma of the breast. In our case, the disease progressed with a rapid growth of the tumor in approximately half a year, and meningeal carcinomatosis, which is considered to be as a main cause of death, was noted immediately after the brain surgery. Most patients with breast cancer with squamous differentiation are presented in an advanced stage and squamous cell carcinoma of the breast is apparently associated with poor prognosis\textsuperscript{4,13}). Identification of pure types appears to be of no clinical importance. Since prognosis can not be accurately ascertained, the stage at presentation is more important than histologic subtypes\textsuperscript{20,22)}.

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