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Primary Squamous Cell Carcinoma of the Breast: A Diagnostic Enigma

Abstract

Primary squamous cell carcinoma of the breast is an uncommon malignancy and represents a very small proportion of breast cancers. Because of its rarity and non-specific clinical presentation, diagnosis is challenging and often requires correlation of imaging, cytology, and histopathology. Pure squamous cell carcinoma of the breast can deviate from epidermis, the nipple or the epithelium of deep-seated epidermoid cyst or squamous metaplasia on chronic inflammatory background.We report the case of a 45-year-old female who presented with a painful lump in the left breast for three years. Radiological imaging revealed a predominantly cystic lesion and initial cytology suggested fibrocystic disease. However, histopathological and IHC examination of the lesion demonstrated features of primary squamous cell carcinoma. This case emphasizes the importance of histopathological confirmation in breast lesions that clinically and radiologically resemble benign conditions.

Keywords : PSCC (Primary squamous cell carcinoma), BIRADS, HER-2

Introduction

Squamous cell carcinoma (SCC) of the breast is an extremely rare malignant neoplasm, accounting for less than 0.1% (approximately 0.04–0.075%) of all invasive breast cancers[1,2] .The diagnosis of primary SCC of the breast is based on strict criteria, which includes: (1) more than 90% of the malignant cells being of squamous cell origin, (2) the tumor being independent of the overlying skin and nipple, and (3) exclusion of a primary squamous cell carcinoma at any other site in the body. [14] Clinically and radiologically, these tumors have nonspecific findings and may mimic benign or inflammatory breast conditions. They are commonly hormone receptor and HER2 negative[3], limiting treatment options and contributing to a poor prognosis. Due to its rarity, diagnostic challenges, and aggressive behavior, we are presenting this case to contribute to the existing literature and improve understanding of this uncommon entity.

Case Presentation

A 45-year-old female presented with a history of a lump in the left breast since approximately three years which gradually increased in size over time and was associated with pain.There was no history of nipple discharge, bleeding from the nipple, ulceration of the skin, or trauma to the breast.

The patient did not report any significant past medical illness or family history of breast malignancy.

On clinical examination, a palpable mass was identified in the upper inner quadrant of the left breast.

The swelling was localized to the breast tissue and the overlying skin appeared normal without signs of ulceration or inflammatory changes. The nippleareolar complex appeared normal. Radiological evaluation of the left breast revealed a large lobulated cystic lesion measuring approximately 5.1 × 4.8 × 3.5 cm which was wider than tall with no internal calcifications. The lesion was reported as complex cystic lesion of the breast with BIRADS score of III.(Fig 1)

Fig1 Cystic lesion

Fig 2 Cystic cavity with partial septations

On further evaluation by fine needle aspiration, approximately 20 ml of pale yellow fluid was aspirated. Microscopic examination showed numerous foamy macrophages, few ductal epithelial cells along with many neutrophils in a background of red blood cells. No atypical cell was seen. Cytological features suggested Benign cystic lesion consistent with fibrocystic change.

Left breast lumpectomy was done and we received a globular mass meausring 5.6 x 4 x 3 cm, on cut section a cystic cavity was identified with partial septations measuring 4.6 x 3 cm (Fig 2). No lymph nodes were retrieved . On microscopic examination a cystic lesion was identified, which was partially lined by atypical squamous epithelium. In addition,

several irregular nests and islands of tumour cells were seen infiltrating the surrounding breast stroma. The tumour cells exhibited moderate nuclear pleomorphism, hyperchromatic nuclei with abundant eosinophilic cytoplasm, prominent keratin pearl formation and individual cell keratinization. Features were consistent with squamous differentiation.The adjacent breast tissue revealed duct ectasia accompanied by dense chronic inflammatory cell infiltrate, and preserved normal terminal ductal units. No atypical glandular elements were identified in the sections submitted.(Fig 3).

IHC for CK5/6 , Pan-Cytokeratin and p40 was done and the case was diagnosed as primary squamous cell carcinoma (PSCC).

Fig 3 Cavity lined by atypical squamous cells with island of malignant cell in surrounding area.

Fig 4 Squamous cell carcinoma with normal ductal lobular unit (H&E 100x)

Discussion

Primary 1 squamous cell carcinoma of the breast is a rare entity. It is termed “pure” when the tumor is composed entirely of malignant squamous cells with no connection with the overlying skin or nipple, and when a primary tumor at another site has been excluded [8,9]. It is important to differentiate it from mixed tumors with squamous components and from metastatic squamous cell carcinoma arising elsewhere.

The exact etiology and pathogenesis of squamous cell carcinoma of the breast remain unclear. Malignant transformation following 5 squamous metaplasia in benign conditions such as cysts, chronic inflammation, abscesses, and fibroadenomas has been proposed. This is supported by reports of SCC developing following long-standing benign conditions, breast implants, or prior radiation therapy.[9,1,11] In our case also, the patient had a multiloculated cystic lesion for 3 years, which may support this proposed pathway.The age of our case was 45 years which is similar to the median age of patients presenting with squamous cell carcinoma that is 52 years. It is reported that squamous cell carcinoma

occurs in slightly younger females than that of infiltrating duct carcinoma. [12] There are no typical findings on the mammogram, ultrasound. In this case USG had reported it as complicated cystic lesion. Cystic changes maybe because of central degenration or associated necrosis. As per literature they are known to mimic benign conditions radioogically[13]. Approximately 70% of patients with SCC of the breast have no axillary node involvement in axillary dissection.[1] Menes et al.[3] reported that they are associated with a lower rate (22%) of lymph node metastasis and a significant rate of distant metastasis without lymph node involvement, in this study axillary lymph nodes were not involved. Suresh et al [14]. reported malignant cells on FNAC but in our case FNAC showed features consistent with benign cystic lesion.Squamous cell carcinomas are generally hormonereceptor-negative [8,9,1,10,5]similar to our study. It is recommended to give patients adjuvant therapy but the radiosensitivity of squamous cell carcinomas is uncertain. The 5-year survival is 67% [1].

Conclusion

Primary squamous cell carcinoma of the breast is a rare malignant tumor that may clinically, radiologically and on cytology resemble benign breast lesions.This case illustrates the importance of thorough clinical workup, histopathological evaluation in patients presenting with long-standing breast lumps, abscess and cyst particularly when imaging and cytology suggest benign conditions.

Accurate diagnosis is essential to guide appropriate management.The prognosis of this type of breast cancer is still regarded as somewhat controversial, though many studies suggest that it is an aggressive disease that may behave like poorly differentiated breast carcinoma [7]

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