

## Primary Squamous Cell Carcinoma of Breast: A Case Report with Brief Review of Literature

Sambit Dasgupta<sup>1\*</sup>, Jayita Dasgupta (Ghosh)<sup>2</sup>, Ranu Sarkar<sup>3</sup>

<sup>1</sup>Demonstrator (Pathology), Nilratan Sircar Medical College Medical College, Kolkata-700014, West Bengal, India

<sup>2</sup>Demonstrator (Biochemistry), Nilratan Sircar Medical College Medical College, Kolkata- 700014, West Bengal, India

<sup>3</sup>Professor and Head, Department of Pathology, Nilratan Sircar Medical College Medical College, Kolkata-700014, West Bengal, India

### \*Corresponding Author:

Name: Dr. Sambit Dasgupta

Email: [sambit\\_dg@rediffmail.com](mailto:sambit_dg@rediffmail.com)

---

**Abstract:** Primary squamous cell carcinoma of breast is an unusual malignant neoplasm and has much lower incidence compared to other breast cancers. We report a case of primary squamous cell carcinoma in a 61 years old woman who presented with a palpable mass in the left breast of 2 months duration. FNAC smears revealed malignant squamous cells. Histopathological examination showed features of squamous cell carcinoma (large cell keratinizing) the tumor being composed entirely of neoplastic squamous cells. Skin or dermal adnexae of the breast and nipple were not involved by the tumor. There was no component of obvious invasive ductal carcinoma or other features of metaplastic carcinoma. All the axillary nodes dissected were free from tumor deposit. The tumor was negative for estrogen receptor (ER), progesterone receptor (PR) and Her2/neu oncoprotein expression. Through clinical examination and extensive investigations ruled out any other primary focus of tumor outside the breast. The patient received chemotherapy with 5-Fluorouracil and Cisplatin following modified radical mastectomy and is asymptomatic in the 18 months follow up period. So, in a breast tumor showing malignant squamous cells on FNAC or histopathological examination, possibility of primary squamous cell carcinoma should be considered in the differential diagnosis. Diagnosis requires detailed clinical history, through examination and extensive investigations to exclude any extramammary primary along with careful histopathologic examination. This case is being reported for its extreme rarity.

**Keywords:** Primary Squamous cell carcinoma, breast cancer, metaplastic carcinoma

---

### INTRODUCTION

Primary squamous cell carcinoma of breast is an extremely rare malignant neoplasm representing about 0.04% to 0.1% of all breast malignancies [1-3]. The clinical and radiographic characteristics are not specific. These tumors are usually hormone receptor negative and are aggressive, treatment refractory carcinomas with a poor prognosis. Here we report the clinical presentation, cytological and histopathological features of primary squamous cell carcinoma of breast with a brief review of literature considering its differential diagnosis, possible histogenesis and current strategies for management.

### CASE REPORT

A 61 years old woman presented with a firm, palpable lump in left breast of 2 months duration. Mammography revealed a round high density mass with partly irregular margins in the left inferior lateral quadrant, measuring approximately 2.0 cms in diameter.

FNAC examination was done which showed cellular smears with malignant squamous cells in clusters and scattered singly. The cells had hyperchromatic enlarged nuclei, coarse chromatin and moderate amount of cytoplasm showing various degrees of keratinization. Background showed inflammatory cells and necrosis. Cytopathological features were suggestive of squamous cell carcinoma (Fig. 1C).

To exclude the possibility of metastatic squamous cell carcinoma to breast, through clinical evaluation and other relevant investigations were carried out. The patient was previously healthy with no history of any skin, oropharyngeal or anal lesions. Chest radiograph, CT scan of thorax and abdomen, endoscopy, laryngoscopy, colposcopy and cervical Pap smear did not reveal any extramammary cancer. All the biochemical parameters were within normal limits.

The patient underwent modified radical mastectomy with ipsilateral axillary node dissection. Gross examination revealed a tumor in the lower outer

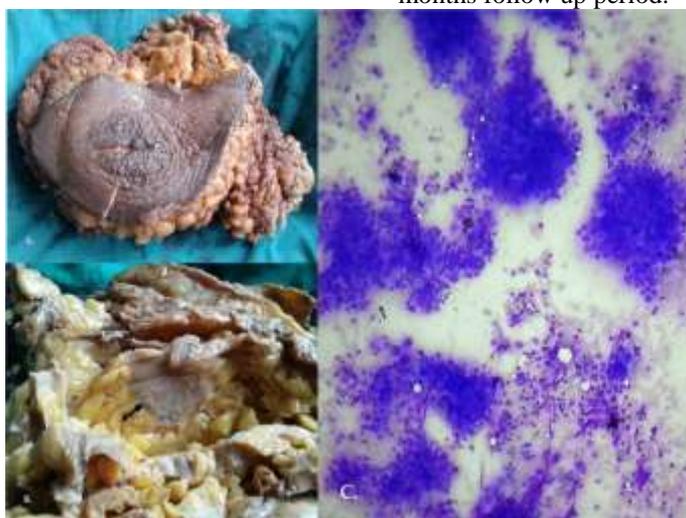
quadrant measuring 2.0 cms in diameter with a greyish white cut section (Fig. 1A, 1B). The overlying skin was grossly free from tumor invasion. Microscopic examination showed a tumor composed of neoplastic squamous cells with hyperchromatic nuclei, occasional prominent nucleoli and abundant eosinophilic cytoplasm arranged in nests, sheets and trabaculae. Individual cell keratinization, keratin pearl formation and scattered mitotic figures were noted (Fig. 2A, 2B). Vascular or neural invasions were not identified. Skin or dermal adnexae of the breast and nipple were not involved by the tumor (Fig. 2C). There was no component of obvious invasive ductal carcinoma or other features of metaplastic carcinoma for example spindle cells, osseous or cartilaginous metaplasia.

Eleven axillary nodes dissected were all free from tumor deposit.

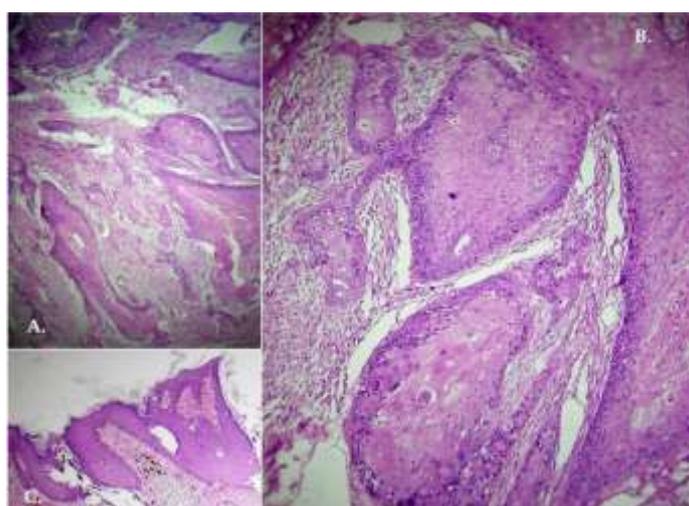
Immunohistochemical examination was done and the tumor was negative for estrogen receptor (ER), progesterone receptor (PR) and Her2/neu oncoprotein expression.

Based on the FNAC and histological picture, correlating with clinical features and other relevant investigation findings, the diagnosis of primary squamous cell carcinoma (large cell keratinizing type) was made.

The patient received chemotherapy with 5-Fluorouracil and Cisplatin and is asymptomatic in the 18 months follow up period.



**Fig. 1A: Gross appearance of mastectomy specimen; B: Cut section of specimen showing a grayish white tumor with slightly irregular margins (marked by arrow); C: FNAC smear- highly cellular, malignant squamous cells with hyperchromatic enlarged nuclei, coarse chromatin and moderate amount of cytoplasm showing various degrees of keratinization.(Low power, MGG stain)**



**Fig. 2A: Low power view- neoplastic squamous cells arranged in nests, sheets and trabaculae ( Haematoxylin & Eosin stain); B: High power view- tumor cells show hyperchromatic nuclei, occasional prominent nucleoli and abundant eosinophilic cytoplasm with individual cell keratinization and keratin pearl formation (H& E stain); C: Overlying skin free from tumor (H& E stain)**

## DISCUSSION

Primary squamous cell carcinoma of breast is a rare tumor constituting 0.04% to 0.1% of all breast carcinomas [1-3]. This tumor have been reported in women of ages 29 to 90 years [4] with a median age of 52 [5]. It is more common in postmenopausal women [6]. Our patient was a 61 years old postmenopausal woman.

Macia and colleagues defined pure squamous cell carcinoma of breast as a tumor which fulfills the following criteria:

- No other neoplastic components such as ductal or mesenchymal elements are present in the tumor.
- The tumor origin must be independent from the overlying skin and nipple.
- Absence of an associated primary squamous cell carcinoma in a second site (oral cavity, bronchus, esophagus, renal pelvis, bladder, ovary and cervix)

In our case all the diagnostic criteria laid down by Macia *et al.* [7] were fulfilled. No other neoplastic component was found on histological examination. Overlying skin and nipple were free and primary carcinoma was not found at a second site on clinical examination and extensive investigations.

The theories explaining the histogenesis of this rare malignancy include:

- Malignant growth from intrinsic epidermal elements (epidermal or dermoid cyst)
- Metaplasia from breast parenchyma (Benign disease like cystosarcoma ptylloides, fibroadenomas or breast malignancies like intraductal carcinoma)
- From chronic abscess [8]

Clinically the patient presents with a rapidly growing mass with a median size of 2-5 cm. Mammographic features are not characteristic with some tumors having irregular, indistinct border while some showing well circumscribed borders [9]. Microcalcification is consistently absent [10]. In our patient the tumor had slightly irregular border with lack of microcalcification on mammography.

FNAC of breast may show squamous cells in various benign lesions like epidermoid cyst, subareolar abscess, fibroadenoma, inflected papillomas, spindle cell metaplasia, phyllodes tumor which may sometimes mimic malignant squamous lesion. The malignant squamous cells are more pleomorphic, mitotically active and dyskeratotic as was seen in the FNAC smears in our case. The differential diagnosis of malignant squamous cells in FNAC of the breast

includes primary SCC and metastatic SCC of the breast [11].

Histologically pure primary squamous cell carcinoma is entirely composed of squamous cells that may be keratinizing, nonkeratinizing and less frequently spindle cell and acantholytic types, some showing combination of these patterns [6]. In our case a similar microscopic picture was observed. Most of the primaries SCC are ER, PR and Her2/neu (triple) negative. Our case supports this observation [12-14].

These tumors are associated with significantly lower rate of lymph node metastasis compared to ductal adenocarcinomas of breast. About 70% of the patients do not present with axillary node involvement but due to unpredictable lymph node dissemination, axillary lymph node dissection must always be performed for staging purposes [2]. All the 11 lymph nodes dissected in our case were free from tumor deposit.

Prognosis of this tumor appears to depend on several factors most importantly tumor size and stage. The SEER database from 1988 to 2001 included 137 cases of squamous cell carcinomas of breast with a mean 5 year survival rate of 64% [1].

The management of primary squamous cell carcinoma of breast include modified radical mastectomy with adjuvant radiotherapy or chemotherapy. As this tumor is usually hormone receptor negative [12-14]. Hormone based therapy may not be effective. Hennessy *et al* proposed early adjuvant radiotherapy as these tumors are often radiosensitive. Rostoch *et al.* review suggests that squamous cell carcinoma is not sensitive to chemotherapeutic agents commonly used in ductal carcinoma [15]. Adjuvant and neoadjuvant CT regimes used at M.D. Anderson Cancer Centre include 5-fluorouracil alone, 5-fluorouracil/cisplatin, 5-fluorouracil/taxane, 5-fluorouracil/cisplatin followed by paclitaxel and cyclophosphamide plus methotrexate plus fluorouracil [16, 17]. Hennessy *et al.* report no benefit to neoadjuvant chemotherapy [17]. Our patient received chemotherapy with 5-fluorouracil and Cisplatin following modified radical mastectomy and responded well to treatment.

## CONCLUSION

Primary squamous cell carcinoma of breast is a rare, generally aggressive tumor. In presence of malignant squamous cells in breast FNAC or histopathological examination, possibility of primary squamous cell carcinoma should be considered in the differential diagnosis. Diagnosis requires detailed clinical history, through investigations to exclude any extramammary primary and careful histopathologic examination. The current surgical management is

similar to conventional adenocarcinoma. However, effective adjuvant and neoadjuvant therapy is not available for this tumor. Future research should focus on molecular biology like epidermal growth factor receptors to develop tumor specific therapy.

#### REFERENCES

1. Gupta G, Malani AK, Weigand RT, Rangenini G; Pure primary squamous cell carcinoma of the breast: a rare presentation and clinicopathologic comparison with usual ductal carcinoma of the breast. *Pathol Res Pract.*, 2006; 202(6): 465–469.
2. Behranwala KA, Nasiri N, Abdullah N, Trott PA, Gui GPH; Squamous cell carcinoma of the breast: clinico-pathologic implications and outcome. *Eur J Surg Oncol.*, 2003; 29(4): 386–389
3. Wrightson WR, Edwards MJ, McMasters KM; Primary squamous cell carcinoma of the breast presenting as a breast abscess. *Am Surg.*, 1999; 65(12): 1153–1155.
4. Shigekawa T, Tsuda H, Sato K, Ueda S, Asakawa H, Shigenaga R *et al.*; Squamous cell carcinoma of the breast in the form of an intracystic tumor. *Breast Cancer*, 2007; 14(1): 109–112.
5. Weigel RJ, Ikeda DM, Nowels KW; Primary squamous cell carcinoma of the breast. *South Med J.*, 1996; 89(5): 511–515.
6. Znati K, Bennis S, Abbas F, Chraibia M, Hammasa N, Chahbouni S *et al.*; Pure Primary squamous cell carcinomas of the breast: a report of eight cases. *Journal of Medical Cases*, 2010; 1(1): 23-26.
7. Macia M, Ces JA, Becerra E, Nova A; Pure squamous carcinoma of the breast. Report of a case diagnosed by aspiration cytology. *Acta Cytol.*, 1989; 33(2): 201-204.
8. Cappellani A, Di Vita M, Zanghi A, De Luca A, Tomarchio G, La Porta D *et al.*; A pure squamous cell breast carcinoma presenting as a breast abscess: a case report and review of the literature. *Ann Ital Chir.*, 2004; 75(2): 259-262.
9. Wargotz ES, Norris HJ; Metaplastic carcinomas of the breast: V. Metaplastic carcinoma with osteoclastic giant cells. *Hum Pathol.*, 1990; 21(11): 1142–1150.
10. Toikkanen S; Primary squamous cell carcinoma of the breast. *Cancer*, 1981; 48(7): 1629–1632.
11. Teerthanath S, Hariprasad S, Shri Krishna U; Primary intracystic squamous cell carcinoma of the breast: A case report and review of the literature. *J Cytol.*, 2009; 26(4): 158–160.
12. Reis-Filho JS, Milanezi F, Steele D, Savage K, Simpson PT, Nesland JM *et al.*; Metaplastic breast carcinomas are basal-like tumours. *Histopathology*, 2006; 49(1): 10-21.
13. Banerjee S, Reis-Filho JS, Ashley S, Steele D, Ashworth A, Lakhani SR *et al.*; Basal-like breast carcinomas: clinical outcome and response to chemotherapy. *J Clin Pathol.*, 2006; 59(7):729-735.
14. Kim MJ, Ro JY, Ahn SH, Kim HH, Kim SB, Gong G; Clinicopathologic significance of the basal-like subtype of breast cancer: a comparison with hormone receptor and Her2/neu-overexpressing phenotypes. *Hum Pathol.*, 2006; 37(9): 1217-1226.
15. Cardoso F, Leal C, Meira A, Azevedo R, Mauricio MJ, Leal Da Silva JM *et al.*; Squamous cell carcinoma of the breast. *Breast*, 2000; 9(6): 315-319.
16. Rosen PR; Rosen's Breast Pathology. Lippincott-Raven, Philadelphia, New York; 1997: 397–404.
17. Hennessy BT, Krishnamurthy S, Giordano S, Buchholz TA, Kau SW, Zhigang D *et al.*; Squamous cell carcinoma of the breast. *J Clin Oncol.*, 2005; 23(31): 7827–7835.