

Squamous Cell Carcinoma of the Breast

Sohail Saqib Chatha¹, Razia Bano², Maham Farooq³, Mahwish Farooq⁴, Umar Farooq² and Abdullah Zakaullah²

ABSTRACT

Objective: To analyse the epidemiological characteristics, clinical presentations, and histopathological as well as immunological characteristics of squamous cell carcinoma (SCC) of breast.

Study Design: A descriptive study.

Place and Duration of Study: Combined Military Hospital, Rawalpindi, from January 1997 to January 2017.

Methodology: Data of all patients, diagnosed as squamous cell carcinoma of breast over defined period of time, were collected and analysed with respect to their clinical presentation, histopathology and receptor status. Year-wise cases of SCC of breast were separated.

Results: Thirty patients, diagnosed as squamous cell carcinoma of breast, were identified over a period of 20 years. There was an increase in number of cases diagnosed after 2007 as compared to before 2007. Moreover, 12 (40%) cases were hormone receptor positive while 18 (60%) were of unknown status. Out of the total, 10 (33%) cases were well differentiated, 17 (57%) were moderately differentiated, while 3 (10%) were poorly differentiated. Seventeen (57%) cases presented as breast masses, 10 (33%) had skin ulceration in addition to breast mass, while 3 (10%) cases presented as fungating masses along with chest wall involvement.

Conclusion: There is an increased incidence of SCC of breast which can be due to better diagnostic facilities and more awareness amongst doctors about different varieties of breast cancers and their impact on the prognosis of disease.

Key Words: Squamous cell carcinoma, Breast, Mass, Ulceration, Chest wall involvement.

INTRODUCTION

Breast cancer is the most common invasive cancer affecting women worldwide.¹ Overall 12% of women suffer from breast cancer throughout the world. There are different types of breast cancers. The most common types are ductal carcinoma in situ, invasive ductal carcinoma, and invasive lobular carcinoma. Amongst various types of breast cancer, SCC of breast is quite uncommon and it accounts for less than 0.1% of all breast cancers.^{2,3} SCC of the breast is diagnosed when more than 90% of the malignant cells are of the squamous type.⁴

Pure SCC of the breast occurs as a result of metaplastic changes of ductal carcinoma cells. World Health Organisation classified squamous cell carcinoma under the category of metaplastic breast cancers.⁵ Various pathological characteristics are required in order to confirm the diagnosis of SCC. These characteristics include a tumour of the origin which is independent of the overlying skin and nipple or of adnexal elements. Greater than 90% of the tumour cells are squamous in nature; there are no other invasive neoplastic, ductal or mesenchymal elements, and other sites of primary SCC

are excluded. SCC of the breast has no specific clinical and radiological features and are characterised by absence of expression of human epidermal growth factor receptor 2 (HER 2) and also negativity for hormone receptors. SCC of the breast has poor prognosis and presents with frequent loco regional and distant metastasis.⁶ It is an extremely rare disease;⁷ and as such, knowledge about the pathophysiology, treatment and prognosis are still uncertain.⁸

Literature search has revealed that there is limited data about epidemiology of SCC and few studies are focusing on outcomes.

This study aimed to identify demographic characteristics of the patients like age, gender, clinical presentation, histopathology and immunohistochemistry.

METHODOLOGY

From January 1997 to January 2017, records of all patients with histologically confirmed diagnoses of carcinoma of breast, at CMH Rawalpindi, was extracted. A single investigator reviewed the records of these patients for demographic features like age, gender, clinical presentation, histopathology and immunohistochemistry. Patients diagnosed with pure SCC of the breast were included in the study. These patients had no other squamous cell malignancy and no distant metastasis. However, treatment and outcome of SCC was not studied.

Data was analysed using SPSS version 21.0. Results were expressed in the form of percentages and frequencies as well as mean +SD.

¹ Department of Surgery, PAF Hospital, Lahore, Pakistan.

² Department of Surgery / Dental Surgery³ / Obstetrics and Gynaecology⁴, Combined Military Hospital, Rawalpindi, Pakistan.

Correspondence: Dr. Sohail Saqib Chatha, Department of Surgery, Combined Military Hospital, Rawalpindi, Pakistan.

E-mail: drsohailchatha@hotmail.com

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RESULTS

Out of 5,890 diagnosed cases of carcinoma of breast, 30 (0.5%) were confirmed histologically as SCC of breast. Out of the 30 cases, 1 (3%) case was male which makes 0.017% of all the cases, while 29 (96%) were females. Age of the patients diagnosed with SCC of breast ranged between 35 to 66 years with an average age of 50.8 ± 9.30 years. There was gradual increase in the number of cases diagnosed as SCC from 1997 to 2017. During the period 1997-2002, only two cases of SCC of breast were diagnosed, and one case was diagnosed from 2003 to 2007. During 2008-2012, 12 cases were diagnosed, while from 2013 to 2017, 15 cases were diagnosed and confirmed histologically.

P 63 expression was noted in 12 cases, while 18 had unknown expression of p63, a highly sensitive and specific marker of metaplastic carcinoma. SCC of the breast had variable clinical presentation ranging from breast mass in 17 (56%) cases, breast mass with skin ulceration in 10 (33%) cases, while 3 (10%) presented as fungating masses with chest wall involvement.

Out of 30 cases, 10 (33%) were well differentiated, 17 (57%) were moderately differentiated, while 3 (10%) were poorly differentiated. Various demographic characteristics of SCC are depicted in Table I.

Table I: Demographic characteristics of squamous cell carcinoma of breast.

Year of diagnosis	
1997-2002	2 (6.66%)
2003-2007	1 (3.33%)
2008-2012	12 (40%)
2013-2017	15 (50%)
P 63	
Positive	12 (40%)
Unknown	18 (60%)
Gender	
Male	1 (3.33%)
Female	29 (96.66%)
Histopathology	
Well differentiated	10 (33.33%)
Moderately differentiated	17 (56.66%)
Poorly differentiated	3 (10%)
Clinical presentation	
Breast mass	17 (56.66%)
Mass + skin ulceration	10 (33.3%)
Fungating tumor with chest wall involvement	3 (10%)

DISCUSSION

SCC of the breast is considered as a rare and more aggressive treatment refractory form of metaplastic carcinoma of the breast with an incidence of 0.1 to 0.4% of all breast cancers. In this study SCC of breast constituted 0.5% of all breast cancers.

Macia *et al.* defined pure SCC of breast as having the certain criteria which included no other neoplastic elements such as ductal or mesenchymal are present in

the tumor, tumor origin is independent of any overlying skin and nipple, and absence of any associated primary SCC at any other site.⁹ According to Rosen *et al.*, SCC is a tumour in which more than 90% of the elements are squamous carcinoma or its variant.¹⁰ There is very limited data available about epidemiology, SCC of breast, its clinical behaviour, and the treatment outcomes.

Majority of SCC are seen in postmenopausal women. Mean age of the patients in this series was 50.5 years. Clinical presentation of the patient is indifferent from infiltrating ductal carcinomas. Most of the patients usually present with a well circumscribed mass, which is clinically palpable. In this series, 17 of the 30 cases present with well circumscribed mass. In some cases, tumour may ulcerate through the skin, as in this series, Ten patients presented with mass and skin ulceration. SCC of the breast rarely present as abscess. There are no specific mammographic findings which can help in diagnosing the condition. However, on breast ultrasound, these tumours appear as solid hypoechoic masses alongwith complex cystic elements.¹¹ Histogenesis of squamous cell carcinoma is not completely understood. This breast cancer can occur as a complicating benign squamous metaplasia in background of benign breast condition, which does not have any evidence of presence of intraductal carcinoma. This tumour may also occur as extensive squamous metaplasia in infiltrating ductal carcinoma. Majority of SCC negative for ER, PR receptors; and also negative for HER 2 neu receptors (triple negative). SCC of the breast has less incidence of metastasis to axillary lymph nodes in comparison to adenocarcinoma of the breast.¹² Metastases to axillary nodes in all patients diagnosed with squamous cell carcinoma of the breast ranges from 10 to 30%.¹³

The prognosis of SCC of breast is still a matter of great controversy, as majority of reports suggest that SCC of breast is an aggressive tumour, which has an outcome that can be compared with poorly differentiated ductal carcinoma of the breast.^{14,15} Because of rarity of this type of tumour, standard treatment regimen is debatable. Since SCC of breast is a hormone receptor negative tumour, so hormone therapy is usually ineffective in these tumours. HER2/neu is usually not overexpressed or amplified in these tumours.¹⁶ These tumours are also found to be non-responsive to chemotherapeutic regimen, commonly used for ductal carcinomas.¹⁷ Role of radiotherapy in these tumours is also unclear. However, an interesting feature is increased frequency of EGFR positivity in these tumours. Hence, the use of anti-EGFR in combination with other chemotherapeutic agents, which may include platin or taxanes, should be investigated in clinical trials. Since it is a rare tumour, so more and more studies are required to completely understand the treatment regimens for this tumour and its prognosis.

CONCLUSION

SCC of breast is an uncommon and aggressive disorder. Due to better understanding of the disease and better radiological and histopathological modalities, the number of newly diagnosed cases is increasing. However, due to rare presentation of the tumour, controversies regarding treatment and prognosis of the tumour still exist, which need more research.

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