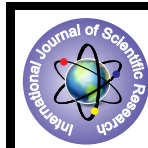


# Secretary Breast Carcinoma in Adult Female: A Case Report and Review of The Literature



## Medical Science

**KEYWORDS :** secretary breast carcinoma, axillary lymph node, immunohistochemistry, treatment

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### ABSTRACT

*A rare case of secretary breast carcinoma (SBC) with axillary lymph node metastasis in a 40-year old adult female, diagnosed with the aid of immunohistochemistry and microscopic examinations together with a review of the literature are reported. The primary tumor involved the right breast without clinically palpable axillary lymph nodes; however, post-mastectomy specimen showed metastasis to axillary lymph node. Patient showed favorable treatment outcome with adjuvant chemotherapy following mastectomy with axillary clearance.*

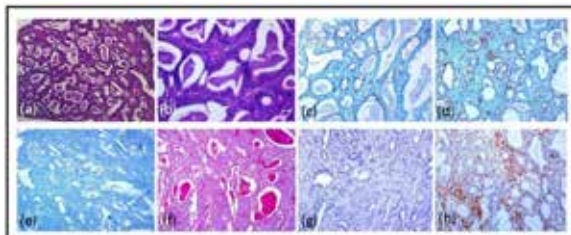
### Introduction

Secretary breast carcinoma (SBC) is an extremely rare entity in breast carcinomas, constituting approximately 0.15% of all invasive breast cancers [1]. SBC was initially given the term ‘juvenile breast cancer’ as it was found mostly in young women and children, but later studies have reported it in many adult patients with a male to female ratio of 1:6 [1],[2],[3],[4],[5],[6],[7]. Most common presentation is a well-defined, mobile retro-areolar mass, mimicking fibroadenoma with a favorable prognosis [1],[2],[5]. Here we report a rare case of SBC in 40-year old adult female having axillary node metastasis with a favorable outcome to adjuvant chemotherapy following mastectomy.

### Case History

A 40-year-old lady presented in September, 2014 as a post-lumpectomy case of secretary carcinoma of right breast. Patient had history of a hard lump of size 3.5 x 4 cm for the past four years, for which she had undergone a lumpectomy in July, 2014. Lumpectomy specimen was suggestive of fibrocystic disease with atypical ductal hyperplasia with secretary carcinoma breast. On examination there was a small healthy curvilinear surgical scar in the infra-areolar region with no residual mass. Left breast was normal and no lymph nodes were palpable in both the axillae and supra-clavicular fossae.

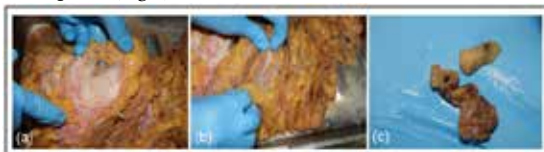
The blocks and slides of the lumpectomy specimen were reviewed in October, 2014 and the histomorphology was consistent with secretary carcinoma breast. IHC showed ER and PR positive, HER2 negative, CK 5/6 negative and PAS positive. S-100 was focally positive (Fig 1).



**Figure 1:** Lumpectomy specimen showing (a) Intraluminal secretions [Hematoxylin & Eosin, x50] (b) Eosinophilic cytoplasm [Hematoxylin & Eosin, x200] (c) Positive Estrogen receptor expression [Diaminobenzidine, x50] (d) Positive Progesterone receptor expression [Diaminobenzidine, x50]

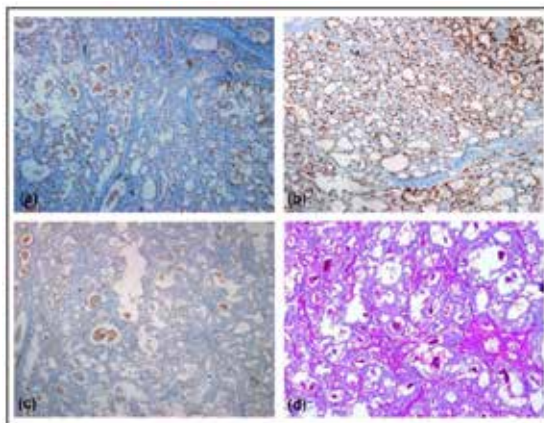
(e) Negative Her2neu expression [Diaminobenzidine, x50] (f) Periodic Schiff Positive diastase resistant material in lumen [PAS with diastase, x50] (g) Negative CK 5/6 expression [Diaminobenzidine, x100] (h) Focal positivity for S-100 [Diaminobenzidine, x50]

Then she underwent right side modified radical mastectomy in view of tumor size and age. The mastectomy specimen showed no residual tumor with clear margins, but a lymph node showed local spread (Fig 2).



**Figure 2:** Mastectomy specimen showing (a) Visible fibrotic tumor bed without grossly identifiable residual disease (b) No gross disease in adjacent parenchyma (c) Gross metastatic axillary lymph node

Further analysis revealed ER and PR positive, HER2 negative and PAS positive (Fig 3).



**Figure 3:** Mastectomy specimen showing (a) Nuclear positivity for Estrogen receptor [DAB, x50] (b) Nuclear positivity for Progesterone receptor [DAB, x50] (c) Negative expression of Her2neu [DAB, x50] (d) Periodic Schiff positive

**diastase resistant material in the lumen [PAS with diastase, x50]**

Hence the patient was given six cycles of intravenous cyclophosphamide (600 mg/m<sup>2</sup>, day 1), methotrexate (40 mg/m<sup>2</sup>, day 1) and 5-fluorouracil (600 mg/m<sup>2</sup>, day 1) chemotherapy at three weeks interval and she completed these six cycles of adjuvant chemotherapy in June, 2015.

There is no recurrence of the disease so far and the disease free survival is 16 months with close follow-up.

**Discussion**

Secretory carcinoma is a very rare type of breast carcinoma, accounting for less than 0.15% of all breast cancers [1]. SBC is very rare in males and seems to occur at a younger age than in females with a poorer prognosis [6].

A hallmark of SBC is a large amount of eosinophilic secretion material, both intracellular and extracellular, which stains positive for periodic acid-Schiff. The tumor cells have copious granular eosinophilic cytoplasm and are arranged in small clusters with gland-like spaces between them [1],[2],[3].

SBC is mostly negative for estrogen and progesterone receptors, and also HER2 (triple negative) but stains positive for S-100 [1],[2],[7]. In the few IHC studies in male SBC, S-100, CEA, EMA, CK and alpha-lactalbumin positivity have been observed [6].

Various studies have uncovered a characteristic feature of SBC at the molecular level, which is a balanced translocation between chromosomes 12 and 15 forming an ETS variant 6-neurotrophic tyrosine kinase receptor type-3 (ETV6-NTRK3) fusion gene encoding a chimeric tyrosine kinase [2],[8]. FISH is a useful tool to detect ETV6 alterations and could be used to rule out SBC from other benign breast pathologies as well as basal-like breast tumors having similar immunophenotype [8].

Although most of the triple negative secretory breast carcinomas have a basal-like immunophenotype, studies have found around 30% of triple negative secretory breast cancers not expressing basal markers. Similarly, 18-40% of all basal-like breast cancers did not show a lack of ER, PR and HER2 [9]. These findings lend support to the notion that SBC is genetically and immunohistochemically different from basal-like tumors. Also prognostically, secretory cancers fare better than basal-like breast carcinoma [9].

Owing to the rare occurrence of this subtype, the optimum management with respect to surgery and appropriate adjuvant treatment strategy remain debatable. Most authors believe surgery should be the mainstay of treatment [1],[2],[3],[5]. In adult patients with tumor size 2 cm or more, there is a higher chance of local recurrence in the chest wall and regional lymph nodes after conservative surgery [5]. Hence, modified radical mastectomy with axillary dissection is warranted in this setting [10]. It is generally agreed that children should initially undergo a wide local excision along with sentinel lymph node biopsy, and further nodal removal may be done for sentinel node positive cases. Rarely, mastectomy may be required [2].

The role of adjuvant chemotherapy, especially in young patients, remains contentious. It is predominantly given in cases with nodal involvement, although good evidence remains elusive in the literature [2].

The importance of adjuvant radiation too is debatable. According to the review by Horowitz et al and other studies, adjuvant radiotherapy was mostly required in adult patients who had undergone lumpectomy than mastectomy [11],[12]. Hence, post-operative radiation could be a fair decision in adult patients treated by breast conservative surgery and might be more beneficial in males.

In general, children and young patients tend to have a better prognosis than adults [10]. Studies have reported the five year overall survival of 87.2% and ten-year overall survival of about 77%; furthermore five-year and ten-year cause-specific survival has been reported to be 94.4% and 92% respectively [11]. Local recurrence is the main form of failure, seen mostly in patients undergoing lumpectomy. Distant metastasis has been reported only in a few cases [5],[13],[14],[15].

A tumor size of 2 cm or less, involvement of less than three lymph nodes, young age female and no surrounding stromal invasion confer good prognosis, with tumor size being the most important factor [1],[2].

**Conclusion**

SBC is a rare type of invasive breast carcinoma with distinct microscopic features and a relatively good prognosis. Although initially reported in children and very young women, it occurs over a wide age range. It is usually a triple-negative disease. Bad prognostic factors include age, tumor size more than 2 cm, involvement of more than three lymph nodes, multicentricity and infiltrative margins [2].

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