

Lung metastasis in secretory carcinoma breast – Rare presentation

Mirza N. I.¹, Fatima S.², Haider N.³

¹Dr. Nihal Ibrahim Mirza, Department of Laboratory Medicine, Aseer Central Hospital, Abha KSA, ²Dr. Sohaila Fatima, Department of Pathology, King Khalid University, Abha KSA, ³Dr. Nazima Haider, Department of Pathology, King Khalid University, Abha, KSA.

Corresponding Authors: Dr. Sohaila Fatima, Department of Pathology, King Khalid University, Abha KSA, E-mail: sohailafatima@gmail.com

Abstract

Secretory carcinoma is a rare breast cancer with mean age of 25 years. It was initially thought to be a tumour of children but can also occur in adults and old age. Tumour cells are cytologically bland and form glands and microcystic spaces containing abundant secretion. They are triple negative tumours but with good prognosis and excellent response to surgery. However, the patients should be kept on long term follow up as late occurrence of metastasis is known. Here we report a patient with diagnosis of Secretory carcinoma breast who developed lung metastasis four years later.

Keywords: Secretory carcinoma, Breast, Lung metastasis

Introduction

Secretory carcinoma breast (SCB) is a rare breast cancer with indolent clinical behavior. It is seen primarily in children but can also occur in adults. The tumor cells have characteristic abundant intra- and extracellular secretions and granular eosinophilic cytoplasm [1]. It accounts for <0.1% of all cases of

invasive breast cancer [2]. It has a less aggressive behavior and a much better prognosis than other variants observed in adults. Axillary metastasis is rare and distant metastases are even rarer [3]. Here we report a patient with diagnosis of SCB who developed lung metastasis four years later.

Case Report

A 62 years old female presented with cough and hemoptysis of 6 weeks duration. She gave history of breast carcinoma 4 years ago which was surgically resected. Computerised Tomography (CT) scan of chest revealed an ill defined heterogeneously enhancing soft tissue mass lesion in right upper lung lobe measuring 10.3x4x6.3cm. It extended from the chest wall deep to the mediastinum and right hilar region encasing the right main pulmonary artery and its upper lobar branch along with right main bronchus with small intrabronchial extension. Few mildly enlarged paratracheal and subcarinal lymph nodes were seen largest measuring 1.3 cm in diameter.

Tracheobronchial biopsy of the mass showed malignant cells exhibiting mild pleomorphism, having vesicular nuclei with prominent nucleoli forming small glandular structures surrounded by fibrous stroma (Figure 1A,B). Immunohistochemistry (IHC)–Cytokeratin (CK) and S100 positive (Figure 1C,D) whereas thyroid transcription factor 1 (TTF1), CK20, synaptophysin, estrogen receptor (ER), progesterone receptor (PR), carcinoembryonic antigen (CEA) were negative. A diagnosis of metastatic adenocarcinoma (well differentiated) of breast origin was made. She presented 4 years ago with breast mass whose trucut biopsy revealed to be invasive ductal carcinoma (IDC)–secretory versus apocrine type. She underwent modified radical mastectomy (MRM) with size of tumor being 3x3x1.5cm and diagnosis of secretory variant of IDC was reached (Figure 2).

There was vascular invasion but all axillary lymph nodes (17) resected were found to be free of tumor. Histological grading according to Nottingham score (modified Bloom Richardson grade) was II/III. It was ER, PR, Androgen receptor (AR), human epidermal growth factor receptor (HER-2/Neu) negative and S100 positive on IHC. Currently the patient is receiving hormonal therapy and is on followup.

Manuscript received: 10th December 2018

Reviewed: 20th December 2018

Author Corrected: 27th December 2018

Accepted for Publication: 31st December 2018

Case Report

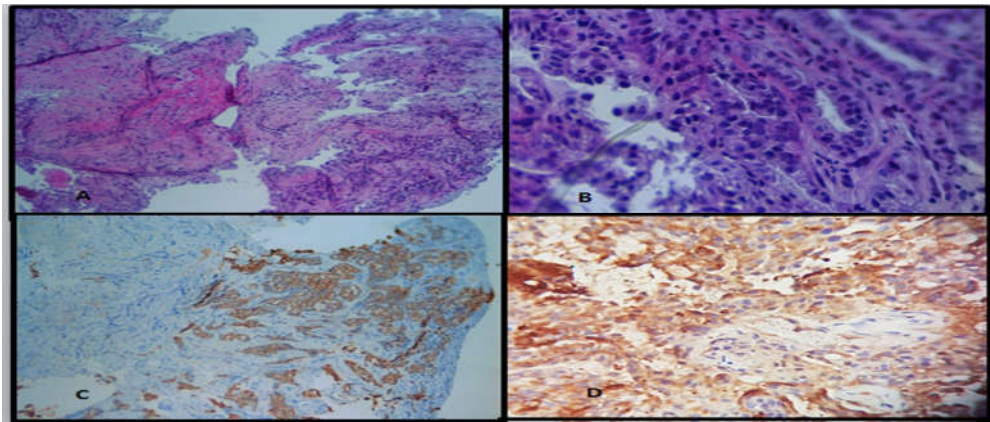


Figure 1(A,B): Sections from lung showing malignant cells forming small glandular structures surrounded by fibrous stroma (H and E, A:10X, B:40X). IHC study C. Showing cytokeratin positivity in malignant cells (Cytokeratin x20X) D: S100positivity in malignant cells (S100x40X).

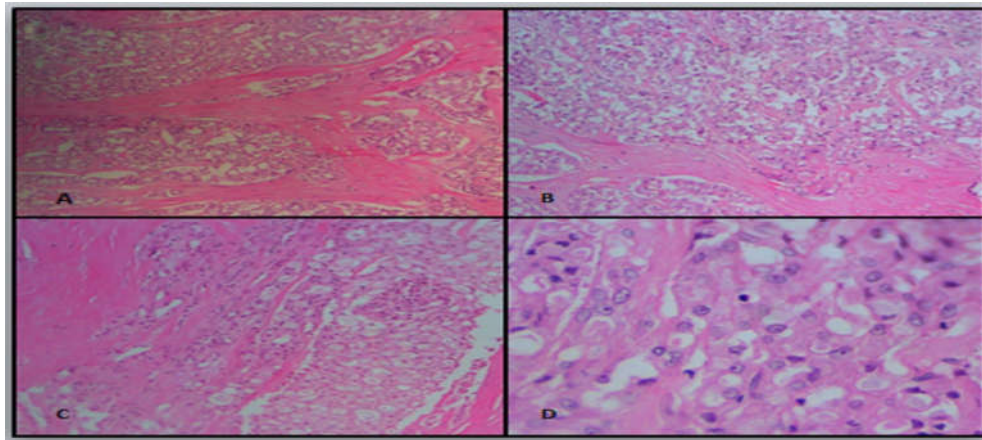


Figure 2(A,B,C,D): Sections from breast showing the tumor cells forming glands, and microcystic spaces containing abundant secretions and hyalinization (H and E, A&B:5X, C:20X, D:40X).

Discussion

Secretory carcinoma is a rare tumor with frequency less than 0.15% of all breast cancers. Mean age in a study was found to be 25 years with female predominance [4]. However a recent study conducted on 246 invasive secretory carcinomas showed mean age of 56.4 years [5]. This goes against the previous view that it is found predominantly in children.

This entity was initially termed "Juvenile breast cancer" by Mc Divitt and Stewart, based on the fact that the average age of the seven patients described in their series was nine years with range of three to fifteen years [6]. Subsequently more cases in children and adults were described. Therefore, it was recommended that the descriptive term SCB replace the designation "juvenile carcinoma".

Grossly, it is well circumscribed and usually small. The margins are of the 'pushing' type with prominent hyalinization seen in the central portion [1].

Microscopically the tumor cells, glands, and microcystic spaces contain abundant secretion, which is usually pale pink or amphophilic with hematoxylin and eosin (H&E) staining. It is often vacuolated or "bubbly," reacting variably for mucin and with the periodic acid-Schiff (PAS) reaction, and is diastase resistant.

In microcystic areas the secretion resembles the material that accumulates in cystic hyper secretory lesions. Strong positive staining has been reported for α -lactalbumin, S-100 protein and CEA (polyclonal). No reactivity was observed for gross cystic disease fluid protein 15 (GCDFP-15) or for monoclonal CEA.

Secretion sometimes in membrane-bound vacuoles, can be found ultra structurally within the cytoplasm of tumor cells and in intracytoplasmic lumina [7]. SCB are negative for hormone receptors ER, PR and do not express HER-2/neu [8]. Our case was also triple

negative. However a recent study showed they are frequently hormone receptor-positive [5]. Tognon et al were the first to report that SCB expresses the ETV6-NTRK3 gene fusion characterized by a balanced genetic translocation, t(12;15) in 12 out of 13 of their cases[9].

SBC with the ETV6-NTRK3 fusion gene belonged to the phenotypic spectrum of basal-like breast carcinomas and immunohistochemical as well as genetic features of SCB distinguished them from other basal-like breast cancers. Prognostic significance of expression of basal markers is not known [10].

While IDC of the breast that is triple negative is associated with a poor prognosis, SCB has been reported to be a low-grade carcinoma with an indolent course and excellent prognosis. Tumor size (less than 2 cm), age (less than 20 years at the time of diagnosis), and circumscribed margins of the tumor are favorable prognosis indicators [4]. SCB in adults is potentially more aggressive than in childhood.

Nodal metastases are more frequent with the lungs and bones being frequent sites of breast cancer metastasis. Slow growth and delayed recurrence are characteristic of many of these tumours. Death from systemic metastases is rare, but may ensue either rapidly or following a long latent period after treatment.

Prolonged follow-up is needed to assess accurately the biological behaviour of this tumour [11]. The reported incidence rate of axillary lymph node metastasis of SCB is 15–30%[12]. Our patient presented with lung metastasis after being in remission for 4 years after treatment.

The differential diagnosis of SCB includes lactation adenoma, cystic hypersecretory carcinoma, juvenile papillomatosis with apocrine metaplasia, apocrine carcinoma, cystic hypersecretory hyperplasia, and signet ring cell breast carcinoma[13].

Treatment modalities are not very well defined because of its rarity. For patients over 20 years old an initial simple mastectomy with axillary node dissection is considered adequate [4].

Our patient underwent MRM with axillary dissection. Surgery is associated with good long-term survival. In a study conducted by Jacob et al SCB's were frequently hormone positive in contrast to previous reports where they were hormone negative.

They compared treatment modalities of SBC with IDC and found breast conserving surgery and hormonal

Case Report

therapy rates were similar in both. Systemic chemotherapy was used less often for SCB and overall survival of patients with SCB being better than with IDC [5].

Conclusion

SCB is a rare indolent malignancy with good prognosis. The patients should be kept on long term followup as later on chances of metastasis are known.

Findings: Nil; **Conflict of Interest:** None initiated
Permission from IRB: Yes

References

1. Rosai and Ackerman's Surgical Pathology. 11th ed. vol 2. Mosby St. Louis, Missouri; 2017.
2. Horowitz DP, Sharma CS, Connolly E, et al. Secretory carcinoma of the breast: results from the survival, epidemiology and end results database. *Breast*. 2012 Jun; 21 (3):350-3. doi: 10.1016/j.breast.2012.02.013. Epub 2012 Apr 10.
3. Yilmaz KB, Pak I, Atalay C, Özaslan C. Histopathological and clinical characteristics of secretory carcinoma of the breast. *Turk J Med Sci* 2009; 39 (1): 155-9. doi:10.3906/sag-0804-40.
4. Tavassoli FA, Norris HJ. Secretory carcinoma of the breast. *Cancer*. 1980 May 1;45(9):2404-13.
5. Jacob JD, Hodge C, Franko J, Pezzi CM, Charles D, Goldman CD, Klimberg VS. Rare breast cancer: 246 invasive secretory carcinomas from the National Cancer Data Base. *Journal of Surgical Oncology*, 2016. 113 (7). 721-25. doi: 10.1002/jso.24241
6. McDivitt RW, Stewart FW: Breast Carcinoma in Children. *JAMA* 1966, 195:144-6.
7. Rosen PP. *Rosen's Breast Pathology*. 4 ed. Philadelphia (PA): Lippincott Williams & Wilkins; 2014.
8. Osako T¹, Takeuchi K, Horii R, et al. Secretory carcinoma of the breast and its histopathological mimics: value of markers for differential diagnosis. *Histopathology*. 2013 Oct; 63(4): 509-19. doi:10.1111/his.12172. Epub 2013 Aug 14.
9. Tognon C, Knezevich SR, Huntsman D, et al. Expression of the ETV6-NTRK3 gene fusion as a primary event in human secretory breast carcinoma. *Cancer Cell*. 2002 Nov;2(5):367-76.

Case Report

10. Laé M, Fréneaux P, Sastre-Garau X, et al. Secretory breast carcinomas with ETV6-NTRK3 fusion gene belong to the basal-like carcinoma spectrum. *Mod Pathol.* 2009 Feb; 22(2):291-8. doi: 10.1038/modpathol.2008.184. Epub 2008 Nov 14.

11. Krausz T, Jenkins D, Grontoft O, et al. Secretory carcinoma of the breast in adults: emphasis on late recurrence and metastasis. *Histopathology.* 1989 Jan; 14 (1) : 25-36.

12. Li D, Xiao X, Yang W, et al. Secretory breast carcinoma: a clinicopathological and immunophenotypic study of 15 cases with a review of the literature. *Mod Pathol.* 2012 Apr; 25 (4):567-75. doi: 10.1038/modpathol.2011.190. Epub 2011 Dec 9.

13. Iglesias B, Monteagudo B, Rouco JS, et al. Secretory breast carcinoma in a 63-year-old man. *J Cutan-Pathol.* 2009 Oct; 36Suppl 1:86-8. doi: 10.1111/j.1600-0560.2008.01240.x. Epub 2009 Mar 17.

.....
How to cite this article?

Mirza N. I, Fatima S, Haider N. Lung metastasis in secretory carcinoma breast– Rare presentation. *Trop J Path Micro* 2018;4(8):556-559.doi:10.17511/jopm.2018.i08.02.

.....