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Inflammatory Breast Cancer: A Case Report and Literature Review

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1. Abstract

A 52-year-old female was admitted to our hospital due to the redness and swelling of the left breast continuing for 1 month. Specialist examination found that the left breast is larger than the right side and the left breast quadrant showed skin redness and orange peel on about 1/3 of the breast. This breast was hard and does not touch the obvious tumor. The lymph nodes were unpalpable on both sides of the axillary and clavicle. Ultrasound examination: the hypoechoic mass of size 25.4mm * 11.3mm can be seen in the left superior quadrant of the left breast, not clear border and irregular shape. A small amount of blood flow signals can be detected inside it. There were several lymph nodes in the left axillary, the largest one was 11.9mm * 6.5mm. BI-RADS: IV level. Mammotome biopsy report: left inflammatory Breast Cancer (IBC). Inflammatory breast cancer is a special type of breast cancer with high malignancy and poor prognosis.

On the basis of the detailed of the case, this paper summarized four recent cases of inflammatory breast cancer diagnosed at our hospital and review of the literature was synthesized to better characterize inflammatory breast cancer.

2. Introduction

Inflammatory breast cancer (IBC) is rare but is the most aggressive type of breast cancer. According to the tumor-node-metastasis (TNM) breast cancer staging system, IBC is classified as T4d and characterized clinically by diffuse induration of skin thickness usually with no underlying mass.[1] In our hospital, we identified four cases of IBC in women with breast cancer. Herein, we describe one case in detail and also present a summary the remaining three cases. Combining such anecdotal evidence with a comprehensive literature review of IBC, we aimed to better characterize clinical and pathologic features of this disease so as to guide the improved treatment outcomes.

3. Case Study

A 52-year-old female was admitted to our hospital after presenting with redness and swelling of the left breast that had continued for 1 month. Specialist physical examination found that the left breast was larger than right side; the left breast quadrant showed skin redness and orange peel on about 1/3 of the whole breast. The breast was hard and does not touch the obvious tumor. Lymph nodes were unpalpable on both sides of the axillary and clavicle. On ultrasound examination a hypoechoic mass of size 25.4mm * 11.3mm could be seen in the left superior quadrant of the left breast, without clear border and irregular shape. A small amount of blood flow signals were detected inside this mass. Additionally, there were several lymph nodes in the left axillary, with the largest one being 11.9mm * 6.5mm, and there was no obvious lymph nodes in the right axillary. BI-RADS was level IV. Mammography of the left breast upper outer quadrant shows multiple punctate calcifications, clustered, and twisted around gland structure with a little annular calcification in the middle of the breast. Finally there was left nipple depression, thickening of the skin around the areola and lymph nodes were both axillary. BI-RADS: V level. Mammotome biopsy report was of left inflammatory breast cancer.

TAC neoadjuvant chemotherapy was used initially for tumor treatment. After two cycles, the volume of left breast was decreased on ultrasound and the focus was reduced to 18.6mm x 10.5mm. Axillary lymph nodes were also smaller in volume and the clinical efficacy was partially relieved. After continuing the regimen for four cycles, repeated breast ultrasound showed that the volume of the left breast was decreased and the lesion reduced in size to 13.9mm

* 10.5mm. Additionally, the axillary lymph nodes were smaller. The clinical efficacy evaluation was partial remission. Combined with the patient's history, symptoms, signs and auxiliary examination results, a clear diagnosis of the left breast cancer (cT4N0M0) was made. The area of the lesion was large, was clinically diagnosed as inflammatory breast cancer.

Modified radical mastectomy was required for the left breast cancer. Pathologic findings included invasive ductal carcinoma grade II in the upper outer quadrant of the left breast after four cycles of postoperative pathological TAC neoadjuvant chemotherapy; as well as necrosis and calcification of intraductal tumor volume, 9cm * 6cm * 4cm. Tumor thrombus could be seen in the lower part of the nipple and in the remaining quadrants. Cancer cells invaded under the nipple and in the lower quadrant with lesions in this area skin nearest <0.2mm. The superficial fascia and never are no invasion. The axillary lymph node was metastatic (4/14). pTNM grading system: T3N2, MBNG grading system:II, Miller and Payne grading system: 2. Finally, the results of immunohistochemistry were ER (-), PR (-), Her-2 (2+), Ki-67 (+30%).

No metastatic tendency was observed during body assessment. According to NCCN guidelines, the patient should continue to undergo chemotherapy, and the radiation after chemotherapy was completed. FISH results were still positive therefore the patient should add Trastuzumab to treatment. Therefore, after the 2 cycles of docetaxel + carboplatin + trastuzumab (TCH) scheme, the molecular target of the herceptin was targeted for six cycles. The patient KPS score was 100 points.

During two and a half years of follow-up the patient received the following tests: blood testing, blood biochemistry, CEA, CA153, lung CT, bone scan, abdominal ultrasound, neck ultrasound, breast ultrasound examination. Finally, a non-qualitative lung CT showing lung and pleural nodules scattered was observed directing us to advise the patient to check regularly, without further treatment. Four years after surgery, patient lung and abdominal CT showed metastasis and liver biopsy immunohistochemistry results were as follows: Ki-67 (+30%), ER (-), PR (-), Her-2 (3+), CK7 (+), CK20 (-), Villin (-), TTF (-), WT-1 (-), GCDFP-15 (-), CA15-3 (+).

After seven courses of chemotherapy (TXH), no significant improvement to the metastatic lesion was seen. After one course of another chemotherapy regimen [TX], one course of another chemotherapy regimen [HT] was started. At this time, the patient was in critical condition. Late stage of the tumor is associated with renal dysfunction and electrolyte disturbance. Head enhanced MRI showed multiple abnormal signals in the brain. The patient and their family requested to stop further treatment and be discharged from the hospital. The patient died two months after discharge, therefore the overall survival period was five years and five months.

The other three cases seen at our hospital with different tumor types are summarized in Table 1.

Table 1: Four cases of Inflammatory breast cancer treated at our hospital

Characteristic	case			
	1	2	3	4*
Age (years)	59	55	57	65
Cancer type	Invasive ductal carcinoma	Invasive ductal carcinoma	Invasive ductal carcinoma	Invasive ductal carcinoma
Stage	II级	III	II级	IV
Receptor status				
Estrogen receptor	-	-	80%	-
Progesterone receptor	-	-	80%	-
HER2	2+	3+	2+	2+
Ki-67	30%	60%	10%	30%
FISH	Her-2 gene amplification	Her-2 gene amplification	not examined	not examined
术后复发时间	-	1M	not examined	unoperated
转移时间	4Y4M	2M		7M
Metastatic sites	Hepar,	Chest wall recurrence,		Lymph gland,
	lung,	lung,		malignant pleural effusion
	brain	brain,		
		bone		
Survival	5 Y 5 M	-		1Y

* A diagnosis of right breast inflammatory breast cancer, lymph node metastasis, malignant pleural effusion were made sequentially after 9 months of left infiltrating ductal breast carcinoma resection.

4. Discussion

IBC is a rare diagnosis in patients with breast cancer, but represents the most aggressive type of breast cancer. We conducted a literature review in PubMed using the search terms "inflammatory breast cancer", nIBC" and "informatory breast neoplasm" for literature published in the most recent ten years. We found that a differentiation has been made between primary and secondary IBC has to be made. Most cases of primary IBC most developed from breast carcinoma in a previously normal breast. Secondary IBC is diagnosed when there is development of inflammatory skin changes associated with invasive breast carcinoma in a breast that already had cancer or there is carcinoma in the chest wall [2]. In our case, a 65 year-old patient was diagnosed with secondary IBC of the right breast after mastectomy that breast for invasive ductal carcinoma.

Skin changes common to IBC are caused by tumor emboli within the dermal lymphatics, not infiltration by inflammatory cells, contrary to the disease nomenclature. Although microscopical detection of tumor emboli in dermal lymphatic vessels is supportive for the diagnosis, it is not required. Furthermore, dermal lymphatic invasion without the typical clinical findings is not sufficient for a diagnosis of IBC [3].

IBC is the most aggressive type of breast cancer and comprises 2.5% of all breast cancers [4]. Furthermore, the median overall survival among women with IBC is less than 4 years even with multimodality treatment options. Among the cases we treated, one had primary IBC with a survival of 5 years and 5 months, while the other one is still alive while had multiple organs metastasis. The one patient with secondary IBC had a survival of one year after the discovery of IBC. Four large population-based studies have reported a higher incidence of IBC in young African-American women with a worse survival compared to Caucasian women. The cause of racial disparities has not yet been elucidated [4-7].

The diagnosis of IBC can be made by core biopsy [8]. An appropriate initial diagnosis should consist of a history and physical examination then diagnostic evaluation. Patients with IBC typically present with pain and a rapidly progressing, firm, tender, and enlarged breast and the skin over the breast is thickened, reddened and warm. Primary breast lesions are more frequently visible on sonography than on mammography [9]. Ultrasonography may show an obvious tumor mass and/or parenchymal distortion. There also may be skin thickening over the breast seen, with or without a breast mass. Mammography testing is highly sensitive to calcification and may show a large area of calcification. Moreover, advances in imaging techniques such as magnetic resonance imaging (MRI) and positron emission tomography-computed tomography (PET-CT) have improved the diagnosis and staging of IBC [10]. For patients who with palpable or suspicious regional lymph nodes, an ultrasound with guided fine needle aspiration (FNA) and/or a core needle biopsy should be performed in order to make a more accurate determination of the tumor stage [8].

Due to a high rate of metastases at presentation in about 30% of IBC patients, accurate initial staging is crucial to planning adequate systemic and locoregional treatment; this includes chest X-ray, bone scintigraphy, abdominal CT and PET-CT [11]. Current management of non-metastatic IBC includes neoadjuvant chemotherapy and ablative surgery if a tumor-free resection margin is expected. This multimodal therapeutic approach has significantly improved patient survival in recent years which might, in part, be explained by the availability more targeted therapy [11-13]. Nevertheless, IBC predicts a poor outcome, with a median disease-free survival of less than 2.5 years and an overall survival of 30–40% at 5 years [2].

5. Summary

IBC is the most aggressive type of breast cancer and has several characteristics which its aggressive biology compared to non-inflammatory breast cancer. Local and regional therapies, such as surgery and radiation therapy, have be shown to suppress local recurrence but without a significant effect on overall survival. Fortunately, since the consistent use of neoadjuvant chemotherapy in IBC treatment overall survival rates have increased.[12] However, more novel oncological treatment modalities are necessary to improve standard treatment IBC continues to suggest a dismal prognosis.

References

1. Sobin LH, Compton CC. TNM seventh edition: what's new, what's changed: communication from the International Union Against Cancer and the American Joint Committee on Cancer. Cancer. 2010; 116(22): 5336–9.
2. Kleer CG, van Golen KL, Merajver SD. Molecular biology of breast cancer metastasis. Inflammatory breast cancer: clinical syndrome and molecular determinants. Breast Cancer Res. 2000; 2(6): 423–9.
3. Edge SB, Compton CC. The American Joint Committee on Cancer: the7th edition of the AJCC cancer staging manual and the future of TNM. Ann Surg Oncol. 2010; 17(6): 1471–4.
4. Hance KW, Anderson WF, Devesa SS, Young HA, Levine PH. Trends in inflammatory breast carcinoma incidence and survival: the surveillance, epidemiology, and end results program at the National Cancer Institute. J Natl Cancer Inst. 2005; 97(13): 966–75.
5. Chang S, Parker SL, Pham T, Buzdar AU, Hursting SD. Inflammatory breast carcinoma incidence and survival: the surveillance, epidemiology, and end results program of the National Cancer Institute,1975–1992. Cancer. 1998; 82(12): 2366–72.
6. Levine PH, Veneroso C. The epidemiology of inflammatory breast cancer. Semin Oncol. 2008; 35(1): 11–6.
7. Wingo PA, Jamison PM, Young JL, Gargiullo P. Population-based statistics for women diagnosed with inflammatory breast cancer (United States). Cancer Causes Control. 2004; 15(3): 321–8.

8. Dawood S, Merajver SD, Viens P, et al. International expert panel on inflammatory breast cancer: consensus statement for standardized diagnosis and treatment. Ann Oncol. 2011; 22(3): 515–23.

9. Yang WT, Le-Petross HT, Macapinlac H, et al. Inflammatory breast cancer: PET/CT, MRI, mammography, and sonography findings. Breast Cancer Res Treat. 2008; 109(3): 417–26.

10. Groheux D, Giacchetti S, Delord M, et al. 18F-FDG PET/CT in staging patients with locally advanced or inflammatory breast cancer: comparison to conventional staging. J Nucl Med. 2013; 54(1): 5–11.

11. Chevallier B, Roche H, Olivier JP, Chollet P, Hurteloup P. Inflammatory breast cancer. Pilot study of intensive induction chemotherapy (FEC-HD) results in a high histologic response rate. Am J Clin Oncol. 1993; 16(3) :223–8.

12. Ueno NT, Buzdar AU, Singletary SE, et al. Combined-modality treatment of inflammatory breast carcinoma: twenty years of experience at M. D. Anderson Cancer Center. Cancer Chemother Pharmacol. 1997; 40(4): 321–9.

13. Gianni L, Eiermann W, Semiglazov V, et al. Neoadjuvant chemotherapy with trastuzumab followed by adjuvant trastuzumab versus neoadjuvant chemotherapy alone, in patients with HER2-positive locally advanced breast cancer (the NOAH trial): a randomised controlled superiority trial with a parallel HER2-negative cohort. Lancet. 2010; 375(9712): 377–84.