International Journal of Biology and Life Sciences
ISSN: 2957-9511 | Vol. 3, No. 3, 2023

Accessory Breast Cancer of the Right Axillary Region: A Case Report and Review of Management

Fengying Yang [1,#], Xiaohe Xie [2,#], Jingjing Liu [2,#], Renyuan Zhang [3], Xiaohua Lu [1], Li Tan [1], Yi Tang [1], Xiangzhi Li [2,*], Linling Huang [1,*]

[1] Breast Surgery, The Second Affiliated Hospital of Guangxi University of Science and Technology, Liuzhou, Guangxi 545006, China
[2] Department of Public Health, School of Medicine, Guangxi University of Science and Technology, Liuzhou, Guangxi 545005, China
[3] Clinical Medical School, Hainan Medical University, Haikou, Hainan 571199, China
# Contributed equally to this article.

*** Corresponding author:** Xiangzhi Li (E-mail: lxz2046@smu.edu.cn); Linling Huang (E-mail: 27872447@qq.com)

Abstract: Accessory breast tissue results from failure of the embryologic mammary ridge, also known as the milk line, to involute. Because of the low incidence of these cases in the population and the lack of a fixed location for the tumor to occur. Case Presentation: Here we present a female patient, 51 years old, who was born with a swelling on the side of the arm in the right axilla that grew with age. Three years ago, a lump the size of an egg was found protruding from the body and gradually ulcerating. Conclusion: Ultrasound assisted examination revealed that the patient had right axillary lymph node enlargement and Pathological diagnosis of accessory breast cancer. The early stage of accessory breast cancer mostly presents only as a painless mass. Therefore, when an abnormality is detected in the early stage, it should be checked out promptly to avoid deterioration.

Keywords: Accessory Breast Cancer; Diagnosis; Treatment.

1. Introduction

Bilateral ectodermal ridges of the breast, also known as mammary lines, running along the ventral surface of the body from the anterior axillary fold to the medial aspect of the inguinal fold; they involute during embryogenesis, except in the thoracic region, where they give rise to breast tissue [1] [2]. The persistence of tissue along these ridges may produce ectopic breast tissue. Ectopic breast tissue may consist of the breast parenchyma, areola, nipple or any combination of these three components [3]. This breast tissue is subject to hormonal influences and undergoes physiological changes [4]. In addition, a number of different neoplasms, benign and malignant, have been found in axillary breast tissue [5], the most common location being the axilla, ectopic mammary tissue can also develop in the face, posterior neck, shoulder, chest, middle back, buttock, perineum, vulva, hip, or groin [6–7]. The incidence of auxiliary breast tissue in the general population ranges from 2.0% to 6.0% [8]. Primary malignancy of the accessory breast tissue is a rare condition with a cancer incidence of 0.2%-0.6% [9], occurring in both men and women [10–12]. Marshall et al [9] reported that 94.7% of patients were women, and only 5.3% were men. Although there is no established age preference, previous reports suggest a 37% incidence rate in women under 45 years of age [13]. Although the majority of cases are sporadic, inheritance is likely to be autosomal dominant with incomplete epistasis [14].

2. Clinical Course

A 51 years old female with no personal history and family history. A lump on the side of the arm in the right axillary was found after birth and was ignored because of her young age. Three years ago, the lump was the size of an egg, protruding from the body and gradually ulcerating, like a cauliflower-like, felt discomfort but not accompanied by bleeding, fearless cold, fever, chest tightness, cough, chest pain, tight gas and so on, not treatment, until a month ago right axillary lymph nodes were swollen in size.

2.1. Body Check

A protruding cauliflower-like swelling is visible on the right axillary arm side (shown in Figure 1), brittle, bleeding easily, with a little discharge, no pressure pain, multiple enlarged lymph nodes can be palpated on the chest wall side of the right axilla, fused into a sheet, fixed, no pressure pain, the larger one is about 3.5 × 4 cm, hard, unclear sides, no obvious swelling in both breasts. Multiple enlarged lymph nodes were palpable under the right clavicle, fused into a sheet, fixed, without pressure, the larger one was about 3.0 × 3.5 cm, hard, with indistinct sides. No obvious enlarged lymph nodes were observed in supraclavicular, left subclavicular and left axilla.

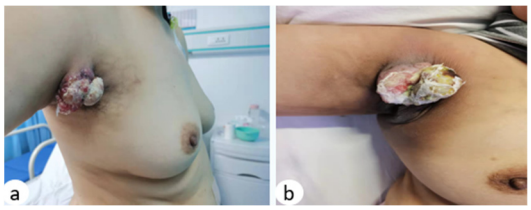

Figure 1. Both breasts are symmetrical without deformity, both nipples are not invaginated or overflowing, a protruding cauliflower-like swelling is visible on the right axillary arm side, about 4.5 × 5 cm.

2.2. Research Methodology

We applied an observational study method and studied patients through ancillary tests, surgery and medication.

2.3. Ancillary Examinations

Ultrasound: multiple hypoechoic masses in the right axilla

and subclavian (41 × 23 mm, 36 × 29 mm); substantial slightly hypoechoic nodule in the left breast (4 × 3 mm), no obvious occupancy in the right breast, no obvious enlarged lymph nodes in the bilateral supraclavicular, left subclavian and left axilla. MRI: Consider multiple enlarged lymph nodes in the right axilla, please combine with the clinical picture. Small nodular foci in both breasts, consider benign nodules possible, BI-RADS classification category three, suggest review. CT: Multiple nodular shadow and mass shadow in the right axilla, lymph node swelling is considered and enhanced CT is recommended if necessary. The nature of the small nodular shadow in the upper inner quadrant of the right breast is to undetermined, recommended to review. (Shown in Figure 2)

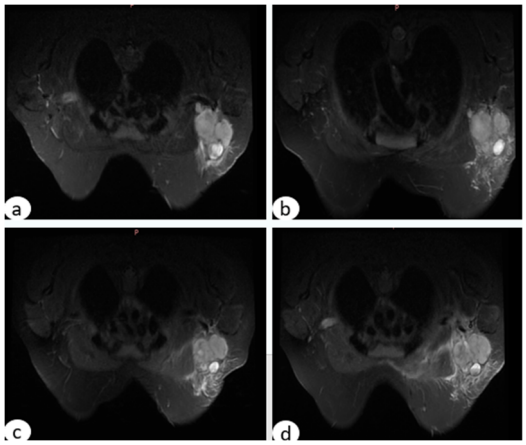

Figure 2. (a) MRI: Multiple abnormal clumps can be seen in the right axilla, and the maximum size is about 3.1 × 3.2 cm on July 23, 2021. (b) MRI: Multiple massive abnormal signal shadow is seen in the right axilla, and the maximum size is about 4.8 × 4.5 cm on Sept 13, 2021. (c) MRI: Multiple massive abnormal signal shadow is seen in the right axilla, and the maximum size is about 4.5 × 4.2 cm on Oct 26, 2021. (d) MRI: Multiple massive abnormal signal shadow was seen in the right axilla, and the maximum size is about 5.8 × 5.2 cm on Dec 9, 2021.

2.4. Treatment Process

1. Excisional pathology biopsy and exfoliative cytology on 20 July 2021. Pathological examination (right axillary mass): (right axillary) invasive breast cancer with fibrous hyperplasia seen on special stain PAS (-) and VG stain. Invasive ductal carcinoma of the breast (grade II), immunohistochemistry: ER (-), PR (-), CerbB-2(++), Ki-67(+, about 60%), ERCC1(+), P53(+) mutant, EGFR (+), CK5/6(+), E-cad (+), P120 membrane (+), D-SP1(+++), D -y85(+++), D-nue (+++). Decidual cytology: cancer cells were detected in the right axillary puncture fluid sent for examination. Currently locally advanced with lymphatic metastases, requiring systemic treatment according to guidelines.

2. Neoadjuvant chemotherapy: six cycles in total. The efficacy of the treatment was assessed every two cycles and the efficacy was PD, thus the chemotherapy regimen changes every two cycles: two cycles of TAC, two cycles of TP and two cycles of XAC. (T-paclitaxel (albumin-bound), A-doxorubicin liposome, P-carboplatin, C-cyclophosphamide). (Shown in Figure 3)

3. Surgical excision: Radical excision of the right side of the parametrial breast under general anesthesia + chronic ulcerated skin flap transfer repair + multiple chest straps with compression bandage. In accordance with the requirements of radical surgery for right - sided parametrial cancer, a high-frequency electric knife was used to perform a complete excision of the right - sided parametrial breast, including the tumor, and because the parametrial cancer had formed a chronic ulcer over a long period of time, the skin could not be sutured directly after excision, so the skin of the breast side was taken and the adjacent flap transfer repair was performed. The right upper limb was explored for vascular nerves and no abnormality or damage was found. The intraoperative infusion volume was 1550 ml, urine volume was 300 ml and blood loss were approximately 400 ml. The patient was conscious and returned to the ward after the operation. Postoperative diagnosis: right parametrial invasive breast cancer with chronic ulceration was combined with sense T4N3M0 stage IIIC. This patient also had moderate anemia and hypoproteinemia.

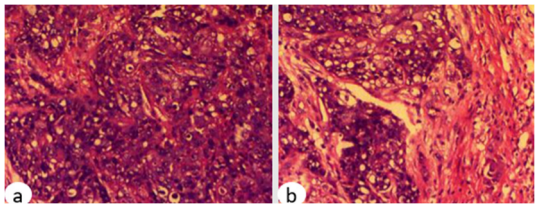

Figure 3. (a. b.) (right axillary accessory breast) this is an infiltrating ductal carcinoma (G2 change) with tumors of 5 × 5 × 4.5 cm and 9.5 × 7.3 × 7 cm, respectively. The tumors invade the skin, adjacent to the base. Lymph nodes examined showed metastasis (1/7). Special staining with PAS (-) and VG showed fibrous hyperplasia. (One metastatic lymph node is a fused lymph node.)

Post-operative adjuvant radiotherapy: Radiotherapy coverage: right axillary scar, right breast, right upper and lower clavicle lymph node drainage area, radiotherapy volume CTV50Gy/25f/35d(2.0Gy/1f), pGTV tb60Gy/ 25f/ 35d (2.4Gy/1f).

2.5. Treatment Results

The patient was treated with GT (gemcitabine + paclitaxel (albumin nodular)) regimen on March 31, 2022 and April 22, 2022, respectively, which went well, but the efficacy was still evaluated as PD after 2 cycles of chemotherapy and the patient was advised to be treated with immune agents. The patient was hospitalized in May for one cycle of oral anlotinib targeted therapy, which was discontinued due to poor self-perception of efficacy.

CT scan on April 20, 2022: right axillary mass-like shadow (4.5 × 4.0 cm) after postoperative chemotherapy for right parametrial carcinoma, nature to be determined and recommended for review; Multiple nodular shadow in the right lung (larger diameter about 1.1 cm), metastases are considered; CT scan of the upper abdomen and pelvis showed no abnormality. CT scan on June 10, 2022: right parametrial cancer after postoperative chemotherapy - right axillary mass-like shadow (6.8 × 6.2 × 7.3 cm, larger than before), consider the possibility of postoperative recurrence; multiple nodular shadow in right lung (larger diameter about 1.5 × 1.4 cm), consider metastasis; CT scan of upper abdomen and pelvis did not show any abnormality.

On June 25, 2022, the patient began to have swelling in the right axilla and a protruding body tumor was visible. A week ago, a tumor broke and combined with obvious sunken edema in the right upper limb, impaired movement of the right upper limb, unable to abduct, and mild edema in both lower limbs. The patient had a day of fever that resolved on its own. Specialized examination revealed that the right axilla was

obviously swollen, with a hard mass under the skin, mild pressure pain, a rupture of about 1 cm in size, a pimple-like discharge, reddened surface skin, and a large number of blisters visible.

3. Compare

Immunohistochemical controls were done on pathological sections taken from patients before and after chemotherapy. The graph below (shown in Figure 4) shows a comparison of immunohistochemistry before and after chemotherapy.

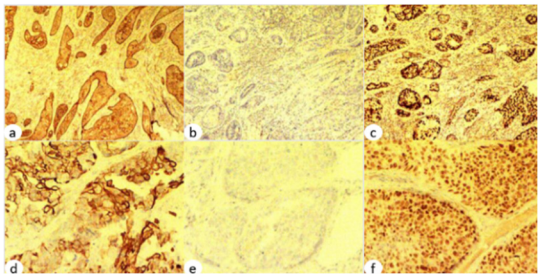

Figure 4. Immunohistochemical findings Before chemotherapy (a. b. c.): ER (-), PR (-), CerbB-2(-), CK5/6(+), P53(+), Ki-67(+)60%, ERCC1(+), EGFR (+), E-cad (+), P120 membrane (+), D-SP1(+4), D-y85(++), D-neu (+++). After chemotherapy (d. e. f.): Neoplasm wax block 3: ER (-), PR (-), CerbB-2 (++), EGFR (+), CK5/6 (+), ERCCI (+), P53 (+) wild type, E-cad (+), P120 membrane (+), Ki-67 (+)40%, D-SP1 (+++), D-y85 (++), D-neu (+++). Paraffin block 12 of lymph node: CK-P (+)

4. Discussion

For benign accessory mammary neoplasms, local excision of the mass, including all the local lumpectomy involving all accessory mammary tissues should be performed. Radical mastectomy is the main treatment for accessory breast cancer. The Axillary accessory breast is close to the axillary lymph nodes and the lymphatic spread of axillary breast cancer is likely to only occur towards the homolateral axillary nodes and then towards the supraclavicular nodes, as this is the normal lymphatic drainage pathway of the subcutaneous and cutaneous tissues of the armpit [11]. It is prone to lymph node metastasis at an early stage, so ipsilateral axillary lymph node dissection should be performed at the time of surgery. In this case, a complete excision of the right side of the parametrial breast, including the tumor, was performed using a high-frequency electric knife in accordance with the requirements of radical mastectomy surgery. Mastectomy is not indicated if clinical examination, mammography and ultrasonography of the anatomic breast reveals no signs of disease, but should be performed when differential diagnosis is challenging [15]. Most of the axillary lymph nodes of the patient were fused into slices, and hard fibreboard was formed around the axillary vein. Therefore, axillary lymph nodes should be carefully dissected and dissected.

This patient has a paramammary location breast cancer and has a triple-negative molecular staging. Triple-negative breast cancer (TNBC) is defined as a type of breast cancer with negative expression of estrogen (ER), progesterone (PR), and human epidermal growth factor receptor-2 (HER2) [16]. Compared with other breast cancer subtypes, TNBC is highly invasive and has a high early recurrence rate. Patients usually relapse within 5 years after surgery, with a very poor overall prognosis [17]. After multiple chemotherapy regimens, the patient had a poor overall outcome with PD, suggesting that the patient was not sensitive to any of the currently used sensitive chemotherapeutic agents for breast cancer and had a poor prognosis.

Paramammary adenocarcinoma is a rare disease and the most common somatic presentation of this cancer is a palpable lump. Oedema, pressure, breast pain and nonspecific discomfort are observed less frequently [18]. However, the area of occurrence of accessory breast cancer is definite, with the submammary region along the milk line passing through the vulva, perineum, groin and thigh (5-10%) [19] and the axillary, the most common site of predisposition (60-70%) [20], etc. Therefore, when abnormalities are presented in these areas, the disease can be included in the investigation in conjunction with physical examination and ancillary tests.

Diagnostic procedures and therapeutic management of patients with accessory breast cancer are not unequivocally established [21]. Because of the rarity of this disease and the consequent lack of clinical awareness, the ability to correctly identify accessory breast tissue is an important factor in the differential diagnosis of axillary tumors. Recognition of this disease by clinicians and pathologists is important in preventing misdiagnosis of malignancy and performing unnecessary extensive surgery.

5. Conclusion

The patient was given preoperative neoadjuvant chemotherapy because of the locally advanced stage and axillary lymph node metastasis. After multiple chemotherapy regimens, the patient had a poor overall outcome with PD, suggesting that the patient was not sensitive to any of the currently used sensitive chemotherapeutic agents for breast cancer and had a poor prognosis. Radiotherapy is effective in reducing local recurrence in patients with locally advanced disease. The patient next received multiple lines of chemotherapy, radiotherapy, immunotherapy and other treatment regimens but the efficacy of PD. With the presentation of the patient's disease progression, this case suggested that patients with triple-negative parametrial cancer have poor treatment outcomes.

6. Statement of Ethics

This study has obtained the informed consent of the patient and the approval of the Ethics Committee of the Second Affiliated Hospital of Guangxi University of Science and Technology.

Conflict of Interest Statement

The authors declare that they have no conflict of interest.

Acknowledgments

This work was supported by the Science and Technology Plan Projects of Liuzhou (2022CAC0229), Scientific Research Project of Guangxi Health Commission (Z-B20230978 and Z-B20230981) and College Students' Innovative Entrepreneurial Training Plan Program (202110 594024).

References

[1] Miles RC, Amornsiripanitch N, Scheel J. Inflammatory breast cancer in accessory abdominal breast tissue. Radiol Case Rep. 2017;12(4):639-41.

[2] Howard BA, Gusterson BAJJoMGB, Neoplasia. Human Breast Development. 2000;5(2):119-37.

[3] Page RN, Dittrich L, King R, et al. Syringomatous adenoma of the nipple occurring within a supernumerary breast: a case report. Journal of cutaneous pathology. 2009;36(11):1206-9.

[4] Yoon HJ, Sung SH, Moon BI, et al. Invasive ductal carcinoma arising from dense accessory breast visualized with 99mTc-MIBI breast-specific γ imaging. Clinical nuclear medicine. 2014; 39(8):717-20.

[5] Devine C, Courtney CA, Deb R, et al. Invasive lobular carcinoma arising in accessory breast tissue. World journal of surgical oncology. 2013; 11:47.

[6] Basu S, Bag T, Saha KS, et al. Accessory breast in the perineum. Tropical doctor. 2003;33(4):245.

[7] Chan NG, Penswick JL, Labelle E, et al. Ectopic breast tissue presenting as an anal polyp. Canadian journal of surgery Journal canadien de chirurgie. 2007;50(6): E23-4.

[8] Kitamura K, Kuwano H, Kiyomatsu K, et al. Mastopathy of the accessory breast in the bilateral axillary regions occurring concurrently with advanced breast cancer. 1995;35(2):221-4.

[9] Marshall MB, Moynihan JJ, Frost A, et al. Ectopic breast cancer: case report and literature review. Surgical oncology. 1994; 3(5):295-304.

[10] Gutermuth J, Audring H, Voit C, et al. Primary carcinoma of ectopic axillary breast tissue. Journal of the European Academy of Dermatology and Venereology: JEADV. 2006;20(2):217-21.

[11] Schmidt H. Supernumerary nipples: prevalence, size, sex and side predilection -- a prospective clinical study. European journal of pediatrics. 1998;157(10):821-3.

[12] Scanlan KA, Propeck PA. Accessory breast tissue in an unusual location. AJR American journal of roentgenology. 1996; 166 (2): 339-40.

[13] Visconti G, Eltahir Y, Van Ginkel RJ, et al. Approach and management of primary ectopic breast carcinoma in the axilla: where are we? A comprehensive historical literature review. Journal of plastic, reconstructive & aesthetic surgery: JPRAS. 2011;64(1): e1-11.

[14] Loukas M, Clarke P, Tubbs RS. Accessory breasts: a historical and current perspective. The American surgeon. 2007;73 (5): 525-8.

[15] Markopoulos C, Kouskos E, Kontzoglou K, et al. Breast cancer in ectopic breast tissue. European journal of gynaecological oncology. 2001;22(2):157-9.

[16] Youn HJ, Jung SH. Accessory Breast Carcinoma. Breast care (Basel, Switzerland). 2009;4(2):104-6.

[17] Wolff AC, Hammond ME, Hicks DG, et al. Recommendations for human epidermal growth factor receptor 2 testing in breast cancer: American Society of Clinical Oncology/College of American Pathologists clinical practice guideline update. Journal of clinical oncology: official journal of the American Society of Clinical Oncology. 2013;31(31):3997-4013.

[18] Yin L, Duan JJ, Bian XW, et al. Triple-negative breast cancer molecular subtyping and treatment progress. Breast cancer research: BCR. 2020;22(1):61.

[19] Pardo M, Silva F, Jiménez P, et al. [Mammary carcinoma ine ectopic breast tissue. A case report]. Revista medica de Chile. 2001; 129(6):663-5.

[20] Marshall MB, Moynihan JJ, Frost AL, et al. Ectopic breast cancer: case report and literature review. 1994;3(5):295-304.

[21] Madej B, Balak B, Winkler I, et al. Cancer of the accessory breast--a case report. Advances in medical sciences. 2009; 54 (2): 308-10.