

Personalized Perioperative Care for a Patient with a 10-Year-Old Postpartum Old Thrombus after Neoadjuvant Therapy for Breast Cancer

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Abstract

Breast cancer is one of the most common malignant tumors in women, and has become the main cause threatening women's health. A case of breast cancer with neoadjuvant chemotherapy was discharged after active treatment and nursing.

Keywords

Breast Cancer, Neoadjuvant Chemotherapy, Personalized Care

1. Introduction

Breast cancer is a phenomenon of uncontrolled proliferation of the breast under the action of multiple carcinogens [1]. According to the data [2], in 2020, the number of new cases of breast cancer in the world will reach 2.26 million, accounting for about 1/4 of the world's cancer cases, which has replaced lung cancer as the world's largest cancer. In China, there are about 420,000 new cases of breast cancer every year, and the incidence rate and mortality rate rank first and fourth respectively among female malignant tumors [3] [4]. Axillary lymph node enlargement, breast lump, breast juice overflow, etc. are early symptoms of breast cancer. With the aggravation of the disease, cancer cells can metastasize far away, leading to multiple organ diseases in the patient's body, endangering the patient's life, health and safety [5] [6]. In recent years, with the development of diagnosis and treatment technology and the update and iteration of therapeutic drugs, the diagnosis and treatment level of breast cancer in China has improved year by year, and a mature system including chemotherapy, endocrine therapy, targeted therapy and immunotherapy has initially formed [7]. Neoad-

juvant chemotherapy is a systemic chemotherapy performed before implementing local treatment methods [8]. Due to the patient's lack of understanding of neoadjuvant chemotherapy for breast cancer, a thrombus refers to a solid formed in the heart or blood vessels from platelet aggregation or blood coagulation in the body's blood. A thrombus is a solid formed in the blood of the body by aggregation of platelets or blood coagulation in the heart or blood vessels. Thrombus lasting more than one month is called an old thrombus, as the blood of cancer patients is in a hypercoagulable state, making them prone to recurrent thrombosis. Moreover, chemotherapy can lead to a series of side effects, causing physiological and psychological discomfort in patients, thus requiring scientific care for the patients [9].

2. Case Introduction

The patient, female, 39 years old, married, was admitted to the hospital 3 weeks after neoadjuvant chemotherapy for left breast cancer. On December 2022, I palpated a breast nodule on my own, causing blood and fluid leakage. At that time, I did not take it seriously and did not take any treatment. Recently, it has grown rapidly. On June 26, 2023, an ultrasound examination at Sun Yat-sen Memorial Hospital revealed a solid nodule in the left breast, with a size of 27*13*16 mm. No obvious enlarged lymph nodes were found in the bilateral axillary areas of BIRADS 4A.

3. Treatment Process

3.1. Physical Examination

T: 36.20°C; P: 74 times/minute; R: 17 times/minute; BP: 96/61 mmHg; H: 160 cm; W: 60 kg; BSA: 1.6221 m²; KPS: 90 points. Clear consciousness, normal development, good mental health, moderate nutrition, autonomous position, cooperative physical examination. No palpable swelling of superficial lymph nodes throughout the body; There is no pallor, cyanosis, or bleeding on the mucous membranes and skin throughout the body. There are no abnormalities in the facial features of the head, no yellow staining in the sclera, no congestion or edema in the eyelid and conjunctiva, normal pupil appearance (bilateral pupils are equally large and round), sensitive light response, no abnormal secretions in the ears and nose, smooth oral mucosa, no swelling in the bilateral tonsils, no congestion in the pharynx, the trachea is in the center, the neck is soft, and the thyroid gland is not enlarged. Both lungs are normal, with clear sounds on percussion and no abnormal manifestations. Bilateral breast development is normal, and there are no abnormalities in the chest. No abnormal protrusions or depressions were found in the precordial area, no abnormal apical pulsation was observed, and no pathological cardiac murmurs were heard in the auscultation areas of each valve. The rhythm was consistent, and the auscultation heart rate was 74 beats per minute. Soft abdomen, no rebound pain or tenderness. Liver subcostal, abdominal mass, spleen subcostal not palpable. Murphy's sign (-), by

tapping the renal area, no percussion pain was found in the patient's renal area, normal bowel sounds, and negative mobile dullness. Roughly measure the muscle strength of the limbs to be normal, with no deformities, free movement, physiological curvature of the spine, and no edema in both lower limbs. Physiological reflex is normal, pathological reflex is not elicited.

3.2. Specialized Examination

Kps: 90 points. Clear mind, autonomous position, calm expression. The skin and mucous membranes throughout the body are not pale or yellowish. A mass of about 1cm was palpated in the upper outer quadrant of the left breast, which became softer than before, with no rupture on the surface, and no exudation of blood or fluid from the nipple. An enlarged lymph node about 1cm is palpated in the left axilla. No abnormalities were detected in the right breast and right armpit. Clear breathing sounds in both lungs, no dry or wet rales heard. Heart rate is 74 beats per minute, and the rhythm is strong without any murmurs. The abdomen is flat and soft, with no tenderness or rebound pain throughout the abdomen. No abdominal mass was palpated, and the liver, spleen, and subcostal area were not palpated. Murphy's sign is negative. There is no obvious percussion pain in both renal areas, negative mobility dullness, normal bowel sounds, no abnormalities in the anus and external genitalia, no deformities or tenderness in the spine and limbs, and no edema in the face and limbs.

3.3. Auxiliary Inspection

Molybdenum target examination on June 26, 2023 showed a solid nodule in the left breast, BIRADS 4C, and multiple enlarged lymph nodes in the left axilla. 2023/7/2 Chest CT: nodular in the upper quadrant outside the left breast. It is considered that breast cancer is likely. There are several lymph nodes in the left armpit and deep surface of the pectoral is minor muscle, indicating a high possibility of metastasis. S2 type nodules in the portal phase of the liver are slightly low-density lesions with undetermined nature. It is recommended to have a follow-up examination. 2023/7/11 Upper abdominal magnetic resonance imaging: Hepatic S2 nodular lesion, considering cyst. Accessory spleen. Breast magnetic resonance imaging on July 3, 2023: left lateral upper quadrant nodule, breast cancer considered, conforming to BI-RADS5. Bilateral glands are scattered with nodules and patchy enhancement, suggesting possible background enhancement. There are several lymph nodes in the left armpit and left pectoral space, indicating a high possibility of lymph node metastasis. On July 5, 2023, breast and lymph node biopsy revealed invasive breast cancer: immunohistochemistry: ER (approximately 95%+), PR (approximately 80%+ in dense areas), HER2 (0), Ki-67 (approximately 70%+). Bone scan showed no clear metastasis. Clinical diagnosis: left breast cancer cT2N2M0 Phase IIIA Luminal B1. On July 8, 2023, July 22, August 4, 2023, August 18, September 3, October 10, 2023, October 31, and November 21, 2023, ddEC-T regimen chemotherapy was performed in

stages C1 - C8. The process was smooth, and after C1 treatment, there was a third degree decrease in white blood cells, which recovered after symptomatic white blood elevation. After C2, C3, and C4, the degree I transaminase increased. Follow up efficacy evaluation PR after C4 treatment. After C6, there was a decrease in grade IV white blood cells (with the lowest reported white blood cell count of $0.8 \times 10^9/L$), accompanied by fever and a maximum body temperature of 39 degrees Celsius, accompanied by grade III diarrhea. Symptomatic supportive treatments such as anti-diarrhea, anti-infection, and elevated white blood count were given, and the condition improved. Diarrhea occurred after C7, but improved after taking oral antidiarrheal medication. After C8, the patient did not report any significant discomfort. After chemotherapy, the tumor regressed well and is now undergoing surgical treatment in our department. The patient is generally in good condition, with no fever, normal mental state, good appetite, normal bowel movements, and no significant change in weight.

3.4. Preoperative Consultation

Preliminary diagnosis: 1) cT2N2M0IIA LuminalB1 type of left breast cancer. 2) Lower limb venous thrombosis left lower limb. The purpose of the consultation request is to detect left lower limb thrombosis around 2013 and regularly take oral medications such as warfarin and Maizhiling. Starting from June 2023, take Bayeritol 2# QD. Discontinue taking Warfarin and Maizhiling, discontinue use of Bayeritol on December 6, 2023. December 12, 2023 09:43:57.

Lower limb vein color ultrasound (set) examination results, ordinary ultrasound examination: The left common femoral vein, superficial femoral vein, popliteal vein to the left posterior tibial vein can be seen throughout the entire process, with uneven thickness and echo separation located in the lumen, with a thicker separation about 2 mm, and partial deformation visible under pressure. The lumen of the right external iliac vein, common femoral vein, superficial femoral vein, popliteal vein, posterior tibial vein, anterior tibial vein, and great saphenous vein at the confluence of the common femoral vein and small saphenous vein at the confluence of the common popliteal vein is not significantly widened, with a smooth inner wall and no echo. There is no solid hypoechoic mass inside. Color Doppler ultrasound examination: reperfusion blood flow signals can be seen in the left common femoral vein, superficial femoral vein, popliteal vein to the left posterior tibial vein.

3.5. Diagnosis

The entire process of organizing thrombus from the left common femoral vein to the left posterior tibial vein (with recanalized lumen) has not changed significantly compared to the previous examination (June 29, 2023). Surgical treatment has been performed today, and consultation is seeking perioperative management advice.

4. Consultation Recommendations

I) In the hospital stage, after the cessation of postoperative active bleeding, gastrointestinal diet can be resumed immediately, and the previous oral administration of “rivaroxaban” can be restored. If gastrointestinal diet is not available, anticoagulation with “enoxaparin 4000 IU, H, QD” can be given after the cessation of active bleeding.

II) Administer “Atorvastatin Calcium Tablets 10 mg, QD” for lipid-lowering and cholesterol control.

III) For standardized diagnosis and treatment of related thrombotic systems, it is recommended that they continue to seek medical treatment in the vascular surgery department of a comprehensive hospital.

1) Establish a personalized nursing team. Select outstanding nursing staff through assessment to form a personalized nursing team, consisting of one supervising nurse, one head nurse, and six nursing staff. Experts with more than 10 years' experience in the hospital were selected to train the nursing team members, including the definition of personalized nursing, specific methods and knowledge of neoadjuvant chemotherapy for breast cancer.

2) Preoperative care.

a) Within 1 day of the patient's admission, nursing staff will understand the patient's basic information (age, degree of illness, etc.) and have simple communication with the patient to roughly understand the patient's understanding and attitude towards chemotherapy.

b) Within 2 days after admission, nurses used one-on-one method to explain breast cancer and surgery related knowledge and precautions to patients and their families, as well as the management rules and regulations of hospital wards. Nursing staff patiently introduce the special characteristics of the disease, the hospital's organizational structure and functions, the professional abilities of medical staff, and the level of medical technology to patients.

Firstly, preoperative evaluation is an important part of nursing work. Nurses should use thrombus risk assessment tools such as the Caprini score to assist in assessing a patient's tendency towards thrombosis.

Secondly, the importance of preoperative education cannot be ignored. Nurses can introduce the related knowledge of breast cancer complicated with lower limb vein thrombosis to patients, including the pathogenesis, symptoms, and preventive measures of the disease. At the same time, nurses should emphasize the importance of preoperative preparation, surgical risks, and post-operative rehabilitation to patients in order to improve their cooperation and treatment compliance.

Again, preventive anticoagulant therapy is one of the important measures for preoperative care. According to the specific situation of the patient, nurses can work together with doctors to develop appropriate anticoagulation plans, including drug selection, dosage, and medication duration. Nurses should monitor the coagulation function indicators of patients and adjust anticoagulant treat-

ment plans in a timely manner to ensure the safety and effectiveness of treatment.

In addition, preoperative and perioperative physical care is also important. Nurses should encourage patients to actively participate in lower limb movements and activities, avoiding prolonged periods of rest or sitting. For patients who are bedridden for a long time, nurses can use auxiliary devices such as anti-pressure shock absorbers and elastic socks to reduce lower limb venous pressure. At the same time, nurses can also teach patients the correct use of lower limb compression devices to promote blood circulation and prevent thrombosis.

c) Roughly analyze the emotional state of patients based on psychological knowledge, for patients with anxiety and despair. Nursing staff provide health education to patients, enabling them to understand the natural development laws of human beings, strengthen humanistic care, and provide positive psychological suggestions. Nursing staff communicate with patient family members to strengthen their communication, care, and understanding of patients. For patients with depression, nursing staff create a good hospital environment by keeping the ward ventilated and controlling the temperature and humidity at 25°C and 50°C, respectively. They regularly disinfect and replace the patient's daily items. They provide appropriate guidance and recommend relaxation techniques to help the patient, such as breathing relaxation: maintaining natural abdominal breathing, breathing steadily, and focusing on the sensation of air-flow in the respiratory tract. Nursing staff encourage family members to maintain a positive and sunny attitude in front of the patient. Depending on the severity of depression, nursing staff administer a certain dosage of antidepressant medication.

d) Design a scientifically balanced diet based on the patient's preferences, rich in protein sources such as eggs, fish, and shrimp; high in fat sources such as meat, animal organs, peanuts, and seeds; low in sweetness, including bananas and hawthorn.

3) Postoperative care. a) Upon returning to the hospital room, the bedside nurse guides and supervises the patient in performing ankle pump exercises. The patient is assisted in wearing appropriate compression stockings, turned regularly, and their pain level is constantly monitored, with any issues promptly reported to the attending physician. Nursing staff provide guidance on personal hygiene management, including changing undergarments regularly, maintaining good ventilation and humidity in the hospital room, cleaning the mouth and rinsing after meals, and regularly disinfecting personal items. b) Weekly telephone follow-up and home visits every two weeks are conducted with the patient. c) Nursing staff instruct the patient to hold a pole in both hands with palms facing upwards, raising it above the head and using the healthy arm to assist the affected side, holding the affected side for 6 - 10 seconds. The patient is guided to clasp both hands and place them behind the neck, with elbows raised for 6 - 10 seconds. During exercise training, it is important to progressively increase intensity. If symptoms such as headaches, dizziness, sharp pain, blurred

vision, numbness in the arms, chest pain, swelling, weakness, or loss of balance occur, the therapist should be informed immediately, and the exercise plan adjusted.

5. Discussion

With the acceleration of the pace of life, people's pressure is increasing, followed by the invasion of various diseases. In recent years, the incidence rate of breast cancer is gradually increasing. Breast cancer seriously threatens the physical and mental health of female friends, and brings great harm to the physical and mental health of female patients [10]. Breast cancer is the most common cancer, an important factor endangering women's lives, and one of the major causes of cancer related deaths worldwide. According to data [11], in 2020, breast cancer, known as the "pink killer", has replaced lung cancer worldwide, with about 2.26 million cases of breast cancer, becoming the world's largest cancer.

Operation is the main means to treat breast cancer. Although the effect of operation is obvious for patients with advanced tumors, breast cancer cells can transfer to other breast tissues through blood circulation, lymphatic system and other ways, continue to grow and form new tumors, with a high recurrence rate. Neoadjuvant chemotherapy can minimize the risk of micrometastasis disease recurrence, therefore, preoperative neoadjuvant chemotherapy has become an important part of comprehensive treatment for breast cancer [12]. Neoadjuvant chemotherapy for breast cancer refers to the chemotherapy before surgery, which aims to shrink the tumor, reduce the stage, and improve the resection rate and breast conservation rate. Due to the high expectations and skepticism of patients towards this treatment method, it has exacerbated their physical and mental pain during the treatment process. Therefore, it is necessary to provide scientific nursing care for patients in neoadjuvant chemotherapy [13]. With the diversified development of clinical nursing models, personalized nursing has emerged to meet the growing demand for personalized and diversified nursing. Personalized care refers to implementing care based on the actual situation and specific needs of patients, developing different nursing plans and implementing different nursing measures according to their different situations and needs [14].

Providing professional and high-quality nursing services for personalized perioperative care can help alleviate the patient's inner stress, maintain normal blood circulation, and effectively prevent the occurrence of lower extremity venous thrombosis. Tumor patients' blood tends to be in a hypercoagulable state compared to normal individuals. Combined with the body's reduced ability to prevent blood clot formation and the fact that malignant tumors are chronic debilitating diseases, patients often require bed rest, leading to sluggish blood flow. Additionally, some postoperative patients may experience lower limb movement disorders, which can trigger deep vein thrombosis in the lower limbs. Therefore, the incidence of VTE in tumor patients is 4 to 7 times higher than non-tumor patients and is showing an increasing trend year by year. After surgery, patients

may experience vascular functional impairment due to damage to their arteries and veins, leading to activation of the clotting system. Additionally, prolonged immobilization in tumor patients can slow down blood flow, making the blood more prone to hypercoagulability and eventual development of lower extremity venous thrombosis. Therefore, during surgery, managing body temperature and environmental temperature can reduce the occurrence of hypothermia events and promote improvement in blood circulation function for patients. Furthermore, postural management can improve venous return in the lower limbs, ultimately reducing the incidence of lower extremity venous thrombosis. Implementing personalized care can avoid unnecessary nursing procedures, enhance nursing efficiency, better protect the patient's blood vessels, reduce the risk of vascular damage from surgery, prevent lower extremity venous thrombosis, play a crucial role in promoting postoperative recovery, and increase patient satisfaction.

6. Conclusion

In conclusion, personalized care can provide patients with scientifically effective nursing services, enhance the quality of care post-implementation, and effectively improve the quality of life for breast cancer patients.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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