

# Treatment and Prevention Strategies of Breast Cancer

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**Abstract.** With the increasing trend of late childbearing and low childbearing, the incidence of breast cancer is increasing rapidly worldwide. At present, breast cancer has become one of the more frequent malignant tumor diseases in women and has aroused widespread concern in society. The cause of the disease is not completely clear, with the deepening of research, the relevant detection methods are constantly updated, as far as possible early diagnosis. At present, the main methods of breast cancer prevention are lifestyle adjustment, including reducing alcohol intake, maintaining a healthy weight and chemical prevention, but the methods are limited, so the research on breast cancer prevention is particularly important. At the same time, medical workers should educate the majority of women about disease prevention, so that women can establish a correct concept of prevention and treatment, so as in order to lower the prevalence of breast cancer and improve the women health.

**Keywords:** Breast cancer, prevention, treatment.

## 1. Introduction

One of the most common cancers in the world for women is breast cancer, which develops when breast cells proliferate and become tumors. Tumors will be able to grow through the whole body and become deadly. Worldwide, women's milk ducts and milk-producing lobules are the source of breast cancer cells to lower the prevalence of breast cancer. If people forget to check it, tumors can spread throughout the body and become deadly. Breast cancer cells originate in the milk ducts and milk-producing lobules of the breast. The earliest forms are not fatal, and it is detectable at an early stage. Cancer cells can move to nearby cell tissues. This creates a tumor, causing a lump. Aggressive cancers can spread to nearby lymph nodes or other organs, and metastasis can be life-threatening. In recent years, the incidence of breast cancer has continued to rise globally, especially in economically developed countries and regions. In 2022, 2.4 million women worldwide were diagnosed with breast cancer and 670,000 women did die from it [1,2]. Breast cancer is present in countries around the world and can strike women of any age after puberty, but the incidence is increasing in older women. Global estimates show a significant imbalance between the burden of breast cancer and human development. For example, one in twelve women in developed countries will receive a breast cancer diagnosis at the same time in their lives, and one in seventy-one women will do the test in the United States will die from breast cancer. In contrast, in countries with a low Human Development Index, while only 1 in 27 women will be one in 48 women who receive a breast cancer diagnosis in their lifetime will pass away from the cancer [1]. The etiology of breast cancer is very complex, involving many factors such as genetic factors, hormone levels, environmental exposure and lifestyle.

The purpose of this paper is to investigate the pathogenesis, epidemiological characteristics, clinical manifestations and treatment strategies of breast cancer and delve into the early diagnosis and treatment of breast cancer, as well as the application prospects of emerging treatment technologies by analyzing the latest research advances and clinical data. In addition, this paper will focus on breast cancer prevention strategies, especially lower the risk of the cancer through lifestyle interventions and public health policies. Ultimately, this study hopes to provide a valuable reference for the comprehensive understanding and effective management of breast cancer.

## **2. Diagnosis of breast cancer**

### *2.1. Western medicine diagnosis*

The diagnosis of breast cancer usually involves multiple tests and evaluation methods to ensure early detection and accurate classification. Since breast cancer often has no obvious symptoms in its early stages, regular screening is especially important for early diagnosis. Common diagnostic methods include mammography, ultrasound, magnetic resonance imaging and biopsy. These methods help doctors identify potential tumors, assess their nature, and develop personalized treatment plans. A diagnosis of breast cancer usually requires a series of tests and evaluations, women can regularly self-examine their breasts to see if there are lumps, skin depressions, nipple discharge and other abnormalities. Doctor's examination: The doctor can detect abnormal lumps or other suspicious signs in the breast or underarm during a physical examination [3]. Mammography (mammography) is the most commonly used screening method and can detect abnormal areas within the breast. And ultrasound often used to further evaluate suspicious areas found on mammograms, especially to distinguish between cystic and solid masses. For high-risk patients or those with complex breast structures, MRI can provide more detailed images [4]. When a suspicious area is found by imaging, a biopsy is needed to confirm the diagnosis. Like needle aspiration biopsy (a fine needle is used to extract a cell or tissue sample from a suspected area for pathological analysis) and core needle biopsy (use a thicker needle to obtain a larger range of tissue samples). If breast cancer is diagnosed, your doctor may order additional tests (such as PET scans, bone scans, etc.) to determine the stage of the cancer and assess whether it has spread to other sites [3]. 6. Determine the type and stage of cancer. After diagnosis of breast cancer, doctors will determine the stage of breast cancer based on the size of the tumor, the spread of the tumor, the number of lymph nodes involved and whether there is distant metastasis. This is very important in developing a treatment plan. Diagnosis of breast cancer requires pathological evidence, that is, a biopsy to confirm the cancerous nature of the cells after imaging tests have found suspicious areas. The final diagnosis and staging were based on the results of integrated imaging and pathological analysis.

### *2.2. Traditional Chinese medicine(TCM) diagnosis*

In the theory and practice of Chinese medicine, breast cancer is not a disease directly corresponding to the concept of "cancer" in Western medicine, but is usually classified as "milk addiction", "milk rock" and other categories. The diagnosis of breast cancer in TCM mainly relies on the combination of observation, smelling, questioning and incision and the results of modern medical examination. Here are some key steps: 1) Check-up. Observe breast shape: TCM doctor will observe the size, shape, color, etc., and pay attention to whether there are lumps in the breast and whether the skin is abnormal. Complexion and tongue image: TCM doctor by observing the patient's complexion, tongue coating, tongue quality, to determine whether the movement of Qi and blood is normal, whether there is blood stasis or phlegm and other pathological changes [5]. 2) Smelling. Listen to the voice: Pay attention to whether the patient's voice has changed, whether there is shortness of breath, low voice, fatigue and other manifestations. Smell: Chinese traditional treatments may judge the lesions of internal viscera through the patient's breath, body odor, etc. 3) Consultation. Medical history and symptoms: Traditional treatment will ask the patient about the medical history in detail, including the time of the appearance of the lump, the change in size, whether it is accompanied by pain, menstrual conditions, lifestyle habits, etc. Systemic symptoms: Ask if there are systemic symptoms such as loss of appetite, weight changes,

fatigue, mood changes, in order to fully understand the patient's physical condition. 4) Feel the pulse: by sensing the pulse of the human body, the disease is judged, or the doctor directly touches or presses on certain parts of the human body by the finger to understand abnormal changes, and thus infer the disease.

Chinese medicine comprehensively assesses the overall state of patients through observation, smelling, questioning and incision, and combines traditional medical theory with syndrome differentiation, but usually combines the examination results of modern medicine to make a more comprehensive judgment. All in all, Chinese traditional medicine is also a good way to whether detect the existence of cancer or try to treat it.

### **3. Risk factors that can cause breast cancer**

The causes of breast cancer include a variety of factors, mainly divided into the following categories: Genetic factors: Some breast cancers are associated with genetic mutations, most notably mutations in genes. These genetic mutations can be transmitted through families, raising the chance of developing breast cancer; Hormone levels: long time exposure to estrogen and progesterone is closely connected with the emergence of breast cancer. Women with early menarche, late menopause, no or late childbearing, and overuse of hormone replacement therapy may have a higher risk of breast cancer; Lifestyle factors: Diet: A high-fat diet and being overweight may increase the risk of breast cancer. Alcohol: Long lasting excessive alcohol consumption is considered a factor for breast cancer. Physical inactivity: A sedentary lifestyle may also increase the risk; Environmental factors: Exposure to radiation or certain harmful chemicals in the environment may increase the risk of breast cancer; Reproductive history and breastfeeding: Women who have not had children or who have had their first child later in life may have a higher risk of breast cancer. Long-term breastfeeding may reduce the risk; Density of breast tissue may increase the risk of breast cancer and can make cancer harder to detect on mammograms [6,7].

The combination of these factors can affect the development of breast cancer, but it is not a guarantee that possessing these risk factors will result in breast cancer.; Conversely, women with no obvious cause can also get the disease. Regular screening and early detection are very important for the prevention and treatment of breast cancer.

### **4. Prevention of breast cancer**

Breast cancer is one of the most common cancers in women worldwide, but its risk can be effectively reduced by taking appropriate preventive measures. Preventing breast cancer is not just a medical endeavor, but also involves lifestyle adjustments and an emphasis on early screening. Understanding and taking scientifically based preventive measures can help women live healthier lives while reducing their risk of disease. The prevention of Breast Cancer is also essentials. It involves many aspects, including lifestyle, diet, medical monitoring and so on.

#### *4.1. Keep a healthy weight*

Being overweight is a risk factor for breast cancer, especially after menopause. Maintaining a healthy weight can help reduce your risk. Overweight and obesity in postmenopausal women are connected with a highly risk of breast cancer [8]. Weight control can reduce the risk of the disease. Some studies have shown that for every 5 units increase in body mass index (BMI), the risk of breast cancer may increase by 10 to 20 percent. The benefit of weight loss is that if postmenopausal women successfully lose weight, especially through a healthy diet and increased physical activity, the risk of breast cancer may be correspondingly reduced. The exact amount of risk reduction depends on the magnitude and duration of weight loss, but it can reduce the risk by about 15% to 20%.

#### *4.2. Eat right*

Having a healthy diet can significantly reduce the risk of breast cancer, but the exact reduction is different from person to person and is affected by many factors, including an individual's genes, lifestyle habits, and diet. A mediterranean diet that full of fruits, whole grains, vegetables, nuts, and healthy fats

such as fish and olive oil, which contains a protease inhibitor, which can inhibit the free radicals generated by carcinogens in the body, including trace elements selenium and isoflavones, which can block carcinogenic genes and prevent breast cancer. Reducing or avoiding alcohol can reduce the risk of breast cancer. Studies have shown that a high-fat diet and a high intake of red or processed meat may increase the risk of breast cancer. Finally, a diet high in fiber, especially fiber from fruits and vegetables, can help reduce the risk of breast cancer. Overall, although a healthy diet cannot completely prevent breast cancer, studies have shown that a healthy diet can reduce the incidence of breast cancer by about 10% to 20%, depending on the individual's health and diet [9,10].

#### *4.3. Exercise regularly*

Regular exercise can significantly reduce the risk of breast cancer. Papers had shown that regular physical exercises can reduce the risk of breast cancer by 15 to 30 percent. This has to do with the effects of exercise on weight control, regulation of hormone levels, and strengthening of the immune system. The exact amount of risk reduction will vary based on factors such as an individual's baseline risk, type of exercise, intensity, and frequency. In general, at least 150 minutes of moderate-intensity exercise or 75 minutes of high-intensity exercise per week can bring significant health benefits. The risk reduction could be even greater if exercise levels increased [9,11].

#### *4.4. Avoid exposure to radiation and environmental contamination*

Avoiding exposure to surroundings pollution does help reduce the chance that get breast cancer, but how much is difficult to quantify. This depends on different factors, like an individual's lifestyle, genetic background and level of exposure to harmful substances. Overall, reducing exposure to radioactive substances and harmful chemicals (such as certain industrial pollutants, pesticides, etc.) can reduce the risk of breast cancer caused by environmental factors. In particular, avoiding unnecessary medical radiation (such as multiple CT scans) and reducing exposure to harmful chemicals in the environment are important measures that can help reduce the risk of disease [9].

#### *4.5. Breastfeeding*

Breastfeeding has been found to reduce the risk of breast cancer. According to the World Health Organization and multiple medical studies, breastfeeding can reduce the chance that get breast cancer by approximately 4.3% per 12 months. The exact rate of reduction will vary depending on individual factors, length of feeding, and whether there is a family history of the disease. Overall, the longer you breastfeed, the greater the reduction in breast cancer risk. This protective effect may be related to hormonal changes during lactation, elimination of toxins, and reduced ovulation [1,12]

By taking these measures in a comprehensive manner, the risk of breast cancer can be effectively reduced, and early detection and prevention can be achieved as far as possible. Regular medical check-ups and a healthy lifestyle are the most critical means of prevention.

### **5. Conclusion**

There are steps most women can take to improve their breast health. Even a small change can bring benefits. This essay explored the pathogenesis of breast cancer, risk factors, and advances in modern diagnosis and treatment. Studies already shown that the development of breast cancer is the result of a combination of factors, including genetics, hormone levels, environmental factors and lifestyle. Early screening and diagnosis play a crucial role in the prevention and treatment of breast cancer, and the application of imaging techniques such as mammography, ultrasound and MRI has greatly improved the accuracy of early detection. At the same time, emerging therapies such as targeted therapy and immunotherapy provide patients with more treatment options, effectively extending survival and improving quality of life. Future research should further focus on personalized therapy and the development of novel biomarkers to provide more precise treatment for patients with different types of breast cancer. In addition, the role of lifestyle intervention and public health education in breast cancer prevention can not be ignored, and publicity and promotion efforts should be strengthened to promote

more people to accept regular screening and health management, so as to achieve early detection, early treatment and higher cure rate of breast cancer.

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