

## Features of Breast Cancer Diagnosis

**Afa Bayramova\***

*Gynaecology Department, Yaroslavl Regional Perinatal Center, Russia*

**\*Corresponding Author:** Afa Bayramova, Gynaecology Department, Yaroslavl Regional Perinatal Center, Russia.

**Received:** February 09, 2018; **Published:** April 30, 2018

### Abstract

This is what I want to address to all women of all ages. Our life is complex, full of stresses and high rates; we have a lot to do in this life. But once it's time to stop and think about who is responsible for our health. The answer to this question is obvious: we only. Let's now remember when you last visited a doctor - on a preventive examination, and not about a disease. When you last did an ultrasound examination, examined the chest yourself or did a mammogram. Many will say to themselves that they have done it for a long time or not at all.

About 40,920 women in the U.S. are expected to die in 2018 from breast cancer, though death rates have been decreasing since 1989. For women in the U.S., breast cancer death rates are higher than those for any other cancer, besides lung cancer.

Besides skin cancer, breast cancer is the most commonly diagnosed cancer among American women. In 2018, it's estimated that about 30% of newly diagnosed cancers in women will be breast cancers.

In women under 45, breast cancer is more common in African-American women than white women. Overall, African-American women are more likely to die of breast cancer. For Asian, Hispanic, and Native-American women, the risk of developing and dying from breast cancer is lower.

As of January 2018, there are more than 3.1 million women with a history of breast cancer in the U.S. This includes women currently being treated and women who have finished treatment. A woman's risk of breast cancer nearly doubles if she has a first-degree relative (mother, sister, and daughter) who has been diagnosed with breast cancer. Less than 15% of women who get breast cancer have a family member diagnosed with it.

About 85% of breast cancers occur in women who have no family history of breast cancer. These occur due to genetic mutations that happen as a result of the aging process and life in general, rather than inherited mutations.

**Keywords:** *Breast Cancer; Oncogynaecology; Gynaecology*

### Causes of Breast Cancer

1. About 5 - 10% of breast cancers can be linked to gene mutations (abnormal changes) inherited from one's mother or father. Mutations of the *BRCA1* and *BRCA2* genes are the most common. On average, women with a *BRCA1* mutation have a 55 - 65% lifetime risk of developing breast cancer. For women with a *BRCA2* mutation, the risk is 45%. Breast cancer that is positive for the *BRCA1* or *BRCA2* mutations tends to develop more often in younger women. An increased ovarian cancer risk is also associated with these genetic mutations. In men, *BRCA2* mutations are associated with a lifetime breast cancer risk of about 6.8%; *BRCA1* mutations are a less frequent cause of breast cancer in men [1].
2. The most significant risk factors for breast cancer are gender (being a woman) and age (growing older).

3. Genetic predisposition: breast cancer most often occurs in women whose relatives were susceptible to the same disease. First of all, it is about the mother and/or sister, if there is one. In case the cancer of one of the next of kin was found, the diagnosis of oncology should be carried out from an early age.
4. The onset of menstruation to 12 years and termination after 55 years. According to statistics, the most common breast cancer occurs in women with a high level of estrogen. The longer menstrual cycles last, the greater the level of female hormones and the higher the risk. The absence of births and pregnancies can be attributed to the same risk factor [2].
5. The presence of cancer of the genital organs (including the cured). A direct connection between the female genital organs and the mammary gland does its job: a malignant tumor of the cervix, uterus and other organs most often causes breast cancer.
6. Smoking, alcohol abuse. Carcinogens, contained in alcohol and tobacco burning products, reduce the defences of the body and can lead to cancer. Such factors include radiation exposure, poor environmental conditions in the region, and so on.
7. Diabetes mellitus, hypertension, obesity
8. Admission of exogenous hormones for 10 years or more. It has been revealed that with long-term use of such drugs for contraception or for therapeutic purposes, the risk of cancer is higher [3].

Even if there is not a single risk factor from the above, it is impossible to completely exclude the possibility of this disease. And the only way to reduce damage is only an early diagnosis of oncology.

### Self-diagnosis of breast cancer

Timely diagnosis of breast cancer will help detect the disease at an early stage. Oncologists advice to visit a mammologist once every two years at the age of 35 to 50 years, from the age of 50 it is better to conduct an examination every year. Until then, you can exclude frequent trips to a specialist and use self-diagnosis. The signs of breast cancer are quite specific: a small compaction appears in the chest, usually painless and does not change the size and density within a month. This seal can be fingered by you [4].

Self-examination should be done once a month for 6 - 12 days from the beginning of menstruation, that is, in the first half of the cycle.

Self-examination is spent lying down and standing at the mirror, when taking a shower and in front of a mirror as follows:

1. Undress to the waist, stand in front of the mirror, put your hands down and carefully examine the mammary glands. Pay attention to all the signs
  - The shape of the nipple: if the nipple is "retracted", it becomes smaller, it can speak of an oncological disease;
  - The shape of the breast: whether it has not changed, whether there are any irregularities that can be taken for compaction;
  - The structure of the mammary glands: whether any densings are felt;
  - The size of the lymph nodes under the arms: their increase is a frequent symptom of oncology;
  - Color of the skin;
  - Your own feelings: does the chest hurt, do you experience unpleasant sensations throughout the menstrual cycle.
2. Do the same with your hands up. Raise your left hand and touch the left breast with the fingertips of your right hand. Begin self-examination from the periphery to the center with a straight arm, without bending your fingers. First, examine the axillary cavities, then move in a spiral towards the nipple of the breast.
3. Continue self-examination while lying down. Place a pillow under your left shoulder, tilt your arm behind your head or simply, without a pillow, raise your hand and wind your palm under your head and palpate your left breast with your right hand. Carry your fingers around in a circular motion with slight pressure, beginning with the edges of the breast in the direction of the nipple. To feel all the parts of the gland. Next, examine the left mammary gland similar to the right breast [5,6].

Self-diagnosis of breast cancer will not take much time. During the check, stand in front of the mirror, raise your hands above your head, look at the chest. On the presence of seals can speak specific "pits" on the skin.

If you have found a seal, if one of the nipples or both began to bleed, if the shape of the nipple or chest changed, there were unpleasant sensations, it is urgent to visit a mammologist who will be able to determine if you have an oncological disease.

### Professional Diagnosis of Breast Cancer

The appearance of cancer in the organ, convenient for examination and palpation, could be quite accessible for timely recognition. However, according to the experience of clinical oncology, the percentage of neglected cases reaches 30 - 40% by the time of diagnosis. This is due to the variety of manifestations of clinical, radiologic, sonographic and pathomorphological forms of malignant tumors of the breast, which complicates the correctness of the diagnosis and that, to some extent, can explain the unsuccessful results of treatment. Today it is impossible to focus on the diagnosis of pre-clinical forms of breast cancer without the use of modern radiation research methods [7].

Modern radiation diagnosis of diseases of the breast includes a number of imaging techniques, the main one of which is the X-ray mammography (RMG) - the "gold standard", the oldest and most reliable method, due to which the majority of malignant tumors of the breast are detected.

RMG significantly supplemented the diagnostic capabilities of the clinical method; however, it was inconvenient to use conventional X-ray machines for radiographs of the mammary glands because of their design features and the bremsstrahlung arising from the operation of an X-ray tube with a tungsten anode inadequate for such an organ as the mammary gland. These drawbacks necessitated the development of special high-performance X-ray equipment, which has a minimum radiation load and is capable of providing early diagnosis of cancer and other diseases of the breast [8,9].

The main age group for screening RMG is women aged 50 - 69. In March 1997, the American Association for Cancer Research (ACS) presented new guidelines for screening, according to which baseline screening RMG should be performed at the age of 40 years. For women who are at risk for breast cancer, screening mammography is performed 10 years earlier (from age 30).

Screening RMG can reduce mortality from the WP by at least 25 - 30%; in Sweden this indicator reaches 36-44%. According to other authors, with mass screening studies up to 15 - 20% of cases of cancer are generally skipped, and up to 30% of observations have to be considered questionable due to unreliable manifestations during visualization. Therefore, the development and improvement of diagnostic equipment, in particular digital RMG, is continuing, which is becoming more and more stable among radiographic methods of research.

The reasons for the erroneous conclusions in RMH in young women are: masking of the tumor by the shadow of an x-ray-dense fibroglandular complex, the presence of fibro-cystic mastopathy, radiography in the second half of the menstrual cycle, lactation and inflammatory diseases of the breast, and incorrect positioning of the mammary glands and inadequate compression of the breasts.

It is known that the greatest number of cases of breast cancer develops from the epithelium of the milk ducts. One of the recognized techniques for the investigation of ducts is X-ray contrast mammography - a doptegraphy that allows the detection of intra-cellular papillomas and cysts, as well as various variants of intra-cellular cancer. The main indication for carrying out ductography is the presence of unilateral pathological secretion of hemorrhagic character from, as a rule, one duct. The likelihood of having an intra-cellular cancer with bleeding from the nipple ranges from 2 to 28%. Cytological analysis of secretions does not have high specificity, and the number of false-negative conclusions of cytological research can reach 18% [10].

Ultrasound (ultrasound), which is not accompanied by radiation, allows you to visualize the pathological process regardless of its location, differentiate fluid and solid formations, and perform targeted minimally invasive interventions.

The harmlessness and simplicity of using ultrasound can be used as the first diagnostic method for breast diseases in young, pregnant and lactating women. Ultrasound is also an effective method of detecting and differential diagnosis of neoplasms with a developed fibroglandular complex and fibrocystic mastopathy. The introduction into clinical practice of modern ultrasound equipment with the possibility of obtaining a three-dimensional image was a new stage in the radiation diagnosis of diseases of the breast.

The sensitivity of ultrasound in the diagnosis of various cancers depends on the histological structure of the neoplasm and ranges from 68% to 100% [11].

Important information for the diagnosis and differential diagnosis of malignant and benign breast can provide color Doppler mapping (CDC) blood flow. The essence of the method is the ability to visualize all moving body fluids in real-time mode and analyze their movement. The CDC evaluates three parameters of blood flow simultaneously: direction, velocity, nature (homogeneity and turbulence) and allows to identify the smallest vessels that are invisible when scanning in B-mode.

As you know, any diagnostic method is not absolute. The possibilities of ultrasound are limited by the non-specificity of a number of echographic features. Limiting the diagnostic capabilities of ultrasound is the difficulty in determining pre-invasive carcinomas, non-palpable invasive carcinomas smaller than one centimeter in patients with fat involution phenomena, but the combination of RMG and ultrasound reaches 100% sensitivity.

X-ray computed tomography (CT) in the detection of neoplasms of the breast is an auxiliary diagnostic method, as it is significantly inferior to traditional RMG in a number of ways. CT - the manifestations of the neoplasm of the breast, on the whole, correspond to their mammographic pattern, however, a smaller number of fine details that do not appear in CT (especially microcalcifications) make it difficult to recognize the true nature of the observed changes. This method of diagnosis is poorly informative for non-palpable neoplasms, is associated with a greater radiation load on the patient [12,13].

One of the additional methods of instrumental examination of the breast is dynamic magnetic resonance imaging (MRI). Undisputed advantages of MRI over other radiation methods of the study are the absence of radiation load, the possibility of examining radiological dense and deformed mammary glands, regional lymphatic collectors and surrounding soft tissues. Also MRI is the method of choice for breast examination after cosmetic and reconstructive surgeries. Unfortunately, a significant limitation in the application of this method is its high cost, as well as a limited number of high-field (1.5T) magnetic resonance tomographs. The most common MRI is shown to patients with positive tests for the presence of gene anomalies (hereditary cancer), occult forms of cancer, as well as with suspicion of multifocal and multicentric types of cancer on the background of pronounced dys hormonal conditions.

Until recently, the main method of verifying the neoplasm of the breast was a sectoral resection on the operating table. However, surgical biopsy is often accompanied by a significant risk of developing cosmetic defects in the breast and is not at all obligatory in the diagnosis of benign lesions.

The use of high-quality RMG and ultrasound resulted in the detection of non-palpable formations, which was the impetus for the development of minimally invasive methods for verifying their morphological structure without surgical intervention. The introduction of high-precision equipment for minimally invasive interventions under the control of radiation research methods minimized the possibility of error in obtaining the material. Among the radiation methods of control when performing minimally invasive procedures for differential diagnosis and verification, ultrasound is the simplest and most accessible. Non-visualized ultrasound-borne education suspected of a malignant process is the main substratum for research on stereotactic installations with X-ray control. Modern X-ray digital technology allows obtaining cytological and histological material from the area of interest in the mammary gland with an accuracy reaching 90 - 100%.

To perform a stereotactic biopsy, both analog and digital attachments to standard mammography units and special horizontal tables have been developed [14].

The need for preoperative morphological verification of the diagnosis is directly related to the introduction of neoadjuvant therapy into oncological practice, which allowed to improve the indicators of the five-year survival of cancer patients by an average of 10.2%. Fine-needle aspiration and automatic trepan-biopsy are the most common methods of obtaining morphological material from pathological formations and areas of the breast. Aspiration through a thin needle has a high diagnostic efficiency and is the standard method of verifying the nodular formations of the breast. However, automatic trepan biopsy has a large laboratory potential. A kind of trepan biopsy is the combination of the latter with aspiration, which in some cases can serve as not only a diagnostic but also a medical procedure.

Thus, the determining factor of the diagnostic process is the choice of the research methodology, which optimizes the possibility of determining the formation, interpretation of data and evaluation of the development of the pathological process.

### TNM Staging – What it Means?

The ‘Tumour-Node-Metastasis’ (TNM) staging system for breast cancer classifies breast cancer for treatment purposes on the basis of the primary tumour type (invasive or in-situ) and size (T), the presence or absence of regional lymph node spread (N), and the presence or absence of distant metastases (M). The overall Stage of breast cancer (stage I through IV) results from the combination of T, N, and M characteristics.

The TNM staging system may estimate patient survival. However, medical specialists will not use this method alone to dictate treatment. As there are advancements in imaging techniques and treatments, revision of the staging guidelines will also be necessary [15].

The American Joint Committee on Cancer (AJCC) has also produced a two-page PDF poster to summarize breast cancer staging for patients.

The letters TNM describe three aspects of the staging process:

- The size of the primary breast tumour (T)
- Presence or absence of metastasis (cancer spread) to regional lymph nodes (N)
- The presence or absence of distant metastases (M)

The TNM scores classify the tumour from Stage 0 (the lowest stage) to Stage IV (the most advanced stage). Modifications to this classification can include P factors from the Pathologist [16].

### Treatment of Early Stages of Breast Cancer

The Treatment of Breast Cancer must be chosen by Stage of it, based on AJCC Staging systems prior to 2018 which were primarily based on tumour size and lymph node status. Since the updated staging system for breast cancer now also includes the ER, PR and HER2 status, the stages may be higher or lower than previous staging systems. Whether or not treatment strategies will change with this new staging system are yet to be determined. You should discuss your stage and treatment options with your physician [17].

The stage (extent) of your breast cancer is an important factor in making decisions about your treatment options. In general, the more the breast cancer has spread, the more treatment you will likely need. But other factors can also be important, such as:

- If the cancer cells contain hormone receptors (that is, if the cancer is ER-positive or PR-positive)
- If the cancer cells have large amounts of the HER2 protein (that is, if the cancer is HER2-positive)
- Your overall health and personal preferences
- If you have gone through menopause or not
- How fast the cancer is growing (measured by grade or other measures)

Talk with your doctor about how these factors can affect your treatment options.

### Stage 0

Stage 0 cancer means that the cancer is limited to the inside of the milk duct and is a non-invasive cancer. The treatment approaches for these non-invasive breast tumours are often different from the treatment of invasive breast cancer. Stage 0 breast tumours include ductal carcinoma *in situ* (DCIS).

Lobular carcinoma *in situ* (LCIS) used to be categorized as Stage 0 but this has been changed, because it is not cancer, but does indicate a higher risk of breast cancer [18].

### Stages I to III

Treatment for stages I to III breast cancer usually includes surgery and radiation therapy, often along with chemo or other drug therapies either before or after surgery.

**Stage I:** These breast cancers are still relatively small and either have not spread to the lymph nodes or have only a tiny area of cancer spread in the sentinel lymph node (the first lymph node to which cancer is likely to spread).

**Stage II:** These breast cancers are larger than stage I cancers and/or have spread to a few nearby lymph nodes.

**Stage III:** These tumours are larger or are growing into nearby tissues (the skin over the breast or the muscle underneath), or they have spread to many nearby lymph nodes.

### Recommendations for the Prevention of Breast Cancer

- Eat healthy foods. Try to follow a balanced diet with lots of vegetables and fruits and a small amount of fat-containing foods and refined carbohydrates. Use protein, which is contained in chicken breasts and fish, red meat eat less often. Instead of animal fats, vegetable oils can be used [19].
- Avoid excessive body weight. Obesity increases the risk of developing cancer.
- Lead an active lifestyle. It has been scientifically proven that an increase in physical activity reduces the risk of developing breast cancer by 10 - 25%.
- Use as little alcohol as possible. The use of alcohol increases the risk of developing breast cancer, so you should limit its use.
- Avoid hormone replacement therapy during menopause, as it promotes cancer.
- Avoid smoking. it promotes the development of breast and lung cancer.
- Try to breastfeed as long as possible. It is proved that lactating women have a lower risk of developing cancer.
- Regularly observe at the gynecologist; after 50 years or earlier (if you have relatives who have had breast cancer), go to the oncologist for screening.

Thus, taking care of one's health, regular self-examination and visiting a gynecologist are the main factors in the timely prevention and treatment of breast cancer.

### Conclusion

As an Ob&Gyn doctors, we should always be on a mission to free the world from cancer. Until we do, we'll be funding and conducting research, sharing expert information, supporting patients, and spreading the word about prevention. All so our patients can live longer - and better.

### Bibliography

1. National Cancer Institute. "SEER stat fact sheets: Breast. SEER Cancer Statistics Review, 1975-2010". Bethesda, MD: National Cancer Institute (2013).
2. National Cancer Institute. "Breast cancer risk in American women". National Cancer Institute Fact Sheet (2012).
3. Dizon DS., *et al.* "Breast cancer". In RR Barakat., *et al.*, eds., Principles and Practice of Gynecologic Oncology, 5<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins (2009): 897-945.
4. American Joint Committee on Cancer. "Breast". In AJCC Cancer Staging Manual, 7<sup>th</sup> edition. New York: Springer (2010): 345-376.

5. Golshan M. "Mastectomy". In JR Harris., *et al.* eds, Diseases of the Breast, 4<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins (2010): 501-506.
6. National Comprehensive Cancer Network. "Breast cancer risk reduction. NCCN Clinical Practice Guidelines in Oncology version 1.2013" (2012).
7. National Comprehensive Cancer Network. "Breast cancer screening and diagnosis. NCCN Clinical Practice Guidelines in Oncology, version 1.2012" (2012).
8. National Comprehensive Cancer Network. "Breast cancer. NCCN Clinical Practice Guidelines in Oncology, version 1.2013" (2013).
9. Patel SA and Topham NS. "Breast reconstruction". In JR Harris., *et al.* eds, Diseases of the Breast, 4<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins (2010): 529-539.
10. U.S. Preventive Services Task Force. Screening for breast cancer (2009).
11. Willett WC., *et al.* "Nongenetic factors in causation of breast cancer". In JR Harris., *et al.* eds, Diseases of the Breast, 4<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins (2010): 248-290.
12. Ferlay J., *et al.* "Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008". *International Journal of Cancer* 127.12 (2010): 2893-2917.
13. Coleman MP., *et al.* "Cancer survival in five continents: a worldwide population-based study (CONCORD)". *Lancet Oncology* 9.8 (2008): 730-756.
14. Anderson BO., *et al.* "Guideline implementation for breast healthcare in low-income and middle-income countries: overview of the Breast Health Global Initiative Global Summit 2007". *Cancer* 113.8 (2008): 2221-2243.
15. Siegel R., *et al.* "Cancer statistics, 2013". *CA: A Cancer Journal for Clinicians* 63 (2013): 11-30.
16. Berry DA., *et al.* "Effect of screening and adjuvant therapy on mortality from breast cancer". *New England Journal of Medicine* 353.17 (2015): 1784-1792.
17. Curtis RE., *et al.* "New Malignancies Among Cancer Survivors: SEER Cancer Registries, 1973-2000". NIH: National Cancer Institute (2006).
18. Buist DS., *et al.* "Diagnosis of second breast cancer events after initial diagnosis of early stage breast cancer". *Breast Cancer Research and Treatment* 124.3 (2010): 863-873.
19. Hartmann LC., *et al.* "Benign breast disease and the risk of breast cancer". *New England Journal of Medicine* 353 (2005): 229-237.

**Volume 7 Issue 5 May 2018**

**©All rights reserved by Afa Bayramova.**