

BREAST CANCER

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Abstract

It is appreciated that about 5–10% of adult cancers are due to genetic causes. Genetic predisposition is responsible for about 10% of breast cancers and for 5–10% of breast neoplasm, according to various authors. The strategies based on the inhibition of cancer breast cell initiation suffer from lack of information regarding critical initiation factors of breast carcinogenesis and difficulty to identify the moment of exposure.

Because the transition of the tumor process, including the promotion, is having place over a long time period, there are more opportunities to apply successfully fighting strategies than prevention strategies.

Breast cancer patients survival is a process of life cycle progress, beginning from the diagnosis and so on, on the whole following period, coping with the cancer stress.

Cuvinte-cheie: cancer, predispoziție genetică, factori de risc.

Keywords: cancer, genetic predisposition, risk factors.

1. INTRODUCTION

It is not clear what causes breast cancer. Doctors know that breast cancer occurs when some breast cells begin growing abnormally. These cells divide more rapidly than healthy cells do. The accumulating cells form a tumour that may spread (metastasize) through the breast, to the lymph nodes or to other parts of the body. Breast cancer most often begins with cells in the milk-producing ducts. Doctors call this type of breast cancer invasive ductal carcinoma. Breast cancer may also begin in the lobules (invasive lobular carcinoma) or cells within the breast.

Researchers have identified things that can increase the risk of breast cancer. But it is not clear why some people who have no risk factors develop cancer, yet other people with risk factors never do. It is likely that breast cancer is caused by a complex combination of genetic makeup and **environment**.

2. INHERITED BREAST CANCER

Doctors estimate that 5 to 10 percent of breast cancers are linked to gene mutation passed through generations of a family. A number of inherited defective

genes that can increase the likelihood of breast cancer have been identified. The most common are breast cancer gene 1 (BRCA1) and breast cancer gene 2 (BRCA2), both of which increasing the risk of both breast and ovarian cancer.

If you have a strong family history of breast cancer or other cancers, blood tests may help identify defective BRCA or other genes that are being passed through your family.

A risk factor is anything that makes it more likely to get a particular disease. But having one or even several risk factors does not necessarily mean someone could develop cancer – most women with breast cancer have no known risk factors other than simply being women (Blidaru, Voinea, Bordea, 2004).

Things that can increase risk of breast cancer include some considerations.

- **Being female.** Women are much more likely than men to develop breast cancer.

- **Increasing age.** Risk of breast cancer increases with age. Women older than 60 have a greater risk than younger women.

- **A personal history of breast cancer.** If someone had breast cancer in one breast, could have an increased risk of developing cancer in the other breast.

- **A family history of breast cancer.** If there is a mother, sister or daughter with breast cancer, there is a greater chance of being diagnosed with breast cancer. Still, the majority of people diagnosed with breast cancer have no family history of the disease.

- **Inherited genes that increase cancer risk.** Certain gene mutations that increase the risk of breast cancer can be passed from parents to children. The most common gene mutations are referred to as BRCA1 and BRCA2. These genes can greatly increase the risk of breast cancer and other cancers, but they do not make cancer inevitable.

- **Radiation exposure.** If someone received radiation treatments to chest as a child or young adult, it is more likely to develop breast cancer later in life.

- **Obesity.** Being overweight or obese increases the risk of breast cancer.

- **Beginning period at a younger age.** Beginning period before age 12 increases risk of breast cancer.

- **Beginning menopause at an older age.** If a woman began menopause after age 55, it is more likely to develop breast cancer.

- **Having first child at an older age.** Women who give birth to their first child after age 35 may have an increased risk of breast cancer.

- **Postmenopausal hormone therapy.** Women who take hormone therapy medications that combine estrogen and progesterone to treat the signs and symptoms of menopause have an increased risk of breast cancer.

- **Drinking alcohol.** Drinking alcohol may increase the risk of breast cancer.

3. FAMILY HISTORY

Family history is a complex and heterogeneous risk factor which depends on several factors, such as: number of relatives affected by breast cancer, degree of kinship, age of onset of disease, bilateral.

Familial transmission of breast cancer can be achieved by maternal or paternal, in an autosomal dominant manner. In these families, the risk of breast cancer is at least 50% (Peltecu, 2004).

Endocrine Factors

Girls who play sports have their first menstrual period at an earlier age than sedentary girls. Regular exercise may reduce breast cancer risk by strengthening the immune system.

Another factor that influences the onset of menstruation is the consumption of meat and eggs: the intake of these foods of animal origin is higher, the age of menarche decreases. In conclusion, a healthy diet may lower breast cancer risk.

Breast cancer risk decreases with increasing age of onset of menarche and increasing age of menopause installation.

Although early onset of menstruation is a known risk factor for breast cancer, trying to prevent the severe weight loss cures or excessive exercise is not wise.

These methods can lead to massive loss of bone disorders or the onset of feeding behavior.

The objective should be a healthy lifestyle, active and balanced, allowing a normal development.

Parity – nulliparous women were at greater risk for developing breast cancer than women who had one or more pregnancies.

The age of first pregnancy is an important factor. The risk of breast cancer in women aged over 30 years is higher since the birth of a child occurs at an older age. Pregnancy in a younger age is protective, while late pregnancy favors the development of disease.

Hormonal treatments: hormone replacement therapy in postmenopausal increases the risk of breast cancer.

If estrogen has been shown to increase breast cancer risk by 35% after 5 years of use, adding progesterone causes an even greater risk of breast cancer. It is also harmful the premenopausal contraceptive administration (Popa, 2000; Blidaru, Voinea, Bordea, 2004).

Exogenous estrogen intake. The role of combined oral contraceptives and hormone replacement therapy at menopause in increasing breast cancer risk is controversial.

The increase of breast cancer is dependent on the type of estrogen and progesterone administered. Increased risk of developing breast cancer at patients receiving HRT estroprogesterone is not accompanied by an increase in breast cancer mortality. On the contrary, it is less than the general population (Păun, 2000).

4. PREVENTION STRATEGIES

It may be developed several methods for primary prevention of breast cancer. In an early stage of the process could be eliminated hazardous exposures, carcinogenic effects could be changed by modifying metabolic activation, a better rehab and better repair of damaged DNA (Fallowfield, 1990).

The biggest problem is the lack of knowledge about the factors that induce breast cancer and the known ones, such as exposure to radiation, contribute little to overall burden of disease. For example, early pregnancy is associated with reduced risk of breast cancer, but cannot be encouraged because of the high social and personal costs.

It is believed that **hormones** play a key role in promoting tumor. Estrogens and progesterone stimulate the proliferation of breast tissue.

Since primary prevention aims to prevent disease in healthy individuals installation, special attention should be given to the benefit-risk ratio of proposed interventions.

Prevention of breast cancer focuses on:

1. Prophylaxis chimiohormon;
2. Prophylactic surgery in March;
3. Changing lifestyle and food (Berbecar, 1999).

4.1. TERMS OF PSYCHOLOGICAL INTERVENTION

Counseling: counseling objectives generally consist in facilitating adaptation to the specific problems of different stages of the disease and improving patient functional status by reducing emotional distress and mental improvement, in achieving the sense of control over the situation, a good mental state and improving the quality of life.

Short-term counseling in times of crisis: the experience includes a number of cancer predictable moments of crisis that occur at all stages of disease. Diagnosis is followed by crisis during treatment, painful procedures related to adverse side effects, and then crisis events in the other phases: remission or relapse, progression, advanced disease and end stage disease. In moments of crisis, short-term counseling is most appropriate (Peltecu, 1994; Abdul, 1992).

Women with breast cancer, which were operated conservatively, live moments of crisis that require this form of counseling.

The first objective of short-term advisers in the event of a crisis is to stabilize the situation.

The patient emotional and practical support consists in providing accurate information, guidance; disclosure of a department, working to prepare an action plan.

The advice is try playing sense of control over the situation and clarifying the direction to follow.

Open communication, realistic assessment of the situation, solving the current problems, feeling that appropriate actions are planned may help the patient to be more hopeful.

The physical presence and intervention of a counselor who understands both the medical and psychological support needed by the patient at a moment when it is besieged with emotion and confusion, create promising conditions for optimal resolution of the crisis.

Expressions of fear, shock, stunned crisis are common and specific for diagnosis, including fear of the disease itself and of the future. Dealing with existential issues and the threat of death cause suffering, anxiety, depression. The crisis affects also the patient's family (Bordea, 2005; Anghel, 2008).

In the presence of a counselor, the patient is able to express fear, doubts, sadness, and can receive the support and encouragement for adopting an effective action.

The counselor will monitor the patient's previous experience in connection with the disease (cases in the family, among friends) or other situations in her/his life that could explain the exacerbation of emotional disorder. In order to help the patient choose the type of surgery, the counselor will provide information, repeating his point of view in connection with the treatment options available, so that option can be endorsed. It is necessary that each patient be given clear and precise information, taking into account the differences between people (based on factors related to socio-economic status, social group of origin, their perception of support from family) (Peltecu *et al.*, 2006).

Excessive information can be as inefficient as the lack of information. Some women want to receive information, but do not want to decide. In any case, when the medical situation requires operation is necessary for patients to be asked to express their preference, even if not all want to assume the responsibility of electing.

Some wish to delegate this responsibility to another person significant to them. The doctor may not agree with this desire. If the woman wishes to choose, it is necessary to understand the weaknesses and strengths of various types of treatment, the advantages and disadvantages of each method.

The counselor will encourage the patients to carefully ponder their choice but also provides information (in agreement with the physician), helping the patient to make a decision based on better knowledge of disease appropriate particular situation in which the patient will then be assisted to adapt to the chosen treatment. Advisers should avoid giving advice, especially if it is not required (Hegarty, 2000).

Women's involvement in the discussion of selection and treatment planning can be particularly important for their future attitude towards the treatment.

Patients who participate in decisions are likely to assume a more active role in therapy and in relation to disease.

It is noted that not all women choose breast preservation. Sometimes young women sexually active, choose mastectomy, thus feeling safer in the course of the disease.

Patients should know that most doctors say that the type of initial surgery for early stage breast cancer does not affect the result in terms of survival.

Patients who cannot decide on the type of surgery to choose and do not know how they will look after mastectomy or after various types of excision achieved by conservative surgery may be helped by offering them to see photos.

Some patients may be so overwhelmed by the diagnosis that they feel paralyzed and unable to think about treatment alternatives, they may be granted respite in which they can review the events and possible treatment options.

In the presence and under the assistance of a psychologist, in a place where they could express their fear, concerns, these patients can temporarily escape the pressure they feel (Ionescu, 1995).

A technique that can be used by a consultant psychologist to help the patient is to go step by step through each treatment option, asking: how would you react to this?

This **method** may decrease anxiety, the patient understanding better what aspects of treatment are more acceptable (Luban, 1990; Jacobsen, Holland, 1998).

Studies consider as particularly important for patients that advice about surgery for breast cancer should be thorough, accurate, correct and complete. The patient should acquire the impression that surgery is the correct choice and appropriate for her system of values as much as possible.

The presence of a team with surgeons, radiotherapists and a counselor with expertise in the field, even when assessing the possibility of conservative surgery and the decision, may substantially contribute to improving the patient's psychological adaptation.

Short-term counseling is effective in all stages of the following: the means by which the patient may clarify certain issues, find solutions and gain easy control over the situation, may also help the patient to express hidden thoughts, fear and to receive empathic support, the support given prior to surgery patients who are afraid of anesthesia or the surgery itself, in the waiting time for the results when the patients are anxious, tense, dominated by frightening thoughts can reduce tension, emotional pain and help them to cope better with the situation.

After conservative surgery the recovery time is shorter than after mastectomy, however the patient may feel good physically yet bad mentally: some thoughts in connection with relapse, with radiation possible complaints on the issue of breast surgery (can sometimes be some distortion), fear about the reactions of the partner in the newly created situation.

During radiotherapy, chemotherapy or hormone treatment, sometimes counseling is a means of information and support that can facilitate adaptation to these treatments in patients with side effects. It is also possible the group counseling (Trifan, 2005; Păun, 2000).

In the form of information-education, before or immediately after starting treatment, counseling is beneficial for patients: familiarity with the place and manner of operation, of radiation, knowledge of the possible side effects of chemotherapy (it is avoided the situation when they are taken by surprise and horrified, for example, by the hair loss), finding out information on the reversibility of side effects of cytostatics and solutions to diminish the impact.

During radiotherapy, most of the patients operated conservatively realize that were operated for cancer and therefore may need psychological support (Dragomir, 2006; Bălănescu, Anghel, 1997).

4.2. RECOVERY FOR PATIENTS WITH BREAST CANCER

For best results, it is ideal that the recovery will begin early (if possible at the time of diagnosis) (Anghel, Ionescu, Șandru, 2002).

The end of treatment, however, is the crucial moment for intensive rehabilitation intervention from the state of illness and psychosocial adjustment of patients.

Recovery measures following treatment activities are aimed at preventing or resolving problems as:

- **physical fitness:** physical potential late effects of treatment – fatigue, shoulder and arm discomfort, swelling under the arm (may occur after several years), fattening;

- **mental state:** changes in interpersonal and family psychosocial disturbances (fear, loneliness, depression), changes in sexual functioning and body image and issues affecting sexuality, concerns about the risk of cancer for daughters, psychological concerns of recidivism (anxiety and depression, fear of death);

- **social situation:** changes of the inter-relationships, of social and leisure skills, feelings of isolation and depression, employment problems;

- **spiritual state** (spiritual crisis, hopelessness, uncertainty about the future).

The goal of treatment in these patients will be a positive psychological state, facilitating their emotional psychological rehabilitation and socio-professional and family integration. Hence, the psychological therapy is essential for patients diagnosed with breast cancer and the importance of multidisciplinary collaboration in the treatment of these patients is vital (Iamandescu, 1996).

5. LIFESTYLES THAT CAN DECREASE THE RISK OF BREAST CANCER

5.1. PHYSICAL ACTIVITY

Intense physical activity in childhood may delay menarche and favors the presence of anovulatory cycles, thereby reducing exposure to estrogen.

Another mechanism that might explain the inverse relationship between exercise and breast cancer risk could be improved peripheral insulin action obtained by moderate physical activity.

Girls who are constantly involved in conducting a sport (ballet, swimming, athletics) have a considerable delay in the occurrence of first menstruation.

In one of the studies, the ballet dancers had their first menstruation at the age of 15.4 years, compared with the control group for which age of menarche was 12.5 years.

Breast development was also delayed in dancers. Girls performing regular moderate physical activity (at least 600 kilocalories expended per week) had 2.6 times more frequent anovulatory cycles compared to sedentary girls.

Physical activity in adolescents and adults significantly reduces their risk of breast cancer in young women (under 40 years). Breast cancer risk among women

who averaged more than 4 hours of exercise per week in the reproductive period is 60% lower than inactive women. This risk reduction is more pronounced in premenopausal women and those with normal weight or underweight (Jacobsen, Roth, Holland, 1998; Lowenfels, Anderson, 1977).

5.2. PERIOD FERTILITY

Numerous epidemiological studies have been done about the relationship between the age of menarche, menopause and first pregnancy at term and the risk of breast cancer.

Late menarche after 12 years would lower the risk, perhaps by installing regular ovulatory cycles late. Also, early menopause is a protective factor. When naturally occurs before 45 years is associated with a RR (relative risk) of 0.75 compared to women with menopause between 45–54 years. The total duration of menstrual cycles is an important element in determining the risk (Păun, 2000).

Parity and age at first birth influences the risk. Nulliparous have a RR of 1.4. The main protective effect against breast cancer is indisputable first pregnancies achieved at a young age.

It was shown that a full term pregnancy before 20 years may reduce breast cancer risk by half compared with nulliparous or those who have their first full term pregnancy after 35 years. The birth of the first child after 30 years is associated with an increase in RR 2–5 times compared to women who gave birth before 19 years.

It was also reported in some epidemiological studies that an association between premature and deliberate interruption of pregnancy may increase risk of breast cancer.

A Danish cohort study, performed by 1.5 million women born between 1925 and 1978 showed no association between abortion and the development of mammary neoplasia (Luban, 1990; Anghel, Ionescu, Șandru, 2002).

5.3. LACTATION

Lactation was frequently associated with a high protective effect against breast cancer. If the cumulative number of ovulatory cycles is directly related to cancer risk, long-term lactation should have a beneficial effect due to the substantial delay in restoration of ovulation following a full load.

First child born in late age (over 28 years), maternal history of breast cancer and a high educational level (less than high school) reduced the possibility of breast feeding as the only alternative.

5.4. DIET

Over time it has been found that environment and lifestyle can strongly influence the etiology of breast cancer. Diet plays an important role among the

putative environmental determinants of breast cancer. After several decades of studies, however, it was concluded that there are some dietary constituents that may be associated with breast cancer. They are:

– **Vegetables**

The dominant hypothesis linking breast cancer to diet is that a high consumption of fat increases the risk of cancer. Thus, the reverse diet with lower fat content will act as a protective factor against breast cancer. A diet low in fat may reduce the risk through hormonal mechanisms. It was shown that there is a direct proportionality between fat food and estrogen levels in postmenopausal women.

There are two sources of fat that do not raise the risk of breast cancer and at least one of them can actually reduce breast cancer risk: consumption of fish and olive oil. Population consuming high quantities of olive oil has a relatively low risk of breast cancer.

A study was conducted between 1973 and 1991 on a number of 9461 Finnish women, aged 19–89 years, who had a history of repeated antibiotic treatment for urinary tract infections. During the study, a total of 157 women were diagnosed with breast cancer. Women who said they currently or previously used medication for urinary tract infections had a higher risk of breast cancer.

These data suggest that premenopausal women who have used medication for urinary tract infections in the long run will have an increased risk of breast cancer.

– **Fibers** also reduce the risk of breast cancer by treating constipation. Women with two or more bowel movements a week had a 4.5 times greater risk of developing precancerous changes than those with bowel movements that occur daily.

5.5. SPECIFIC MICRONUTRITION

– **Vitamin A** state is molded into compounds of animal origin and precursor form of carotenoids, primarily in fruits and vegetables. The intake of retinol derived from fish oil supplements while beta-carotene is more of the synthetic products.

Many carotenoids are potent antioxidants and may represent cellular defenders against reactive O₂ species that can alter DNA.

Vitamin A is also a regulator of cell differentiation and may prevent the development of malignant cell phenotype. Retinol inhibits the growth of malignant breast cells in vitro and retinyl acetate reduces breast cancer incidence in some rodent species.

A Canadian study revealed that as the amount of beta-carotene is greatly mammograms showed a smaller number of lesions suggestive of an increased risk of breast cancer.

– **Vitamin C** is also an antioxidant that blocks carcinogenesis. Iodine and selenium have also an important contribution. The two elements work synergistically with each other. **Lycopene**, found for example in tomatoes, is a substance related

in structure to beta-carotene, and because of structural similarity is called carotenoid. In 1989 researchers found that lycopene is a more powerful antioxidant than beta-carotene and other carotenoids (Popa, 2000; Lowenfels, Anderson, 1977).

5.6. EXERCISE AND STRESS MANAGEMENT

Physical exercise reduces aggression and anxiety, relieves frustration and strengthens confidence.

In the absence of somatomotors activities to reduce the stress, the body is subjected to strains and autonomic psychophysiological additional state of conflict that often occurs during the predominantly static work and life of contemporary man. It follows that physical exercise is one of the prophylactic and therapeutic measures.

Even moderate physical exercises decreases breast cancer risk. This decrease is due to the reduction of fatty deposits, but also to the decrease of the number of anovulatory cycles (Iamandescu, 1996; Abdul, 1992).

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REFERENCES

1. ABDUL, H.H., *Cancerul de sân: considerații clinice și terapeutice*, București, TD, Facultatea de Medicină, 1992.
2. ANGHEL, G., *Cancerul de sân: considerații clinice și terapeutice*, București, TD, Facultatea de Medicină, 2008.
3. ANGHEL, R., IONESCU, D.M., ȘANDRU, A., *Cancer de sân*, București, Editura Națională de Sănătate, 2002.
4. BĂLĂNESCU I., ANGHEL R., *Cancer de sân*, București, Editura C., 1997.
5. BERBECAR, GH., *Implicații în tratamentul tumorilor endocrine complexe a sânilor*, București, TD, Facultatea de Medicină, 1999.
6. BLIDARU, AL., VOINEA, S., BORDEA, C., *Cancer de sân*, București, Editura Universității, 2004.
7. BORDEA, C.I., *Factori de agresivitate în cancerul de sân*, București, TD, Facultatea de Medicină, 2005.
8. DRAGOMIR, G., *Tendințe moderne în tratamentul cancerului de sân*, București, TD, Facultatea de Medicină, 2006.
9. FALLOWFIEL, L.J.D., *Psihologie socială de ajustare după tratamentul pentru cancer de sân incipient*, New York, Editura Oncolog, 1990, București, TD, Facultatea de Medicina, 2000.
10. HEGARTY, J., *Psihologi, medici și pacienți*, București, Editura Rac, Biblioteca British Council, 2000.
11. I.B. IAMANDESCU, *Stresul în boli interne*, București, Editura Infomedica, 1996.
12. IBRAHIM, F., *Implicațiile factorilor de mediu în etiologia cancerului și evoluție*, București, TD, Facultatea de Medicină, 2008.
13. IONESCU, A., *Cancerul de sân. Factori de risc*, București, TD, Facultatea de Medicină, 2004.
14. IONESCU, G., *Psihoterapie*, București, Editura Univers Enciclopedica, 1995.

15. JACOBSEN, P.B., ROTH, A.J., HOLLAND, J.C., *Răspunsuri psihologice la intervenții chirurgicale de sân*, în HOLLAND J.C., *Psycho-Onchology*, New York, Oxford, Oxford University Press, 1998.
16. LOWENFELS, A., ANDERSON, M., *Dietă și cancer*, Cancer, Philadelphia, 1977.
17. LUBAN, B., *Psychosomatic Boli în practica medicală*, București, Editura Medicală, 1990.
18. PĂUN, M.C., *Cancer și psihosomatică: interferențe de comportament între factorii psihosociali și cancer* în I.B. IAMANDESCU, *Elemente de psihosomatică generală și aplicată*, București, Editura Infomedica, 1999.
19. PELTECU, GH., *Tratatul de Obstetrică și Ginecologie*, București, Editura Universității „Carol Davila”, 2004.
20. PELTECU, GH. et al., *Tratamentul conservator al cancerului mamar incipient*, București, Facultatea de Medicină „Carol Davila”, 2006.
21. PELTECU, GH., *Tratamentul chirurgical conservator al cancerului de sân*, București, TD, Facultatea de Medicină, 1994.
22. POPA, S., *Implicațiile factorilor de mediu în etiologia și dezvoltarea cancerului*, București, TD, Facultatea de Medicină „Carol Davila”, 2000.
23. TRIFAN, F., *Noi tendințe în tratamentul de cancer de sân*, București, TD, Facultatea de Medicină, Biblioteca, 2005.

REZUMAT

Se apreciază că aproximativ 5–10% dintre cancerle adulților se datorează unor cauze ereditare. Predispoziția genetică este responsabilă pentru aproximativ 10% din cancerle mamare și pentru 5–10% din neoplasmale mamare după alți autori.

Strategiile bazate pe inhibarea inițierii celulelor mamare canceroase suferă de lipsă de informații privind factorii critici de inițiere a carcinogenezei sânului și de dificultatea de a identifica momentul expunerilor.

Deoarece procesul de malignizare, incluzând promoția, se desfășoară pe o perioadă lungă de timp, există o deschidere mult mai largă a oportunităților pentru aplicarea cu succes a strategiilor îndreptate împotriva acestora, în comparație cu strategiile care previn inițierea.

Studii arată că în etapa diagnosticului, calitatea comunicării cu medicul influențează decisiv starea psihică a pacienților cu cancer mamar.

Supraviețuirea bolnavilor de cancer este procesul de derulare a vieții, de la diagnostic și în continuare, pe toată perioada care urmează, făcând față solicitărilor cancerului.