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# STUDY OF BREAST CANCER EVOLUTION IN WOMEN WITH THE HELP OF SOME TUMOR MARKERS

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***Key words**: breast cancer, women, tumor markers*

## INTRODUCTION

Statistics, the chance, is present in the world, but also in our country, and the second half of it. For women, the risk of breast cancer is lower than the incidence of the disease. Ignorance, the lack of diagnosis, the lack of health education, but also of some decided prevention and screening programs (deprivation of the chance among the risk-free operation) is a diagnosis in our country the disease to be realized in advanced stages, and the treatment remains only relative and extreme in short, in this case the suffering of the race being immense.

There are several types of breast tumors. In most cases, they are benign, which means they are not cancerous. These tumors or swellings are often characterized by fibrocystic changes. Cysts are smooth and fluid. Fibrosis cystic fibrosis determines the rarity of tumors and pain. These can be benign tumors, although they are rare tumors inside the breast, but they do not metastasize. They must be treated surgically.

Breast cancer mimics malignant tumors. There are several histological types (depending on the cellular type) of cancer. The paper presents a study carried out on 283 patients diagnosed with breast cancer, undergoing treatment, during the year 2022.

## MATERIAL AND METHODS

The research activity was carried out in the clinical analysis laboratory of the Bacău County Emergency Hospital, with the support of specialists from the laboratory, on cases provided from the department of this hospital.

The work group included 210 patients in whom the CA 15-3 marker was determined and 73 patients in the CEA marker. Markers are used for monitoring therapy and early detection of relapses in asymptomatic patients.

The marker CA-15-3 (mucin-like or MUC1) is used for monitoring therapy, disease progression and detection of metastases. Elevated values are correlated with a tumor mass, found in 70% of patients with breast carcinoma and in 40% of patients without metastasis.

CEA (carcinoembryonic antigen) is also used for screening and early detection of recurrences. After successful surgery, the CEA level should return to normal within 6-8 weeks. A significant new growth indicates the progression of the disease, and a rapid growth indicates the occurrence of metastases.

The biological material consisted of peripheral blood collected from these patients.

## RESULTS AND DISCUSSIONS

The obtained results were processed statistically and represented graphically

In women, after uterine cancer, breast cancer ranks second in frequency, representing approximately 10% of all forms of cancer in women. In most cases, it appears after the age of 40 (but sometimes much earlier!), reaching its maximum frequency after the age of 60.

Breast cancer is a disease in which cancerous (or malignant) cells develop uncontrollably in the breast tissue (usually in the ducts - the tubes that transport milk to the nipple - or in the lobules - the glands that produce milk). It is among the most common types of cancer found in women and the main cause of death.

It should be mentioned that - although rare - breast cancer can also occur in men. It manifests itself in the form of small, hard nodules located in the tissue around the nipple. These nodules will be surgically removed to prevent the occurrence of metastases. In general, there is one case of breast cancer in men for every 100 cases in women.

Most of the time, breast cancer is classified into two types: non-invasive and invasive (fig. 1).

**Non-invasive breast cancer** or carcinoma in situ is located in the ducts of the breast. It cannot be detected by palpation of the breast, but by a mammogram.

**Invasive breast cancer** also spreads outside the breast. The most common form of breast cancer is invasive ductal breast cancer, which develops in the ductal cells.

Other types of breast cancer include invasive lobular breast cancer, inflammatory breast cancer, and Paget's disease of the breast. Unfortunately, invasive breast cancer can spread to other regions of the body.

The combination between the size of the tumor and the invasion of neighboring tissues, the involvement of neighboring tissues, lymph nodes and metastasis lead to the classification of the form of cancer in one of the stages. Depending on this stage, doctors assess the risks and determine the patient's treatment. The earlier the stage, the less advanced the cancer and the higher the chances of cure.

Breast cancer treatment includes surgery which can be mastectomy (or breast removal), removal of breast nodules with preservation of the breast. Other treatments are radiotherapy, chemotherapy, hormone therapy.

Our results show that in the group of breast cancer patients investigated, the most affected age group is 59-73 years, followed by 45-59 years (figures 1, 2).

In healthy subjects, serum levels below 30 U/ml were determined. Increases in the CA 15-3 marker are recorded in 4-7% of pregnant women and approximately 8% of pregnant women. The main indication of CA 15-3 is in the monitoring of the uterus, in establishing the diagnosis and in the detection of metastases in breast cancer. Elevated values of CA 15-3 are correlated with tumor mass, they are found in approximately 70% of metastatic breast cancer cases and 40% in non-metastatic cases.

In the test performed with the CA 15-3 marker, 59% of the patients have marker values within normal limits, which means that following the surgical and medical treatment the patient's evolution is good, while 41% of the patients have marker values above the limits admitted, and therefore the evolution of the patients is not favorable, and the treatment must be improved (fig. 3).

In the test performed with the CEA marker, 90% of the patients have marker values within the reference limits, so following the applied treatment the patient's evolution is good, while 10% of the patients have marker values outside the reference limits, and therefore the patient's evolution is not favorable, and the treatment must be changed (fig. 4).

Carcinoembryonic antigen (CEA) is used in the screening and monitoring of patients with breast cancer. The value of the CEA marker correlates with the recurrence-free interval and the life span, thus being used as a prognostic factor. This marker is used in the monitoring of patients undergoing surgical treatment.

From graph 5 it can be seen the highest values of the CA 15-3 marker were recorded in the 50-60 age group.

And in the case of the CEA marker, the situation is identical. The highest values were also recorded in the 60-70 age group.

Regular check-ups with the oncologist, surgeon or family doctor are mandatory after any form of treatment performed. For greater safety, it is good that the treatment even includes a combination of radiation therapy, chemotherapy, and hormonal therapy. Removing both breasts reduces the risk of breast cancer in about 90% of women who have a family history.

Detected in the early stages, breast cancer can be cured in a very high percentage.

Obesity increases the risk of breast cancer, especially after menopause.

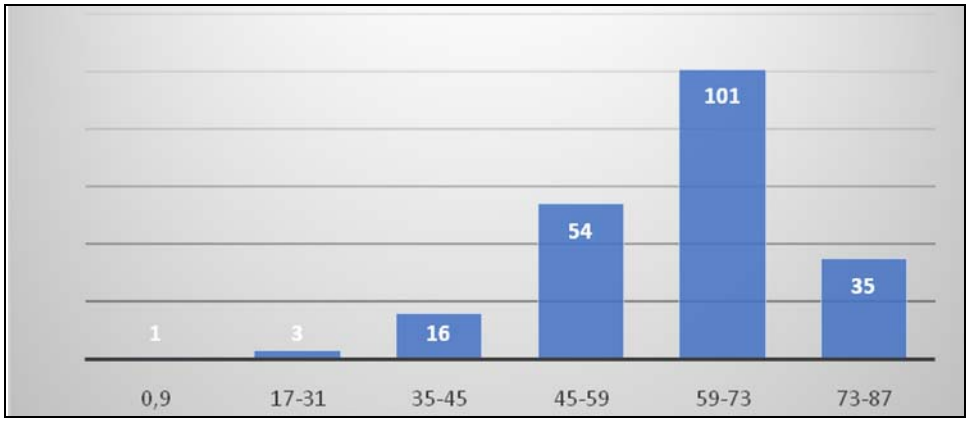


Fig. 1. Numerical representation by age of the investigated patients

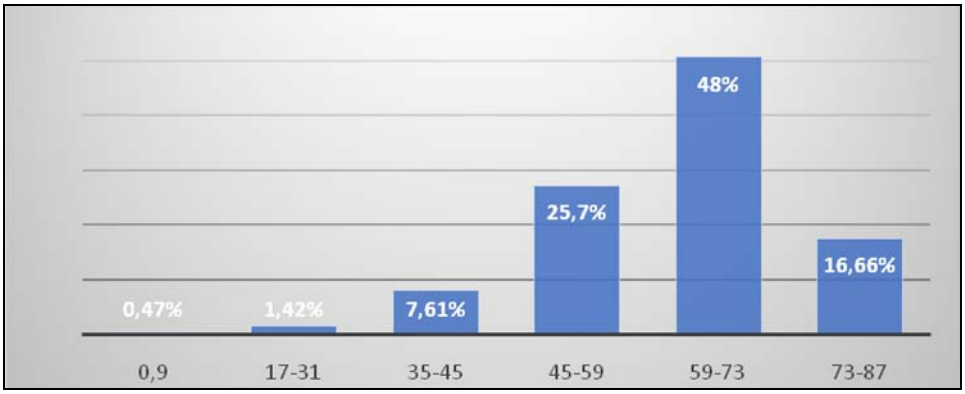


Fig. 2. Percentage representation by age of the investigated patients

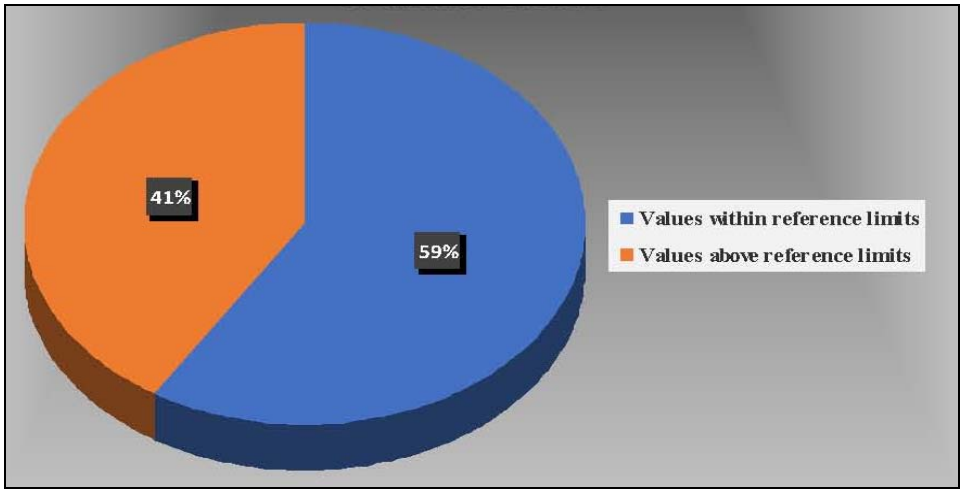


Fig. 3. Graphical representation of the rate response at marker CA 15-3

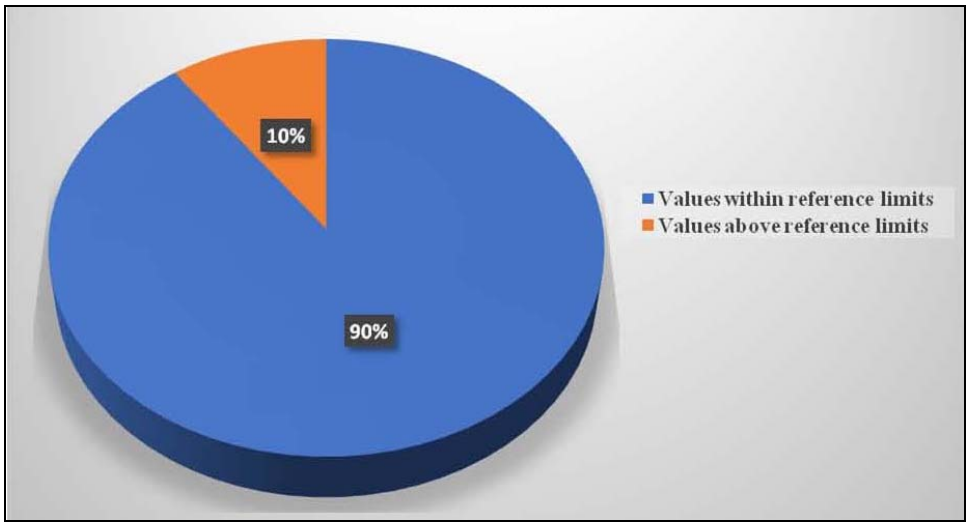


Fig. 4. Graphical representation of the rate response at marker CEA

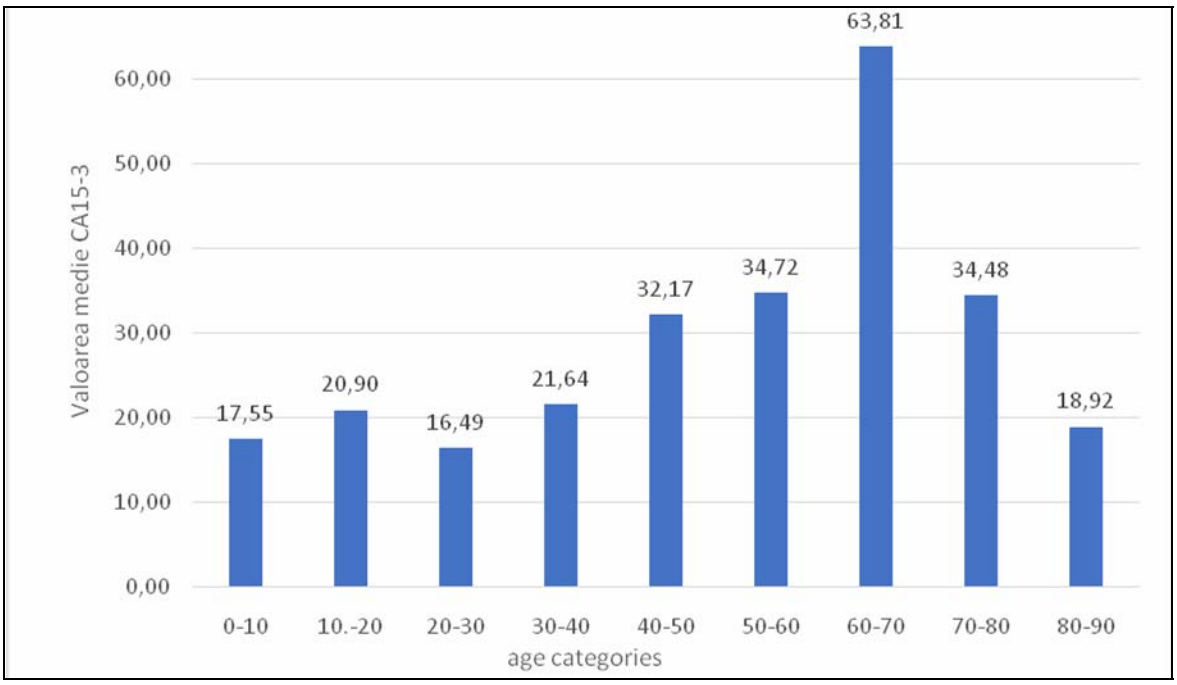


Fig. 5. Distribution of the values obtained at the CA 15-3 marker by the age of the patients

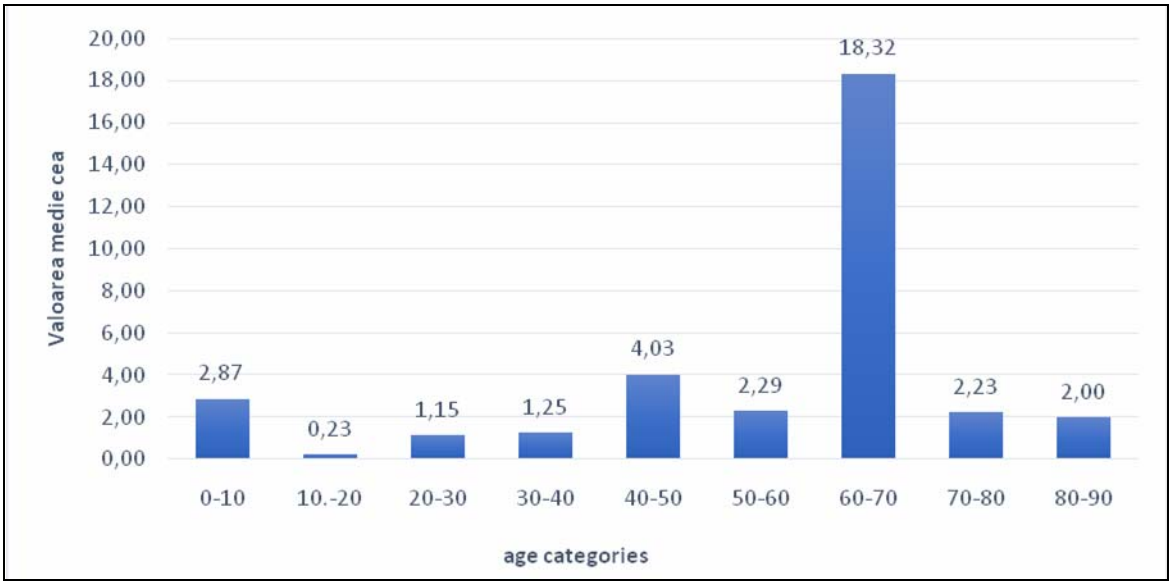


Fig. 6. Distribution a of the values obtained at the CEA marker by the age of the patients

## CONCLUSIONS

The following conclusions emerge from the obtained results:

- Cancer has become an increasingly common disease, affecting different tissues and organs, and appearing at younger and younger ages.
- In the present study, the minimum age at which the form of breast cancer (mammary adenoma) was identified was in a 9-month-old girl.
- The increasing frequency and the appearance of increasingly serious forms of neoplasm should be an alarm signal to reconsider our disordered lifestyle, habits, and nutrition.

- The values within the normal limits of the markers used demonstrate a good evolution of the disease and an adequate treatment.
- The values of the markers that exceed the accepted limits demonstrate the occurrence of metastases and an unfavorable evolution of the disease.

## ABSTRACT

210 patients hospitalized in the Bacău County Emergency Hospital, Oncology department, were investigated, in which the CA 15-3 marker was determined and 73 patients with the CEA marker. The biological material consisted of peripheral blood collected from these patients. In the test performed with the CA 15-3 marker, 59% of the patients have marker values within normal limits, which means that following the surgical and medical treatment the patients' evolution is good, while 41% of the patients have marker values above the limits admitted, and therefore the evolution of the patients is not favorable, and the treatment must be improved. In the test performed with the CEA marker, 90% of the patients have marker values within the reference limits, so following the applied treatment the patient's evolution is good, while 10% of the patients have marker values outside the reference limits, and therefore the patient's evolution is not favorable, and the treatment must be changed. In the present study, the minimum age at which the form of breast cancer (mammary adenoma) was identified was in a 9-month-old girl.

## REFERENCES

1. ANDREESCU, M., DOBRE, V., MALTEZEANU, G., MATEESCU C., 1970 - Neoplasma.
2. HAMILL, C. , 2014 - B is for Breast Cancer. From anxiety to recovery and everthing in between - a beginner's guide, Piatkus.
3. LINK J., DR. WAISMAN J., LINK N., DR. WEST J. , 2016 - Breast Cancer Survival Handbook.
4. LOPRINZI, L., DR. HARTMANN, L. , 2019 - Mayo Clinic. Breast cancer(Clinica Mayo. Cancerul mamar), Corinth Publishing House.
5. LOTHAR THOMAS. , 1998 - TUMOR MARKERS. Clinical Laboratory Diagnosis, 955-957.
6. MIHĂILESCU, M. , 1978 - Chirurgical Diseases (Boli chirurgicale), Didactic and Pedagogical Publishing House, Bucureşi.
7. PRISECARU MARIA, IONUȚ STOICA, 2017 – General and clinical immunology (Imunologie generală şi clinică), Ed. Alma Mater Bacău, ISBN 978-606-527-572-0.
8. PRISECARU MARIA, IONUȚ STOICA. DANIELA TIȚĂ, FLORIAN PRISECARU, 2020 - Guide to health education and human pathology, vol. I, Being healthy - Staying healthy through health education(Ghid de educație pentru sănătate i de patologie umană, vol. I, A fi sănătos – A rămâne sănătos prin educație pentru sănătate), Alma Mater Bacău Publishing House, ISBN 978-606-527-656-7.
9. PRISECARU MARIA, IONUȚ STOICA. DANIELA TIȚĂ, FLORIAN PRISECARU, 2020 – Health education guide and human pathology, vol. II, Mother and child health(Ghid de educație pentru sănătate şi de patologie umană, vol. II, Sănătatea mamei şi a copilului), Alma Mater Bacău Publishing House, ISBN 978-606-527-657-4.
10. PRISECARU MARIA, IONUȚ STOICA. DANIELA TIȚĂ, FLORIAN PRISECARU, 2021 – Health education guide and human pathology, vol. III, Diseases of different organs and systems(Ghid de educație pentru sănătate şi de patologie umană, vol. III, Bolile diferitelor organe şi sisteme), Alma Mater Bacău Publishing House, ISBN 978-606-527-663-5.
11. PRISECARU MARIA, IONUȚ STOICA. DANIELA TIȚĂ, FLORIAN PRISECARU, 2021 – Health education guide and human pathology, vol. IV, Health and the challenges of the contemporary world (Ghid de educație pentru sănătate şi de patologie umană, vol. IV, Sănătatae şi provocările lumii contemporane), Alma Mater Bacău Publishing House, ISBN 978-606-527-664-2.

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