




Management of Breast Cancer During Pregnancy

Victor Andres Diaz Rincon^{1*} , Dalila Rosa Fernández Cuello², Juan Felipe Villegas Lora³, Gabriela Carolina Alvear Ayala⁴, Juan Sebastián Rivas García⁵, Karen Medina Zabaleta⁶, Daniela Gallón Estrada⁷, Gabriel Alejandro Córdoba Adames⁸ , July Paola Ramirez Quiroga⁹

Corresponding Author: Victor Andres Diaz Rincon

¹General Physician, Universidad del Norte, Barranquilla

²General Physician, Universidad de Cartagena

³General Physician, Universidad del Norte, Barranquilla

⁴General Physician, Universidad de las Américas

⁵General Physician, Universidad del Sinú

⁶General Physician, Corporación Universitaria Rafael Nuñez

⁷General Physician, Universidad Pontificia Bolivariana

⁸Intern Physician, Universidad Latina de Panamá

⁹General Physician, Universidad de Cartagena

Abstract:

Background: Breast cancer is the most common type of cancer in women throughout the world during reproductive age, it is the most frequent neoplasm in women, its etiology being unknown and probably related to multiple factors. It usually presents as a mass, being essential to perform a breast imaging test and biopsy suspicious lesions.

Methodology: A narrative review was carried out through various databases from 2012 to 2021; the search and selection of articles was carried out in journals indexed in English and Spanish. Keywords were used: approach, breast cancer, pregnancy.

Results: to guarantee quality care, the main finding to highlight is a painless nodule in the breasts, the treatments are the same applied to non-pregnant women, but with limitations to maintain fetal well-being, and the main interventions are prevention and detection early breast cancer in pregnant women, and apply individualized care plans prepared as the case may be.

Conclusion: when detecting a palpable mass or abnormal lump in the breasts of a pregnant patient, it is necessary to delve into the etiology of this abnormality, in order to determine with solid criteria the approach regarding the treatment of pregnant patients, this should be safe and must be approached in a multidisciplinary way.

Key words: Approach, breast cancer, pregnancy.

Copyright : © 2021 The Authors. Published by Medical Editor and Educational Research Publishers Ltd. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).



Introduction

It should be noted that breast cancer is the neoplasm that most commonly occurs in women, its etiology being unknown and probably related to multiple factors, it usually presents as masses, and it is essential to perform a

breast imaging test and biopsy of suspicious lesions, in the first stages or locally advanced, the treatment can vary from surgery, radiotherapy, chemotherapy, among others. In case of distant metastases, the main objectives of treatment are

Management of Breast Cancer During Pregnancy

the maintenance of quality of life and increased survival, depending on the characteristics of the tumor and the location of the metastasis, systematic treatment combined with local treatments can be used such as surgery and radiation therapy. (1)

It is very important to highlight the breast self-examination since this is a fundamental method of early diagnosis of breast cancer, for which it constitutes a tool for the prevention of this pathology, being of vital importance for the basic health team at the primary care level. medical. Despite its importance, there are studies that demonstrate its poor use worldwide, even though there are many more information instruments that offer a strategy for approaching this pathology from the different levels of medical care and that place breast self-examination as one of the Fundamental screening methods in primary health care. (2)

We must bear in mind that the appearance of breast cancer during pregnancy represents a very difficult condition for the patient and her family. Faced with this situation, she should be offered effective psychological and social support and clear information on what the best treatment options are in her case so that the woman and her family can make the best decision based on her situation, values and beliefs. (3)

The purpose of this bibliographic research is to describe the different treatment approaches that a woman diagnosed with breast cancer during pregnancy has.

Materials and Methods

A bibliographic review was carried out, in which the PubMed, Scielo and ScienceDirect databases, among others, were searched. The collection and selection of articles was carried out in journals indexed in English and Spanish from 2012 to 2021. As keywords, the terms: Approach, breast cancer were used in the databases according to the

DeCS and MeSH methodology. , pregnancy. In this review, 50 original and review publications related to the subject studied were identified, of which 21 articles met the specified inclusion requirements, such as articles that were in a range not less than the year 2012, that were articles of full text and to report on the approach to breast cancer during pregnancy. As exclusion criteria, it was taken into account that the articles did not have sufficient information and that they did not present the full text at the time of review.

Results

What is breast cancer

Cancer is one of the most notable diseases today and is among the leading causes of death worldwide. One of the most frequent types of cancer in women is breast cancer, this is nothing more than a type of tumor that develops in the cells and structure of the glands of the breast tissue. Emphasizing that these glandular structures are made up of abundant nerves, blood and lymphatic vessels, fat, connective tissue and glandular tissue. Both men and women are born with breast tissue, but in women, due to the pituitary release of follicle-stimulating hormone (FSH), luteinizing hormone (LH), and prolactin, the ovaries are stimulated to produce breast tissue. and release estrogens, which are responsible for stimulating the growth and proliferation of the ductal system. These physical changes take place during puberty as this is when ovulatory cycles begin. (4)

We also have to mention another important structure that the breast has, which is the nipple, this is made up of epithelial, glandular, erectile and nervous tissue. The smooth, darker skin between the nipple and the breast is recognized as the areolar tissue. On this surface there are also small projections called Montgomery tubercles, which are sebaceous glands that keep the nipple area soft and elastic (4,1)

Management of Breast Cancer During Pregnancy

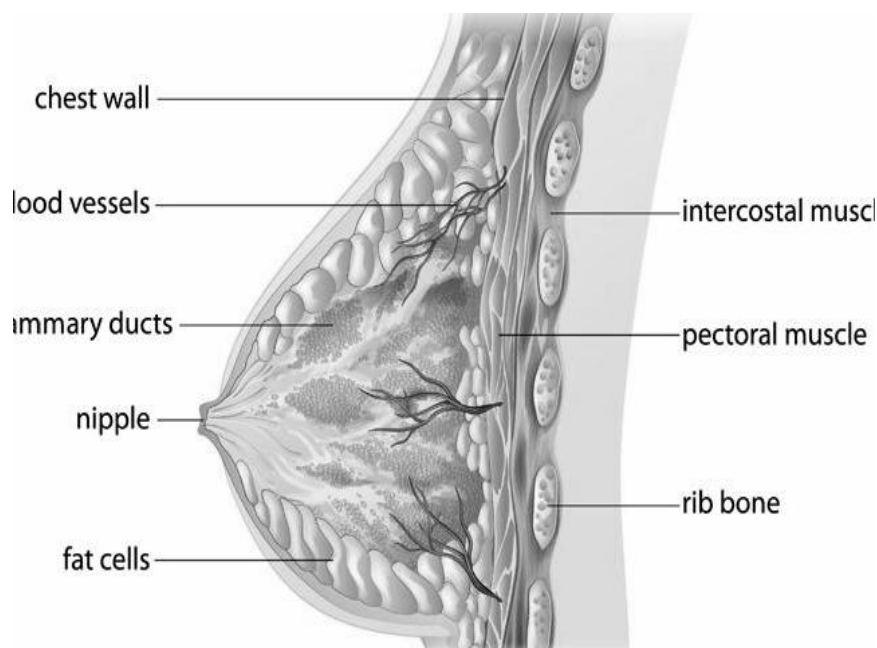


Figure 1. Breast structure

We can mention that, during pregnancy, the breast undergoes a series of changes to adapt to the arrival of the baby, these changes generate the production and secretion of milk in order to provide essential nutrients for babies. In this sense, in response to estrogen, the ductal systems grow and branch in fat throughout pregnancy. There are many hormones that are mainly responsible for changes in the breasts, including progesterone, estrogen and prolactin, these are the ones that during pregnancy make the mammary gland reach its maximum development. (5)

Types of breast cancer

First of all, it is important to emphasize that knowing the information on the biological and genetic aspects that generate breast cancer allows us to better organize treatments based on these biological characteristics, that is, we can know the spread, the greater or lesser sensitivity to certain types of treatment, and likewise the greater or lesser possibility of relapse. (6)

Breast cancer can be classified according to whether or not the basement membrane is affected:

Invasive: these are those that invade beyond the basement membrane, in the same way they are introduced into the mammary stroma, from where there is the possibility of invading blood vessels,

regional or distant lymph nodes. Therefore, from the point of view of gene expression, they are divided into 5 groups:

Normal

Luminal A

Luminal B

Basal

HER2

Non-invasive: this means that the tumor remains within the milk ducts or lobules of the breast. They have not yet invaded or multiplied in adjacent tissues outside or inside the breast, such as:

Intraductal carcinoma in situ: This refers to the cells that line the ducts through which the milk circulates have become cancerous cells, but it has not yet spread to other adjacent tissues of the breast. (6.1)

Lobular carcinoma in situ: They are a type of breast change, this refers to cells that have a cancerous appearance, these grow in the lining of the glands that generate milk in the breast, but that have not crossed the area of the lobules. Normally, they are considered benign, but if not treated early, the risk of cancer increases. (6.2)

Management of Breast Cancer During Pregnancy

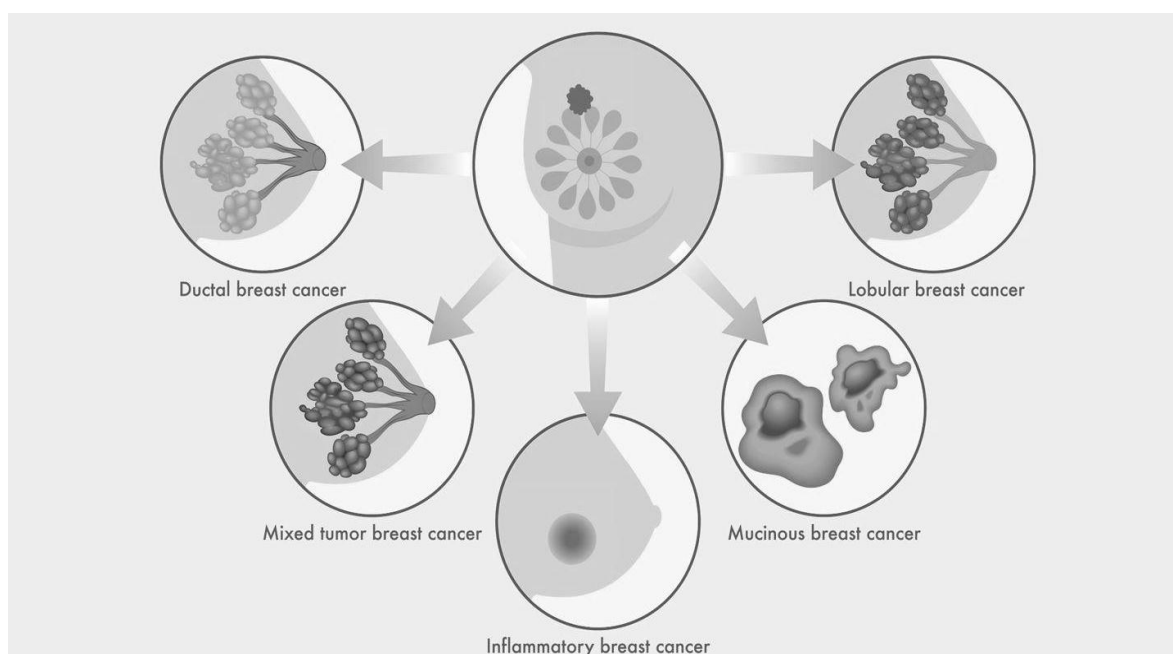


Figure 2. Types of breast cancer

Breast cancer stages

The stages or stages of breast cancer help us after diagnosis to determine the degree of extension of the cancer and also to determine what the best treatment will be. This starts from stage 0 to stage 4, it is established that the lower the number, the less the cancer has spread, with stage 4 being the greatest extension of this. (7)

As for stage 0, it only involves a small group of cancer cells either in the duct or lobule of the breast, in the same way we have stage 1, this is when the tumor measures less than 2 cm, we also have the stage 2, already at this stage the tumor is less than 5 cm in size but it has not yet spread to the lymph nodes in the armpit, as for stage 3, the tumor can be of any size but there is the possibility of having spread towards the axillary nodes, later in stage 4, the tumor presents any size, in addition to having spread and metastasized in other areas and tissues in addition to the breast and lymph nodes. (7.1)

Approach to breast cancer during pregnancy

Breast cancer in pregnant women is mainly diagnosed in advanced stages and has a worse prognosis than in non-pregnant women, all because of the physiological changes that women undergo during this period, characterized by increased breast density, nodularity, hypertrophy and discharge from the nipple, which lead to a delay in the diagnosis of this pathology. (8)

It should be noted that breast cancer diagnosed during pregnancy can be treated adequately, however, it is an approach that requires a multidisciplinary team. It is well known that the optimal treatment will depend on the gestational age, the morphological and biological characteristics of the disease. (9)

Surgical approach

Both radical and conservative surgery can be performed throughout the pregnancy, so the choice of a mastectomy as a treatment for breast cancer should follow the same guidelines as in a non-pregnant woman with the same postoperative risk, and it is also important to note that the drugs used during anesthesia have been shown not to cause any adverse effect on the development of the fetus, in general terms, any surgery can be performed safely in a pregnant woman. (10)

Chemotherapy

The possible effects of breast cancer management during pregnancy assess the risk of diagnostic studies and therapy on fetal development, as well as the impact and prognosis on maternal health. Pregnancy is divided into 3 main stages, the first is the most important for the fetal outcome. That is why chemotherapy can be used from week 14 and during the second and third trimesters of pregnancy, however, some cases of intrauterine growth restriction or premature delivery have been reported after the administration of cytotoxic

Management of Breast Cancer During Pregnancy

agents. For the protection of the fetus, chemotherapy is strictly contraindicated until the tenth week of pregnancy. A safety period of 2 to 4 more weeks is recommended, being able to start the application of chemotherapy between weeks 12 and 14 as mentioned above, this is due to the fact that during the first 10 days of pregnancy where the period of fertilization and implantation, the normal development of the embryo is determined and in this period the use of chemotherapy is not recommended due to the high risk of teratogenicity. (11) Chemotherapy is based on the use of specific drugs that aim to eliminate tumor or metastatic cells. This is a systemic treatment and includes conventional chemotherapy, therapies targeting HER2 tumors, and hormone therapy. Chemotherapy can be adjuvant or complementary, when it is administered after surgical removal, or neoadjuvant or primary, when it is administered as the first treatment to reduce the size of the tumor, thus facilitating a better surgical approach, and finally, palliative chemotherapy can be used, which is applied when the disease is already widespread in order to prolong survival and treat symptoms. (12)

Durante toda esta investigación en todos los artículos encontrados estos coinciden que la terapia hormonal y la terapia biológica están totalmente contraindicadas durante el embarazo, ya que existe un alto riesgo de interferencia con el estado hormonal asociado al embarazo. (12)

Radiotherapy

This consists of using high-energy rays or particles to eliminate malignant cells. This type of treatment is usually used after breast-conserving surgery or after a mastectomy (in tumors larger than 5 cm). (14) It is necessary to apply radiotherapy once the surgical area is healed and, after chemotherapy. There are two types of radiotherapy, external and internal or brachytherapy. In turn, external radiotherapy has several subcategories, one of which is intraoperative radiotherapy, which consists of the administration of radiation in the operating room at the end of breast conservation surgery. Radiotherapy, except in some individualized cases, is not a therapeutic option during pregnancy. (15) It is currently recommended to evaluate and treat breast cancer during pregnancy

with a multidisciplinary and transdisciplinary team made up of: gynecological oncologist and/or surgical oncologist, medical oncologist, radiation oncologist, anesthesiologist, radiologist, pathologist, obstetrician-gynecologist and neonatologist. (16)

Discussion

The data collected during this investigation give us certainty that the diagnosis of breast cancer in pregnancy is rare with an incidence of 1 in 3,000 women, however, and because women of childbearing age delay motherhood, the risk for their presentation is on the rise. (17) In the study of the researcher Víctor Vargas Hernández et al, which is called "study of 14 cases of breast cancer and pregnancy" they mention in their research the predominant age that was between 18-38 years, despite that the literature reports a higher frequency after 30 years of age, and only 4 of the 14 patients studied were between 30 and 38 years of age. (18) Regarding the diagnosis, most of the patients were between the first and second trimesters of pregnancy at the time of breast cancer detection, so the treatment option was only surgery in two cases, while nine women received chemotherapy or radiotherapy or both in combination with surgery, The treatment options selected for each patient was adequate, since the 11 women who received treatment concluded their pregnancy favorably, their children were born healthy and after pregnancy five of these patients were show no tumor activity. The results obtained from this study show that breast cancer can be approached with complete safety based on well-established criteria throughout this process, always considering which are the options that are most favorable for the mother and the fetus. (18,1)

A strength of the current study is the implemented methodology, regarding the literature search, and steps in the selection of relevant articles, quality assessment and data extraction. However, this study has several limitations, which should be taken into account before reaching a conclusion, among these are the little evidence related to breast cancer during pregnancy.

Conclusion

It should be noted that success lies not only in the treatment but also in the early diagnosis of breast cancer, so it is vital to recommend a careful breast

Management of Breast Cancer During Pregnancy

self-examination, and a clinical examination of the breast when feeling any unusual alteration in the breast. (19) This is not easy, since the hormonal changes that occur in pregnant women cause the breasts to increase in size, which makes it more difficult to detect a tumor before it is before it is considerably large, even so Women, especially pregnant women, are recommended to perform a breast self-examination and tell their doctor about any anomaly they consider. In another aspect, we can say that the poor prognosis associated with breast cancer in pregnancy is mainly related to the diagnosis. of this, and in advanced stages of the disease, as well as due to the delay in treatment due to incompatibility with the gestational age.(20) The techniques used for the diagnosis in pregnant women are similar to non-pregnant women, but with some limitations due to the risks to which the fetus is exposed. (21)

References

1. Sánchez-Ramírez, B., Herrerías-Canedo, T., Olaya-Guzmán, E. J., & Sequeira-Alvarado, K. A. (2012). Abordaje diagnóstico del cáncer de mama en el Instituto Nacional de Perinatología. *Perinatología y reproducción humana*, 26(2), 106-114.
2. Salas González, E., Villegas Pacheco, R., Pérez Ávila, C. E., Burciaga Sepúlveda, A. S., Castro Castro, C. C., Lomelí Muñoz, J. A., & Cantón Díaz, A. (2014). Cáncer de mama y embarazo. *Cirujano general*, 36(4), 245-250.
3. Fuenzalida, G. S., Acosta, J. M., Tristán, F. P., Garza, M. G., & Sáenz, O. H. (2018). Embarazo y cáncer de mama en el primer trimestre, reporte de un caso y revisión de la literatura. *Clínica e Investigación en Ginecología y Obstetricia*, 45(3), 137-140.
4. Salas-González, E., Mejía-Bautista, J. D. J., Leyva-Perea, J. G., Rosas-Enríquez, V., Salas-Limón, R. A., Macías-Ochoa, C. D., ... & Cantón-Romero, J. C. (2020). Cáncer de mama asociado a embarazo. *Gaceta mexicana de oncología*, 19(2), 63-69.
5. Martín, M., Herrero, A., & Echavarría, I. (2015). El cáncer de mama. *Arbor*, 191(773), a234-a234.
6. Ramírez, M. E. (2018). Cáncer de mama. *Revista Médica Sinergia*, 2(01), 8-12.
7. Márquez-Acosta, G. (2012). Cáncer de mama. *Perinatología y reproducción humana*, 26(2), 81-82.
8. Piedra-Molina, M. D. C. (2014). Cáncer de mama en el embarazo.
9. Vicente, E. M., Gómez-Hidalgo, N. R., & De León-Luis, J. Embarazo en pacientes con cáncer de mama.
10. Gayo García, A., & Loma Martínez, P. (2016). Impacto psicosocial de la mastectomía en pacientes operadas de cáncer de mama: Abordaje enfermero (Bachelor's thesis).
11. Melgosa Peña, M. (2021). Nuevas estrategias terapéuticas en el tratamiento del cáncer de mama.
12. Vich, P., Brusint, B., Álvarez-Hernández, C., Cuadrado-Rouco, C., Diaz-García, N., & Redondo-Margüello, E. (2014). Actualización del cáncer de mama en Atención Primaria (I/V). *Semergen-Medicina de Familia*, 40(6), 326-333.
13. Yustos, M. A., Angulo, M. M., & Soto, M. Á. M. (2017). Cáncer de mama. *Medicine-Programa de Formación Médica Continuada Acreditado*, 12(34), 2011-2023.
14. Córdoba i Cardona, O. (2014). Cáncer de mama y embarazo. *Universitat Autònoma de Barcelona*.
15. Cruz-Beníteza, L., & Morales-Hernández, E. (2014). Historia y estado actual sobre los tipos de procedimientos quirúrgicos realizados en cáncer de mama. *www. smeo. org. mx*, 13(2), 124-133.
16. González Merchan, J. P., & González, J. P. (2020). Factores relacionados en las estrategias de afrontamiento que utilizan las mujeres gestantes con diagnóstico de cáncer de mama de Latinoamérica y España.
17. Valenzuela, M. L. R. G. (2016). Prácticas personales de cuidado y para la detección oportuna del cáncer de mama (Doctoral dissertation, Universidad de Concepción, Chile).
18. Vargas-Hernandez, V. M., García-Rodríguez, F. M., Jiménez-Villanueva, X., Hernandez-Rubio, Á., Aboharp-Hassan, Z., & Moreno-Eutimio, M. A. (2013). Estudio de 14 casos de cáncer de mama y embarazo. *Cirugía y Cirujanos*, 81(2), 108-111.
19. Schneider Hermel, J., Pizzinato, A., & Calderón Uribe, M. (2015). Mujeres con

Management of Breast Cancer During Pregnancy

- cáncer de mama: apoyo social y autocuidado percibido. *Revista de Psicología (PUCP)*, 33(2), 439-467.
20. García, M. J. T., Jiménez, E. A., & López-González, Á. A. Cáncer de mama en España: factores de riesgo. 22.
21. Gómez, E. M., Cuetos, A. C., Garrido, C. M., Martín, C. C., Velasco, F. A., Sánchez, N. G., & Goñi, Á. Z. (2016). Cáncer de mama en mujeres muy jóvenes, nuestra experiencia. *Clínica e Investigación en Ginecología y Obstetricia*, 43(1), 17-23.

Rincon, V. A. D. ., Cuello, D. R. F. ., Lora, J. F. V. ., Ayala, G. C. A. ., García, J. S. R. ., Zabaleta, K. M. ., Estrada, D. G. ., Adames, G. A. C., & Quiroga, J. P. R. . (2022). Management of Breast Cancer During Pregnancy. *Journal of Medical Research and Health Sciences*, 5(4), 1960–1966. <https://doi.org/10.52845/JMRHS/2022-5-4-16>