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Encapsulated papillary carcinoma of the breast

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Abstract

Cancer over time has become a health problem in society, at the municipal, state, national and international level. Being a multicausal disease which presents a set of pathologies involved in the same problem with a different origin of relevance. The main cancers have been monitored based on the data of the most common by the World Health Organization (WHO), being the following: breast (2.26 million cases); lung (2.21 million cases); colorectal (1.93 million cases); prostate (1.41 million cases); skin (other than melanoma) (1.20 million cases); and gastric (1.09 million cases).

And mentioning those that cause the highest number of deaths: lung (1.8 million deaths); colorectal (916,000 deaths); liver (830,000 deaths); gastric (769,000 deaths); and of the breast (685,000 deaths).

We have come to the conclusion that good clinical practice and prevention campaigns could help in effective and rapid diagnosis. Likewise, prevention with respect to a theoretically healthy life will help, such as exercise, good nutrition, not smoking, control of environmental factors; It would help reduce the incidence of cancer.

Keywords: Papillary cancer; Carcinoma; Brain tumor; BIRADS; Invasive carcinoma; Epidermal growth factor.

Graphical abstract



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1. Introduction

1.1. Cancer

The term "cancer" groups clinical entities of diverse origin, such as breast cancer, neuroblastoma, osteosarcoma or leukemia, among others. Despite the different clinical manifestations of this disease, it has been possible to generate a consensus on certain common principles that are observed in the different clinical entities.

Currently, cancer is considered as a disorder of cells that divide abnormally, which leads to the formation of aggregates that grow, damaging neighboring tissues, nourishing the organism and altering its physiology. In addition, these cells can migrate and invade distant tissues, where they find an appropriate niche to continue their growth, causing metastasis that is often the cause of death of affected individuals [1].

Cancer that begins in the skin or in tissues that line or cover internal organs is called carcinoma [2].

1.1.1. Types of cancer

The main types of cancer are the following:

- **Carcinoma.** This is the most common type of cancer and has its origin in epithelial cells. These cells are those that cover the skin and mucous membranes. If the carcinoma affects areas on the surface of organs that have a secretory function, they are called adenocarcinomas, if the tissue affected by the tumor does not have glandular functions, then it is called squamous cell carcinoma or epidermoid carcinoma, as occurs in lung cancer or skin cancer.
- **Sarcoma.** Sarcomas are cancers that form in bone and soft tissue, including muscle, fat tissue, blood vessels, lymphatic vessels, and fibrous tissue.
- **Leukemia.** Cancers that begin in the blood-forming tissues in the bone marrow are called leukemias. These cancers do not form solid tumors.
- **Lymphoma.** It is a cancer that originates in the cells of the immune system, specifically in the lymphocytes (T cells or B cells).
- **Multiple myeloma.** It is a cancer that begins in plasma cells, another type of immune cell.
- **Brain and spinal cord tumor.** There are different types of brain and spinal cord tumors. These tumors are named based on the type of cell where it forms and the first site where the tumor is located in the central nervous system [3].

2. Statistics in México

Between January and August 2020, 683,823 deaths were registered, of which 9% were due to malignant tumors (60,421).

- In 2019, 88,683 deaths from malignant tumors were registered, representing 12% of total deaths.

The incidence of tumors and cancer changes as the age group changes, which for the purposes of this review will begin to be reviewed after the age of 20, since the incidence of breast tumors begins from this group.

Table 1 Incidence of tumors by age: hospital morbidity rate in the population aged 20 years and over for the main types of malignant tumors and sex according to age group.

For every 100.000 inhabitants for each age group and sex								
Malignant tumors and sex	Age group							
	20 - 29 years	30 - 39 years	40 - 49 years	50 - 59 years	60 - 64 years	65 - 74 years	75 - 79 years	80 years and more
Man								
Digestive organs (C15-C26)	3.33	12.26	34.83	80.31	141.30	177.63	207.67	152.65
Male genital organs (C60-C63)	25.46	16.23	9.35	29.93	87.07	174.80	230.24	159.12
Lymphoid hematopoietic tissues or related tissues (C81-C96)	27.89	21.86	30.93	48.28	76.83	87.26	97.12	65.35
Skin (C43-C44)	0.89	2.38	5.19	14.47	30.26	63.83	114.41	157.34
Women								
Breast (C50)	5.84	45.80	165.89	238.91	290.34	254.53	175.28	91.90
Female genital organs (C51-C58)	12.70	44.10	91.42	124.14	146.58	145.51	112.54	75.08
Digestive organs (C15-C26)	2.98	11.85	32.41	67.92	101.72	128.70	119.59	105.32
Lymphoid, hematopoietic tissues or related tissues (C81-C96)	19.94	17.86	23.51	39.47	56.27	69.37	68.29	45.96
Note: The international Statistical I Classification of Diseases and Related Health, Problems (ICD-10), codes C00 to C97X, were used.								
Sources: HEALTH, General Directorate of Health Information (DGIS) (2020). Sector hospital discharges, 2017. Database. CONAPO (2018). Projections of the Population of Mexico and the States, 2016-2050.								

We can see that the incidence peaks between 40 and 80 years of age, which is why it is at this age when screening begins in our population in search of it.

Table 2 Cancer mortality from 30 to 59 years: percentage distribution of deaths from the main malignant tumors by age groups (30to 59 years and 60 years and over) and sex.

Main causes of death in men		Main causes of death in women	
From 30 to 59 years	100	From 30 to 59 years	100
Malignant tumor of the colon, rectum, and anus	12	Malignant neoplasm of breast	23
Malignant tumor of the stomach	10	Malignant neoplasm of cervix	13
Malignant tumor of the trachea, bronchi and lung	8	Malignant neoplasm of ovary	9
Leukemia	7	Malignant neoplasm of colon, rectum and anus	6
Others causes of malignant tumors	63	Others causes of malignant tumors	49

60 years and over	100	60 years and over	100
Malignant tumor of the prostate	22	Malignant tumor of the breast	13
Malignant tumor of the trachea, bronchi and lung	11	Malignant tumor of the liver and intrahepatic bile ducts	10
Malignant tumor of the liver and intrahepatic bile ducts	9	Malignant tumor of the colon, rectum and anus	8
Malignant tumor of the colon, rectum and anus	8	Malignant tumor of the trachea, bronchi and lung	7
Others causes of malignant tumors	50	Others causes of malignant tumors	62
Note: The causes of the transport accidents correspond to the classification of the special tabulated list (tabulation 1 for mortality). ICD-10			
Source: INEGI Mortality statistics 2019. Interactive data consultation. SNIEG. Information of National Interest			

Mortality in the age group of 30 years and older in Women in Mexico currently according to INEGI data is due to a malignant breast tumor.

3. Breast cancer

As we have already seen, age exists as a risk factor for the appearance of breast cancer, however, there are other factors that will be mentioned in this section, as well as anatomical characteristics. Genetic predisposition: The most important inherited genetic mutations are BRCA1 and BRCA2. They correspond to 10% of the cases.

Familial cancer: comprises 20% of cases. Hormonal factors: it is related to female reproductive hormones Early menarche, nulliparity, late age at first pregnancy and late menopause increase the risk; in postmenopausal women, obesity and hormone replacement therapy. Benign proliferations: ductal hyperplasia increases the risk by 1.5-2 times; ductal atypia or lobular hyperplasia 4-5 times. Environmental Factors: exposure to radiation [4].

4. Pathological classification

4.1. Non-invasive tumors

Intraductal carcinoma in situ: The most frequent form of presentation is a palpable tumor. Mammography shows a central necrotic lesion with grouped microcalcifications in a mold.

Lobular carcinoma in situ: they are usually an incidental biopsy finding. They are usually bilateral and multicentric. They are treated by extensive biopsy plus lymphadenectomy and subsequent follow-up.

4.2. Invasive carcinoma

It is one that invades beyond the basal membrane and enters the mammary stroma, from where it can invade blood vessels, regional and distant lymph nodes.

Among the main histological types of breast carcinoma are:

- Ductal (79%)
- Lobular (10%)
- Tubular (6%)
- Mucinous (2%)
- Medullary (2%)
- Papillary (1%)
- Metaplastic (1%).

Another way to classify breast carcinoma is through the use of immunohistochemistry, which makes it possible to detect proteins in cells, which has led to categorizing breast carcinomas according to the expression of estrogen, progesterone, and HER2 receptors [5].

5. Papillary lesions

The World Health Organization (WHO) classification of breast tumors subdivides intraductal papillary lesions into four categories: intraductal papilloma, intraductal papillary carcinoma, encapsulated papillary carcinoma (with or without invasion), and solid papillary carcinoma.

Encapsulated papillary carcinoma (EPC) is a very unusual variant of papillary carcinoma, with an incidence between 0.2 and 2% of all breast lesions, diagnosed histopathologically and requiring immunohistochemical study.

These lesions are characterized by papillary growth, forming a cystic cavity surrounded by a capsule and may be associated with ductal carcinoma in situ (46%) or infiltrating carcinoma (36%) [6].

6. Clinical case presentation

- Identification
- Name: no data
- Sex: female
- Age: 74 years old.
- Race: white race
- Pathological personal history: Obstructive Pulmonary Disease (COPD) and Type 2 Diabetes Mellitus (Not insulin dependent).
- Physical examination of the breast: A palpable tumor was found in the lower-internal quadrant of the left breast, 1 cm in diameter, firm, mobile in relation to superficial and deep planes. No tumors or adenopathy's were palpable at the axillary level.
- Cabinet exams:
 - A mammography is performed with the following results.
 - A dense, rounded image with poorly defined edges is evident in the described topography.
 - The ultrasound reported a heterogeneous image with cystic and solid sectors. It was classified BI-RADS 4c.

Table 3 BI-RADS assessment categories

	Category	Recommended Action	Likelihood of Cancer
0	Incomplete	Need additional views / imaging to further evaluate	N/A
1	Negative	Continue routine annual screening	Essentially 0%
2	Benign	Continue routine annual screening	Essentially 0%
3	Probably Benign	Short interval follow-up suggested (6 months)	<2% probability of malignancy
4	Suspicious for malignancy	Biopsy should be considered	4A: low suspicion for malignancy (2-9%) 4B: moderate suspicion for malignancy (10-49%) 4C: High suspicion for malignancy (50-94%)
5	Highly suggestive of malignancy	Biopsy required	>95% probability of malignancy
6	Known biopsy-proven malignancy	Confirmed biopsy and treatment planning	Proven malignancy

This lesion translates to a lesion with a high suspicion of malignancy that requires a biopsy for its correct clinical translation, which is performed as an infiltrating ductal carcinoma (IDC) with a papillary pattern.

For its treatment, quadrantectomy plus sentinel lymph node was performed to search for probable metastasis whose extemporaneous study was negative.

The delayed study reported: encapsulated papillary carcinoma with microinvasion, tumor-free margins, associated with a focus of low-grade DCIS.

An immunohistochemical study was also performed, which showed positive estrogen and progesterone receptors, HERb2 negative, and a Ki67 of 12.

Treatment with adjuvant radiotherapy was completed.

The patient progressed well, receiving oral tamoxifen, with normal subsequent controls, being asymptomatic 12 months after surgery and in complete remission.

7. Discussion

The type of tumor found in this patient is rare, as we mentioned in the classification according to its anatomopathological characteristics, papillary lesions represent about 1% of the lesions found, for which its finding requires an intentional search for risk factors. that may have contributed to its appearance.

Although the simple fact of being a woman already has a factor for presenting a tumor and breast cancer, it is not the only one, however, we can observe that the patient also has another risk factor that is her age, since as We can see that he is 74 years old and is within the age group in which this type of tumor is more frequent.

The clinical case does not provide us with whether or not there is a history of this pathology in first-, second-, or third-degree relatives, nor does it provide us with a gynecologic-obstetric history such as age of menarche, parity, age of menopause presentation, or use of hormonal treatment, neither do data provide somatometric data such as weight and height to determine whether or not obesity exists.

Data such as work, exposure to radiation or pre-existing breast lesions are not provided either, which seems to only leave us with the factors already mentioned, sex and age, for which, and for the benefit of the patient, self-examination was the key to the lesion finding.

The lesion was classified according to the BI-RADS system, which is a classification used by radiologists and imaging doctors to classify the possibility that a lesion is malignant, which obtained a classification of 4c, which translates into high suspicion. of malignancy.

A biopsy was performed on the lesion, finding malignancy and giving the diagnosis of infiltrating ductal carcinoma (IDC) with a papillary pattern.

Breast tumors can have several molecular subtypes.

These subtypes are:

- Epidermal growth factor receptor 2.
- Estrogen receptor.
- BRCA1

And it is based on them the treatment of choice that should be given.

These treatments include agents that target the epidermal growth factor receptor 2 (Her2) for tumors that overexpress Her2; aromatase inhibitors, third-generation hormone treatments for estrogen receptor (ER)-positive tumors, and poly (ADP-ribose) polymerase (PARP) inhibitors for BRCA1-deficient and triple-negative tumors [7].

The patient showed positive estrogen and progesterone receptors, HERb2 negative, and a Ki67 of 12. This means that the optimal treatment is to first remove the lesion and then start aromatase inhibitors, which was the treatment given through the tamoxifen.

The patient managed to be asymptomatic and in complete remission at 12 months.

8. Conclusion

We can therefore conclude that breast cancer must always be intentionally sought and screening the population that is at the age at which it occurs at its peak, that present important risk factors and that once a patient is found in a lesion, this can be studied with the imaging study of choice, which is mammography, and if necessary, perform a biopsy, in addition to always carrying out a study in search of metastasis and therapeutic targets so that in this way the treatment is adequate and leads our patient more likely to a cancer remission.

Compliance with ethical standards

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Disclosure of conflict of interest

I Lucía Caputzihil Domínguez Castro; I declare that I do not have a conflict of interest in the relationship of this article with other co-authors.

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