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Mucinous Cystadenocarcinoma of the Breast: Report of A Case and Review of the Literature.

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Abstract

Mucinous cystadenocarcinoma of the breast is a rare neoplasm with few cases reported in the literature; the coexistence of breast cancer with tuberculosis infection is also extremely rare.

We present the case of a patient with a primary mucinous cystadenocarcinoma of the breast with metastasis in an axillary node, at the same time tuberculosis was diagnosed in the same breast by PCR.

Keywords: *Breast cancer, Mucinous cystadenocarcinoma, Tuberculosis*

Introduction

Mucinous cystadenocarcinoma of the breast is a rare primary mammary carcinoma, which has a similar histology to mucinous cystadenocarcinoma of the pancreas and ovary **(**1**)**.

Tuberculosis **(**TBC**)** is an infectious disease, curable, curable and with an important social component. TB in Peru ranks fifteenth in the causes of death, and twenty-seventh in burden of disease measured by years of healthy life lost **(**HLY**) (**2**)**. The coexistence of TB and breast cancer has been described in several literatures, malnutrition, impaired immunity resulting from local or systemic effects of chemotherapy or radiotherapy may play a role in infection or reactivation **(**3**)**.

The most common clinical presentation of TB of the breast is a unilateral, hard, irregular tumor in the center or upper-outer quadrant of the breast, often associated with overlying skin inflammation. Regional lymphadenopathy may be present in up to 15% of all cases. Breast tuberculosis is often difficult to differentiate clinically from carcinoma or pyogenic abscess. Other granulomatous lesions such as sarcoidosis, various fungal infections, and granulomatous reactions should also be excluded **(**4**)**. The detection of Koch's bacilli **(**BK**)** by Zielh Neelsen staining is difficult due to its low sensitivity, which is why more sensitive and specific tests such as PCR are used.

Case Report

A 49-year-old woman with a history of having been diagnosed with left breast tuberculosis by PCR of breast tissue, who received complete treatment, scheme I, simultaneously reports that she has a progressively growing tumor in the left breast for a period of two years, located in quadrants lower; Clinical examination revealed a 15-cm tumor of firm, mobile consistency with irregular edges and

ulcerated areas with mucopurulent discharge, edema in the four quadrants and cold erythema. A 1-cm mobile, non-painful left axillary lymph node was palpated. , the clinical diagnosis was granulomatous mastitis versus breast cancer, she attended the National Institute of Neoplastic Diseases on her own initiative; Tomographic examinations of the abdomen, thorax, and brain were also performed, and no findings of another neoplasm were found.

A percutaneous core biopsy was performed, which microscopy showed tall columnar cells that produce mucus. Immunohistochemistry studies were positive for mammoglobin, GCDFP15, keratin 7, and estrogen receptor, and negative for keratin 5/6, progesterone receptor, and CERB. -B2, subsequently underwent a modified radical mastectomy with axillary dissection, the breast measured 21 x 20 x 4 cm. , lozenge of skin of 19 x 9 cm., where areas of ulceration were observed, the largest of 8 x 5 cm. ; Serial sections showed a friable retroareolar tumor measuring 15 x 9 x 8 cm with an expansive appearance with solid dark brown areas, cystic areas filled with mucoid material, and areas with a necrotic appearance. Microscopy revealed cystic spaces lined by tall columnar cells with abundant intracytoplasmic and extracellular mucin with basal nuclei with marked atypia. An 8-mm metastasis was found in one of the lymph nodes. Immunohistochemistry showed that the columnar cells were positive for keratin. 7 and negative for keratin 20, estrogen receptor, progesterone receptor, cerbb2 and gata 3.

FIG 1: macroscopic image of the tumor, showing a solid area with mucin and cysts.

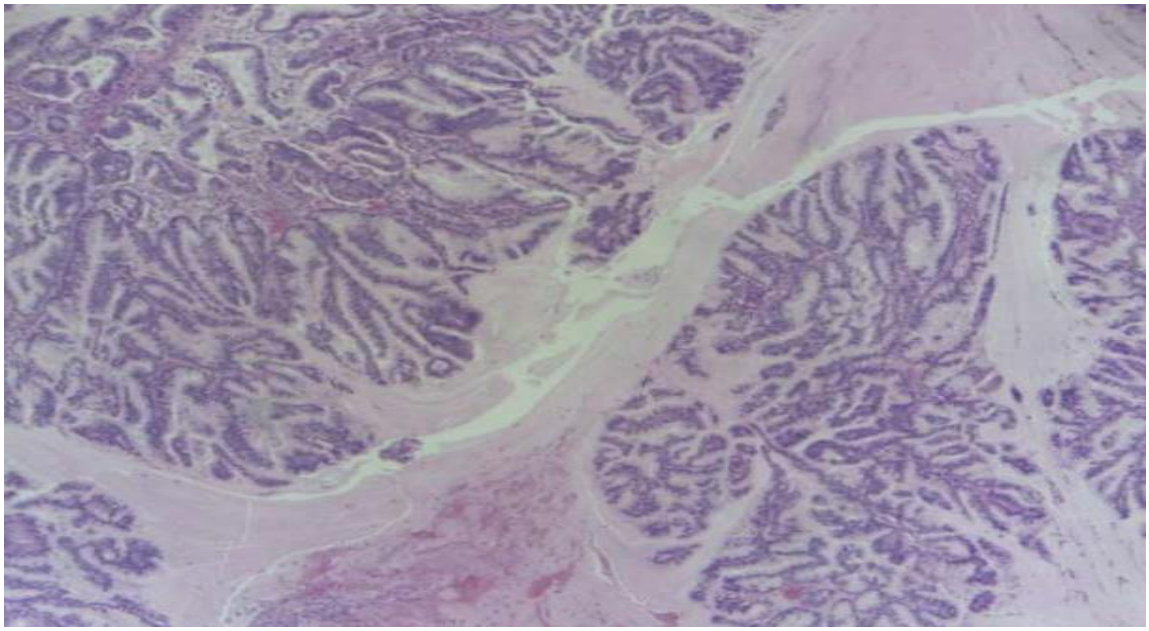

FIG2: microscopic image of the tumor with papillary architecture.

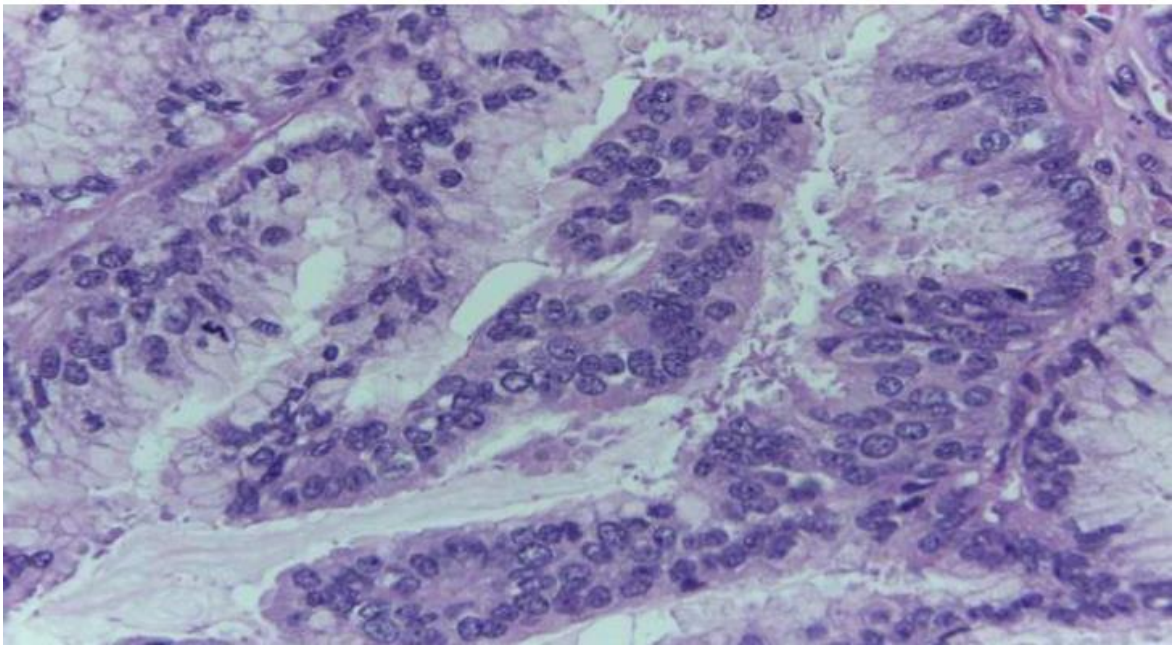

FIG 3: microscopic image of the tumor, the columnar cells with apical mucin are observed.

Discussion

Mucinous cystadenocarcinoma of the breast is an invasive breast carcinoma characterized by cystic structures lined by tall cylindrical cells with abundant intracytoplasmic mucin, which resembles pancreatobiliary or ovarian mucinous cystadenocarcinoma. Therefore, it is important to consider metastases as the main differential diagnosis **(**1**)**.

In the classification of breast tumors published by the World Health Organization **(**WHO**)** in 2019, it belongs to epithelial tumors. Mucinous cystadenocarcinoma was defined as carcinoma composed of generally tall, columnar cells with soft nuclei located at the base and abundant intracytoplasmic mucin that mimics a cystic neoplasm at low power. There were only 4 cases on record when the third edition of the WHO classification was published, and based on these reports, the tumor was thought to have clinical features similar to common infiltrating ductal carcinoma. However, the term was abandoned in the 2012 WHO classification due to its rarity. Only 2 types of mucin-producing carcinomas were described in this edition: mucinous carcinoma and carcinomas with signet ring cell differentiation **(**5**)**, already in 2019 it is within epithelial breast tumors **(**1**)**.

In the literature there are 30 reported cases, with ages ranging from 41 to 96 years **(**mean 60 years**)(**6**)**. The positive keratin 7 and keratin 20 negative staining pattern is common in primary breast tumors and unusual in tumors of ovarian and gastrointestinal origin, which are the differential diagnosis **(**7**)** , which must be ruled out in all cases, both with the immunophenotype as with history and imaging studies.

The immunohistochemical profile of mucinous cystadenocarcinomas of the breast is typically CK7 **(**+**)**, CK20 **(-)**, CDX-2 **(-)**, GCDFP-15 **(**+**)**, mammoglobin **(**+**)**, and triple negative expression of ER, PR, HER- 2. Ovarian and pancreatic mucinous cystadenocarcinomas are commonly CK7 **(**+**)**, CK20 **(**+**)** and CDX-2 **(**+**)**. Interestingly, there is evidence that HER2 protein may rarely be positive in mucinous cystadenocarcinomas of the breast. In these cases, HER2 positivity has been confirmed by gene amplification through FISH evaluation **(**9**)**. Another study reported a case with a basal-like immunophenotype classified as ER-, PR-, HER2-, CK5/6+, and EGFR+ **(**6**)**.

We present the case of a 49 - year - old patient , who is within the range of ages reported for this type of cancer , who presents with a breast carcinoma and with a history of having been treated for mammary tuberculosis in the same breast where she presented the disease . cancer, which underwent a modified radical mastectomy plus axillary dissection, macroscopically it appears as a mass with firm-looking areas of whitish color with cystic areas filled with mucin, microscopy shows cystic spaces filled with mucin lined by an epithelium with columnar cells with intracytoplasmic mucin, with nuclei

with marked atypia and several mitoses, the immunophenotype was positive for keratin 7 and negative for keratin 20, estrogen receptor, progesterone receptor, cerbb2 and gata 3, which is consistent with previous studies ; As GATA 3 is known, it is widely used to detect primary epithelial breast neoplasms **(**8**)**. Our case was GATA 3 negative and estrogen receptor negative, which is logical since GATA 3 correlates with a negative estrogen receptor **(**9**)**. because GATA3 plays an important role in the formation and differentiation of the mammary gland and if it is lost, a mammary gland with negative estrogen receptors will be formed, as well as lack of myoepithelial cells, added to this, our case was of high histological grade, which which reinforces this theory.

An additional finding to our case is that the patient presented a positive PCR result for TB in breast tissue, ALTHOUGH histologically no tissue changes **(**caseating granulomas**)** due to treatment were found and that the tumor replaced the entire mammary gland. The coexistence of carcinomas and tuberculosis is rare and well documented. It should be noted that the patient underwent imaging studies which were negative for another primary cancer; Thus concluding that we are facing a primary mucinous cystadenocarcinoma of the breast.

Conclusion

Mucinous cystadenocarcinoma of the breast is a very rare primary breast carcinoma, it has a unique morphology among breast carcinomas with a different clinical behavior, with a favorable prognosis unrelated to tumor size, lymph node metastasis and molecular subtype.

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