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RESEARCH ARTICLE

BREAST TUBERCULOSIS SIMULATING MALIGNANT TUMOR: A CASE REPORT

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Abstract

Breast tuberculosis is an infection that affects young women in their genitally active period. It is often primary and creates issues in terms of diagnosis and treatment. Treatment is actually based on antitubercular chemotherapy, occasionally associated to surgery. The prognosis is favorable under treatment. We have to mention that in case of breast tuberculosis, histopathological examination remains the only mean of diagnosis. Referring to the medical literature written about the affection, we will analyze its particularities.

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Introduction:-

Tuberculosis is an infectious disease caused by bacteria belonging to the family of Mycobacterium ("Koch's Bacillus"). The Lung remains the primary organ affected by this endemic disease, even though it could target any viscera in the organism (spreading by blood). The mammary gland represents a very rare localization, at the last rank in the list of organs that can be affected by tuberculosis.

However, there is a major issue of the differential diagnosis with other mammary pathologies, either benign or malignant, including breast cancer due to clinical and radiological similarities.

Only histo-pathological examination and/or the bacteriological one confirms the diagnosis and allow us to distinguish between breast tuberculosis and other malignant or benign breast diseases.

Observation:-

Our patient is a 36 year-old woman, married with 2 children, without pathological history. She was referred and admitted in our service for a breast node.

Her symptoms appeared 15 days ago when she discovered a node in her left breast during self-examination. She had no fever and kept a good general health condition. The patient consulted a gynecologist who performed a mammography associated to breast ultrasound that concluded to a galactophoritis of left breast classified BIRADS 3 according to the ACR classification (figure 1).

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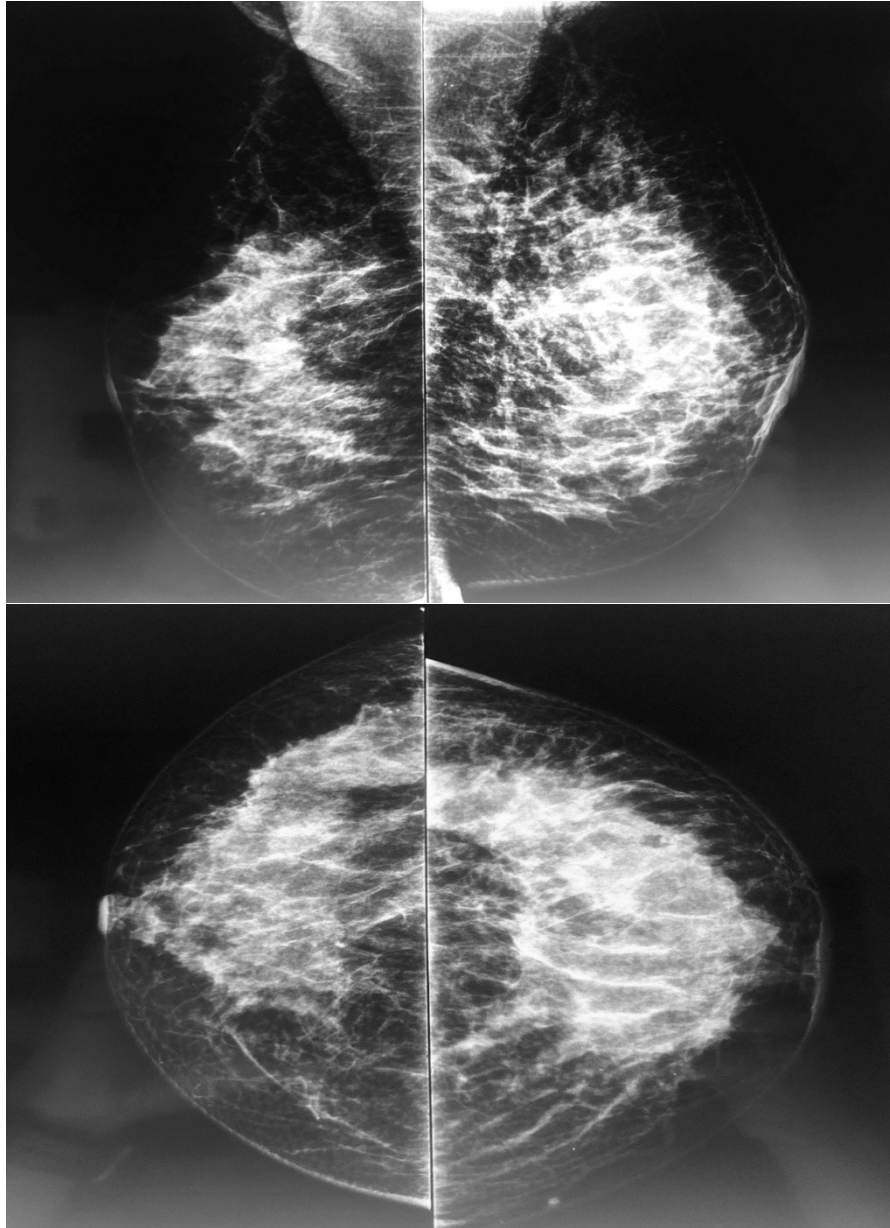


Figure 1:- Mammographic screen face and profile showing the aspect of left breast galactophoritis.

The examination at admission found the patient in good health condition, no fever, heart rate at 71 beats/minute, blood pressure at 125/68 mmHg.

On the physical exam, breasts had an average size. Palpation of the right breast found induration in the upper-external quadrant that was painless, mobile, measuring 6 cm from the major axis. The examination of the other breast was normal. There were no lymph nodes.

Breast MRI shows enhancement at the upper-external quadrant of left breast according to a standard curve 2, classified BIRADS 4 (figure 2)

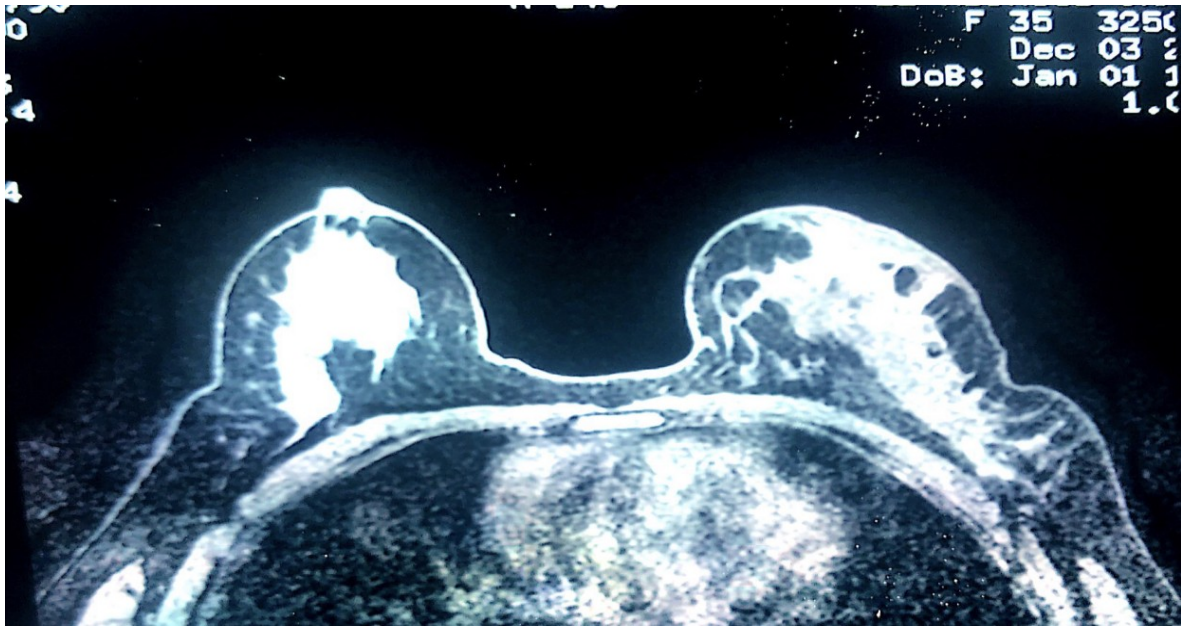


Figure 2:- MRI aspect of left mass enhancement at the upper-external quadrant.

Histopathological examination of the micro-biopsy was in favor of granulomatous epithelial-gigantocellular mastitis without caseous necrosis, which can be related with tuberculosis.

The bacteriological analysis of biopsy showed an important cellular reaction along with sterile culture. The QuantiFERON-TB came up positive, confirming a *Mycobacterium Tuberculosis* infection. Prior to that the Lowenstein-Jensen culture turned out to be positive.

Based on these clinical and paraclinical elements, the diagnosis of breast tuberculosis was made and the patient was put under anti-tuberculosis antibiotics for 6 months following the protocol of Moroccan national tuberculosis program. Treatment was well tolerated.

Discussion:-

Epidemiology:

Mammary tuberculosis is an extremely rare pathology. It represents between 0,06 and 1% of all localizations of tuberculosis, and 0,5 to 4,5% of breast pathologies. Its low frequency could be explained by the nature of the mammary tissue, not propitious enough for the proliferation of the tubercular bacilli.

Since the first case of breast tuberculosis described by Astely Cooper in 1829 as a cold breast tumor, so far about 900 cases have been reported [1]. Breast tuberculosis is mostly encountered in tuberculosis-endemic countries. Asia has the largest percentage with 45,2% of reported cases, followed by 27,5% in Black Africa, 17,2% in North Africa, 16,2% in Europe and 4% in America [2].

ZEKRI and al. reported that in Morocco during the past 8 years, the incidence of breast tuberculosis represents 0.4% of all mammary affections compiled in the department of gynecology obstetrics "A" in Ibn Rochd University Hospital in Casablanca, which is quite similar to those published by studies done in North Africa [3].

Breast tuberculosis affects 95% of woman in their genitally active period from 20 to 50 years old. The risk factors are multiparity, breast-feeding, traumatic breast injuries, chronic mastitis and AIDS [4]. We shall add that 21 cases were seen among men [5].

Transmission Routes:

Breast Tuberculosis is considered primary in the absence of any other localization, which is the most frequent case. In this situation, the transmission is direct, consequently to an abrasion of skin or the galactophorous ducts. It is

considered secondary if the infection has started in another localization. The breast is often contaminated by contiguity through lymph nodes, intra-thoracic, cervical, supraclavicular or axillary ones, or from other neighboring foci. It spreads more rarely by hematogenous route [1-4].

In 50 to 75% of mammary tuberculosis, axillary nodes are involved, but they could be cervical or mediastinal as well. It spreads by antegrade or retrograde extensions through the lymphatic vessels from intra-thoracic or intra-abdominal tuberculous localizations. The contiguity involves pleural, costal, or sternal lesions. The blood hematogenous spread is rare, described in the case of military tuberculosis [6-7-8].

Clinical Diagnosis:

Mammary tuberculosis presents a wide range of clinical features. It has almost always an insidious onset. It is rarely acute. The lesions are often unilateral and mainly at the level of the upper outer quadrant. According to Wilson and MacGregor, bilaterality has only been observed in 3% of cases [9]. Among young women, mammary tuberculosis mimics a pyogenic abscess, in the elderly, it mimics mammary carcinoma [10]. In our case, it was suspicious of malignancy in MRI.

However, some clinical criteria might be useful to draw attention to the etiology of tuberculosis:
The existence of a recurrent breast abscess in spite of antibiotic therapy and proper surgical drainage on previous occasions.

A fistulized axillary lymph node associated with a breast lump.

Rarely, a mammary fistula with an intermittent discharge punctuated menstrual cycles.

Four forms are usually encountered:

The nodular form: with the presence of a hard lump, poorly defined (craggy, with irregular margins/edges) and poorly mobile, painless, accompanied or not by axillary lymph nodes, evoking a malignant tumor. This is the case of our patient.

The diffuse form: less frequent, it affects the whole breast which is painful and inflammatory, with axillary lymph nodes. It frequently presents a cutaneous fistulization.

The sclerotic form: it is rather the case of the elderly with the presence of a painful mass and induration that rarely evolves towards suppuration.

The physical examination reveals axillary lymph nodes in 75% of the cases. They are mobile and can evolve towards fistulization [12-13]. In other cases, Cervical, supraclavicular, or contralateral axillary lymph nodes may also be observed. An abnormal lymph node may precede any affection of the mammary gland and therefore constitute the only reason for consultation [7].

Radiological diagnosis is based on mammography and mammary ultrasound.

Mammography presents 4 aspects [5]:

A dense mass of variable size and shape, with well-defined margins shape and without skin thickening.

An oval area with undefined contours with skin retraction suggestive of malignancy.

Stellar dense opacity with skin retraction and thickening.

Thick, irregular margins with an abnormal architecture and a micronodular lesions of the breast. It's often associated with significant skin thickening and the aspect of military breast tuberculosis.

Apart from clinical manifestations (which are the recurrent abscesses with multiple fistulous orifices), TABAR identified three radio-clinical forms :

A nodular form: that corresponds to a painless tumor mass of very slow growth, producing a dense round or

ovalshapewithblurredmargins. The case of our patient.

A diffuse form:characterized by an inflammatory, painfultumor mass withulceratedskin and nippledishcharge. The mammographicpresents a dense mass with a skin thickening in relation to the lesion.

A sclerosingform: pseudo-neoplasticlesionswith a predominantfibrosis. It results in a higherdensity and homogeneity of the mammary gland: an increase in opacitywithglandularretraction, whichmightbeaccompaniedwith architectural distortion.

In the Histopathologicalexamination, mammarytuberculosisappears in the form of a reddish or grayishyellowishlesion, sometimesalongwithulceration areas suggestive of neoplasticlesion. The lump size is variable. The consistencyisinitiallyfirm, thenbecomes soft in the case of caseum.

The histological section shows a lump strewnwithwhitish granulations or necroticat the center, resulting in a yellowishgranular pus.

Differentforms are described in the literature [11]:

1. Nodularform: 81.4%
2. The sclerosing or scirrhiform: 12.2%
3. Formwith a cold abscess: 5.6%
4. The destructive form: 1.4%
5. Other rare forms:Formwith hot abscess, tuberculous intra-mammarylymphnodes
6. The histologicalcriteria for breasttuberculosisisdetermined by the presence of epithelioidfollicles and Langhans giantcells, with orwithoutcaseousnecrosis[8-9-10].
7. Two classifications are used for mammarytuberculosis:
8. The classification of DELARUE [10]
9. This classification distinguishes four histologicalforms:

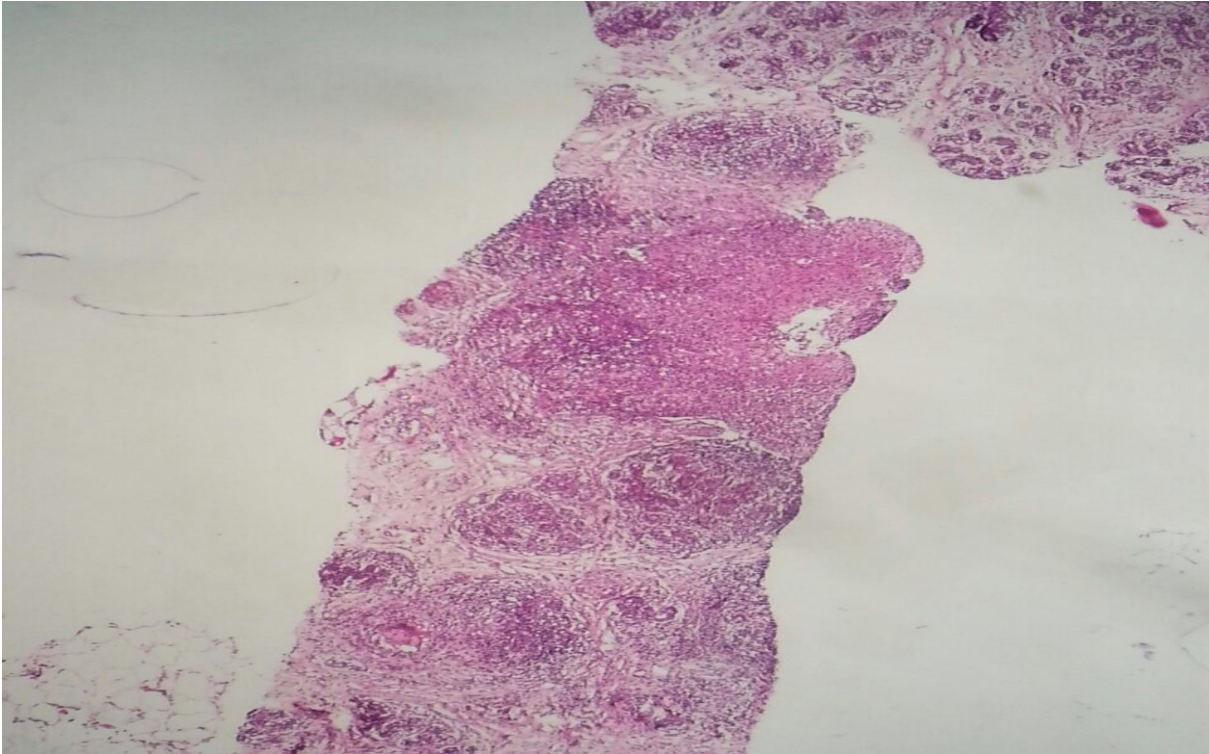
Tuberculousmammarylobulitis: the mostcommonhistologicalesioncommonwhich affects the glandular lobules in the form of caseofollicularlesionswith respect to the interlobularduct and the perilobular tissues. Two aspects are distinguished: Tuberculousgalactophoritis, a lesionwhichelectively affects the galactophoricduct, and cysticgalactophoritis, in which the ductscontain a thick pus whichoriginatedfrom the calcifiedwall;

Vegetativegalactophoritis: withpapillaryvegetationswhichformfleshybudscontainingtuberculousfollicles;

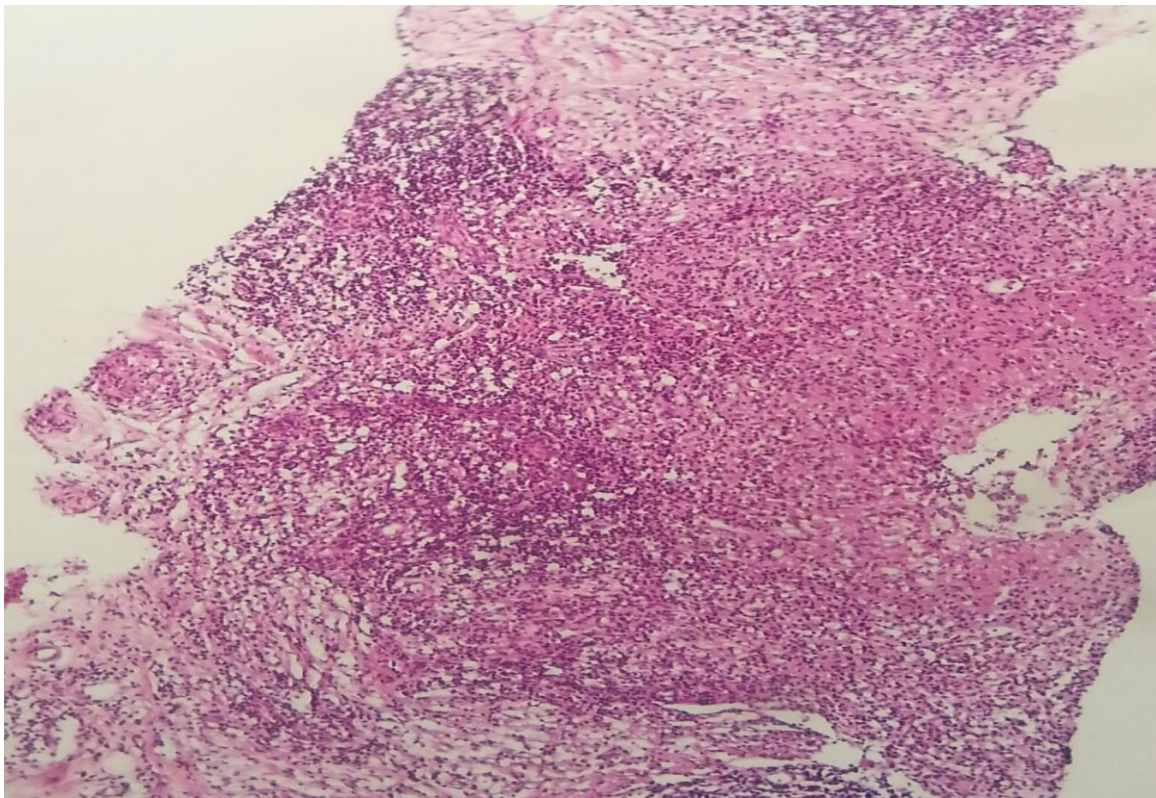
Cold abscess: whichconstitutes a suppurativecaseus, open or not in a galactophore and containing pus with Koch

Bacilli :

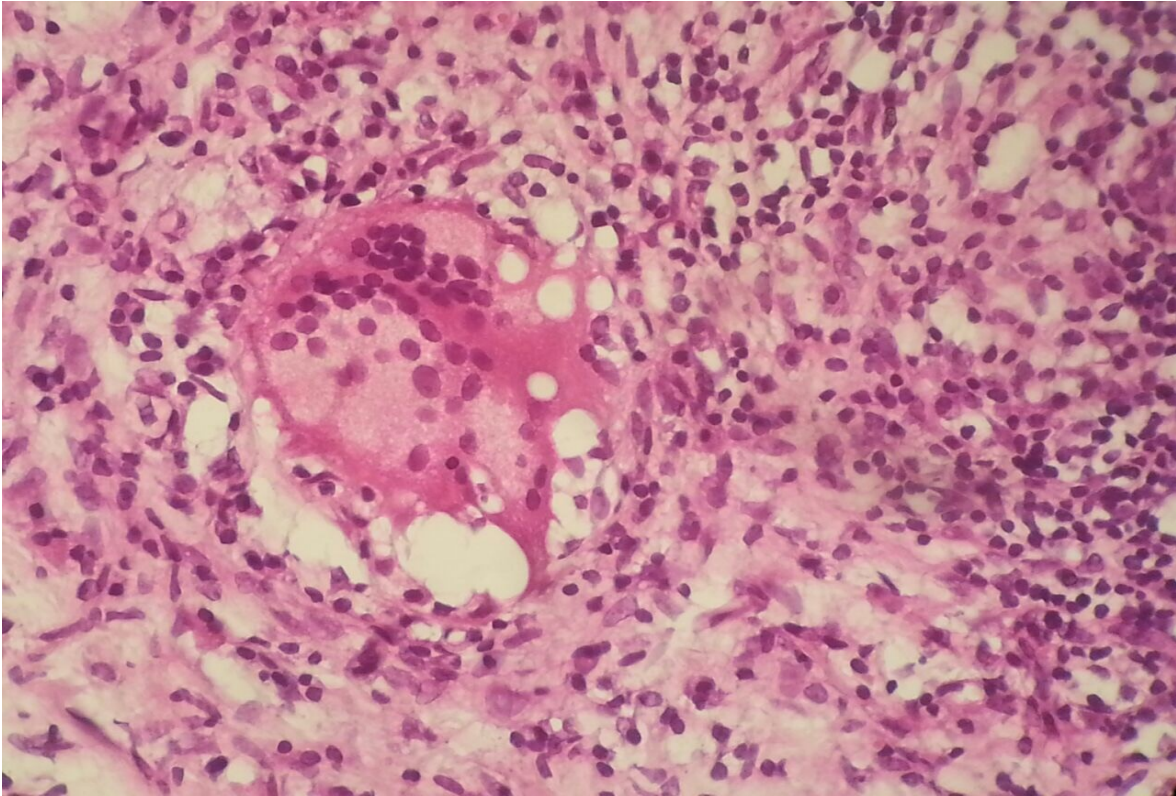
- Miliarybreast: This is an exceptionallocalization of the generalizedgranulate, characterized by severalisolatedfoci, the size of a pinhead, yellowish white. Histologically, the intralobularlesionpresents all aspects of the military tuberculosis.
- The classification of Mac Keown and Wilkinson [13] is the mostwidelyused one. It distinguishes five forms:
- Nodulartuberculosismastitis of the breast: the mostfrequentform
- Disseminatedtuberculosismastitis: verycommonform, invading the wholebreastwithnumerouscaverns;
- Tuberculosismastitisobliterans: rare form, due to a ductal infection withfibrosis and obliteration of the galactophoric system;
- Acutemilitary tuberculosismastitis: a rare form, observedespecially in autopsyseries;
- Sclerosingtuberculosismastitis



Picture 3:- Low magnification showing granulomatous epithelial-giganto-cellular.



Picture 4:- middle magnification showing granulomatous epithelial-giganto-cellular.



Picture 5:- High magnification showing Langhans giant cell.

Differential Diagnosis:

A number of diagnoses must be excluded before we make the diagnosis of breast tuberculosis including breast cancer, which should be the first concern of all physicians because of its high frequency. It is important to note that in the medical literature, forms associating cancer and mammary tuberculosis have been reported, hence the need for the histopathological study of the mammary tissue in order to eliminate an associated carcinoma.

Other pathologies to be excluded are mammary plasmocytosis, antibiotic-mediated pyogenic abscess, actinomycosis, mammary granulomatosis, sarcoma, Chronic mastitis with foreign body giant-cell response and mammary duct ectasia [13].

Treatment:

It is identical to that of the other extra-pulmonary tuberculosis sites according to the National Tuberculosis Control Program. It consists of an intensive phase combining Isoniazid, Rifampicin and Pyrazinamide for 2 months, followed by a consolidation phase involving Isoniazid and Rifampicin for 4 months: 2RHZ / 4RH. Antituberculous chemotherapy is controlled and administered primarily as an out-patient-treatment.

The indication of surgery is limited. It remains necessary for diagnosis (through biopsy) however as a therapeutic mean, it is recommended especially in second intention if there was a bad response to medical treatment. Surgery would involve the lump excision or drainage of abscess, by resecting as much as possible the necrotic and infected tissues, or by a segmentectomy (quadrantectomy) or total mastectomy, if the breast is completely ravaged and riddled with fistulas.

Prognosis:

The life threat for the patient when mammary tuberculosis is isolated. Meaning, the vital prognosis depends on the other tuberculous localizations which must be systematically investigated with the utmost attention. These extra-mammary localizations might be progressive or quiescent [1].

Conclusion:-

Breast tuberculosis is rare even in endemic countries. However, it deserves to be studied due to its extreme resemblance to breast cancer. It affects mainly young women during their genitally active periods. It is promoted by: multiparity, pregnancy, lactation and immuno-suppression, especially HIV infection.

Radiological and clinical exam don't reveal any specific signs, hence the need for a bacteriological study and histological examination to ensure and confirm the diagnosis.

The treatment is mainly medical. However, surgical treatment is useful in case of doubt or after the failure of medical treatment. The outcome under treatment is generally favorable.

Improving the prognosis of mammary tuberculosis involves an early diagnosis and physician insight.

We shall stress on the importance and the crucial need to promote the preventive means prevention in order to eradicate this disease.

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