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THE PLACE OF IMAGING IN PAGET'S DISEASE OF THE NIPPLE EXPERIENCE AT MEDICAL IMAGING DEPARTMENT OF THE PIERRE AND MARIE CURIE CENTER

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Abstract

The objective: is to determine the contribution of breast imaging in the diagnosis of Paget's disease, to describe the aspects and the radiological particularities in conventional imaging, in MRI and to know the therapeutic management. Materials and methods Clinical, radiological (mammography, ultrasound and MRI), and histological data were analyzed in 23 female patients presenting Paget disease of the breast. The criteria for analysis in MRI were the following: morphology of the areola-nipple plaque (thickening, regularity of the contour) and the type of enhancement after injection of contrast medium (signal intensity/time curve), detection of abnormal enhancing in the mammary gland, and ganglion areas. Results: Five of the patients do not presented a palpable mass or a suspicious anomaly on mammography. On MRI, the areola-nipple plaque was morphologically abnormal in four cases, with suspicious enhancement in two cases (two cases of ductal carcinoma in situ) and normal enhancement in two cases (one case of ductal carcinoma in situ). In the two other cases, the areola-nipple plaque was normal (one case of ductal carcinoma in situ). Distant abnormal enhancement of the areola-nipple plaque was noted in two cases (one case of ductal carcinoma in situ and one benign lesion). Conclusion the MRI aspect of the areola-nipple plaque in Paget disease shows little concordance with the histological results. MRI can be useful in detecting distant lesions when there is no clinical sign nor a suspicious mammography.

Keywords: Nipple Eczema, Breast Carcinoma, Mammography, MRI, Nipple Biopsy.

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INTRODUCTION

Paget's disease of the nipple is a carcinomatous infiltration of the nipple, manifesting itself as an eczematous rash of the nipple. It is a rare form of breast cancer, accounting for 0.5 to 5% of all breast cancers. It is associated with breast cancer in 82% to 100% of cases, with infiltrating carcinomas accounting for over 50%, and multifocal involvement ranging from 20% to 79%.

The aim: to determine the contribution of breast imaging to the diagnosis of Paget's disease, to describe the radiological aspects and particularities of conventional imaging and MRI, and to learn about therapeutic management.

Materials and Methods:

This is a retrospective study of 23 patients with Paget's disease of the nipple without and with palpable breast mass, over a 3-year period (from 2021 to 2023). Each patient underwent digital mammography (two views of each breast, with additional views if necessary). The exploration was completed by breast ultrasound, 1.5 Tesla breast MRI was systematically performed in search of a tumor focus not found on standard imaging, but also to look for additional lesions. Breast MRI interpretation criteria were based on the ACR BI-RADS lexicon. Percutaneous sampling was performed by micro biopsy using 14-gauge needles for masses. Macro biopsy under stereotaxis on a dedicated digitized table or add-on stand for microcalcifications and masses without ultrasound translation. We evaluated the population criteria, the results of the different exploration modalities and the outcomes of therapeutic management.

Results:

Clinically:15 patients had a palpable mass (65.3%), 3 had nipple discharge (13.4%) and 5 patients had no palpable mass (21.8%). The clinical appearance of the nipple was red and shiny in 6 cases (26%), crusty in 12 cases (52.2%) and ulcerated in 5 cases (21.7%) (figure 2). The mean clinical size was 42mm, with a diagnostic delay of between 12 and 18 months.

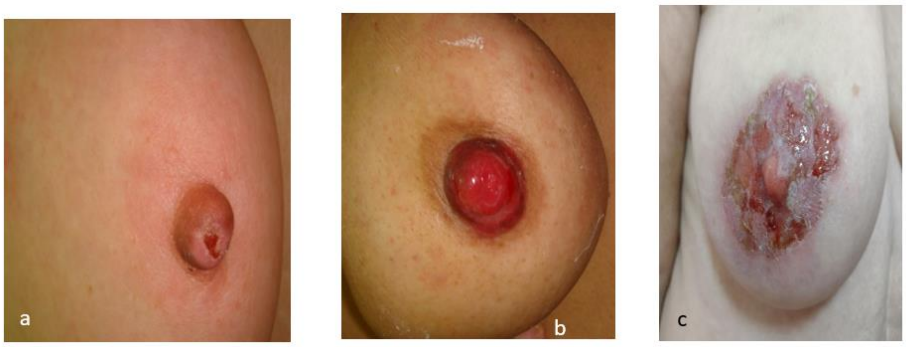

Figure 1a: Initial stage of Paget's disease, b: Intermediate stage of Paget's disease, c: End stage of Paget's disease

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Imaging results: mammography and breast ultrasound were normal in 5 cases, pathological in 18 cases, distributed as follows: isolated masses in 5 cases, isolated microcalcifications in 4 cases, combined masses and microcalcifications in 9 cases. Skin thickening was found in 13 cases, isolated in 5 cases and associated with masses and microcalcifications in 8 cases.

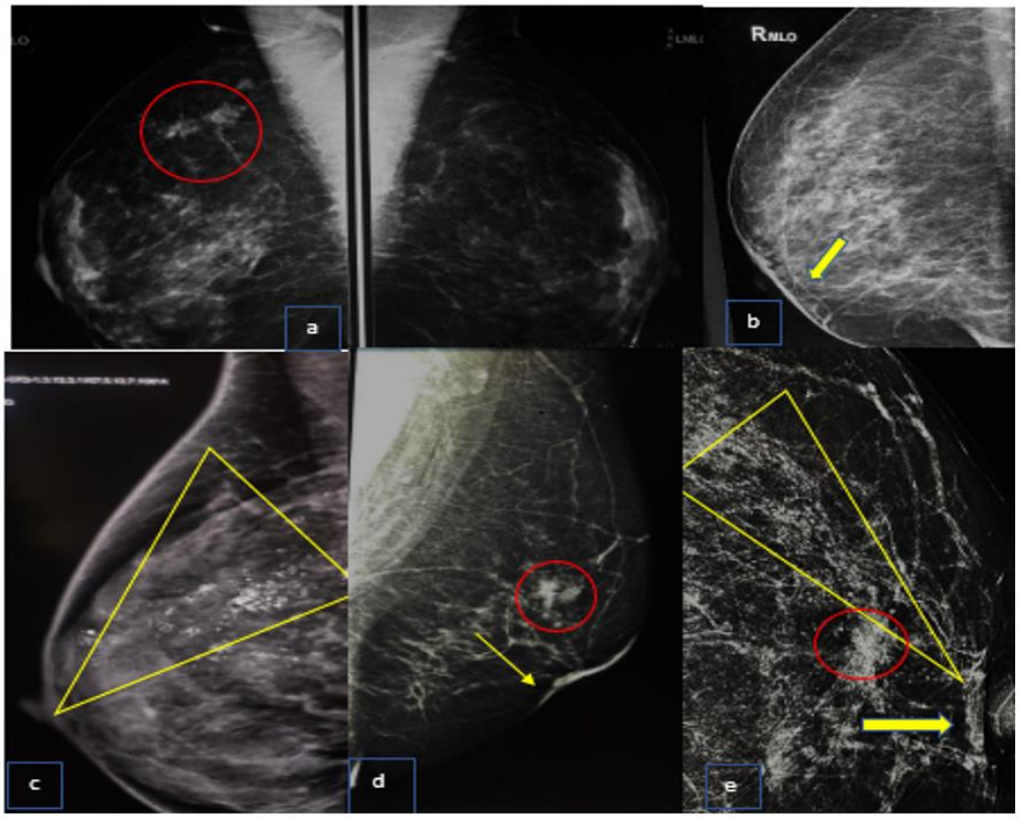

Figure 2: Mammographic aspects during Paget's disease, a : suspicious mass, b: thickening of the nipple areolar plate, c: isolated segmental microcalcifications, d: thickening of the nipple areolar plate + microcalcifications, e: retraction of the PAM + microcalcifications + architectural distortion.

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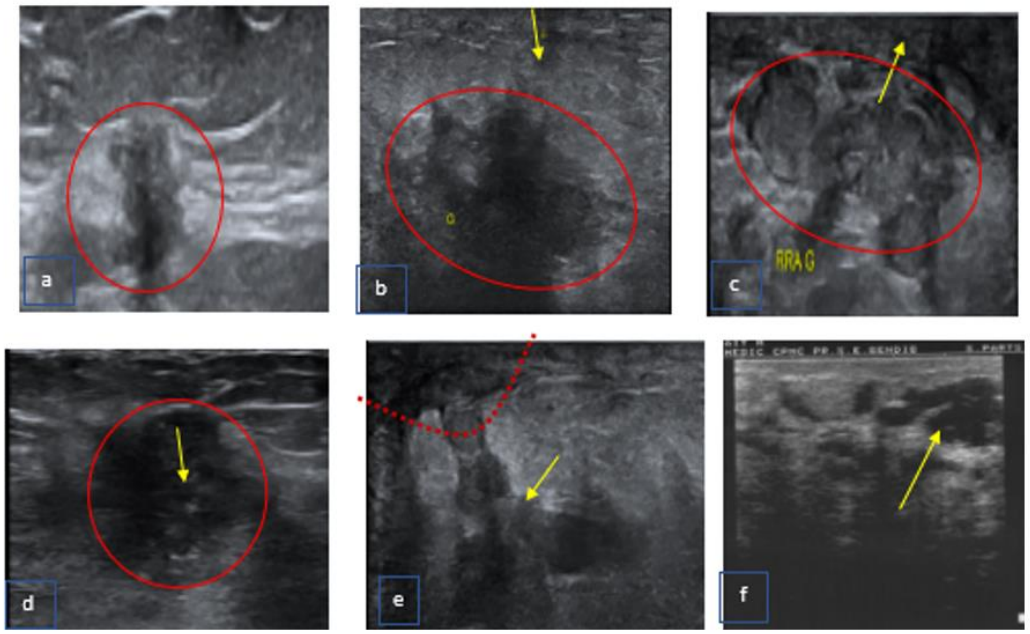

Figure 3: Ultrasound aspects during Paget's disease , a : suspicious mass , b : mass + thickening of the nipple areolar plate , c : mass + infiltration of the nipple areolar plate ,d : mass + microcalcifications, e : retraction of the nipple areolar plate + architectural distortion , f : ductal ectasia with echogenic content .

A total of 5 cases were classified as BI-RADS 1 ACR, 2 as BI-RADS 2 ACR, 1 as BI-RADS 3 ACR, 7 as BI-RADS 4 ACR, 8 as BI-RADS 5 ACR. On MRI, all cases were pathological

Morphological MRI revealed enhancement without mass in 10 patients, including 4 with linear distribution and 5 with segmental distribution, whose internal enhancement characteristics were heterogeneous or micropunctate; in 3 patients, enhancement without mass associated with thickening of the nipple areolar plate; isolated thickening of the nipple areolar plate in 3 patients; and mass with involvement of the nipple areolar plate in 7 patients.

Hemodynamically: the enhancement curve after injection of contrast medium on mass lesions and non-mass enhancement were of type 2.

(ascending curve with plateaus) in 13 patients and type 3 in 8 patients (ascending curve with Wach out). And type 1 in 2 patients (ascending and progressive curve). Breast MRI also detected additional lesions in 4 patients, enabling them to undergo conservative surgery.

Breast MRI was able to detect lesions that had gone undetected or had been considered insignificant on standard imaging, and also to find additional lesions in 5 cases (21.7%),

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compared with 1 case (1.4%) on mammography and ultrasound, thus allowing conservative surgery.

A total of 11 patients were classified as ACR BI-RADS 5, 9 as ACR BI-RADS 4 and 3 as ACR BI-RADS 3.

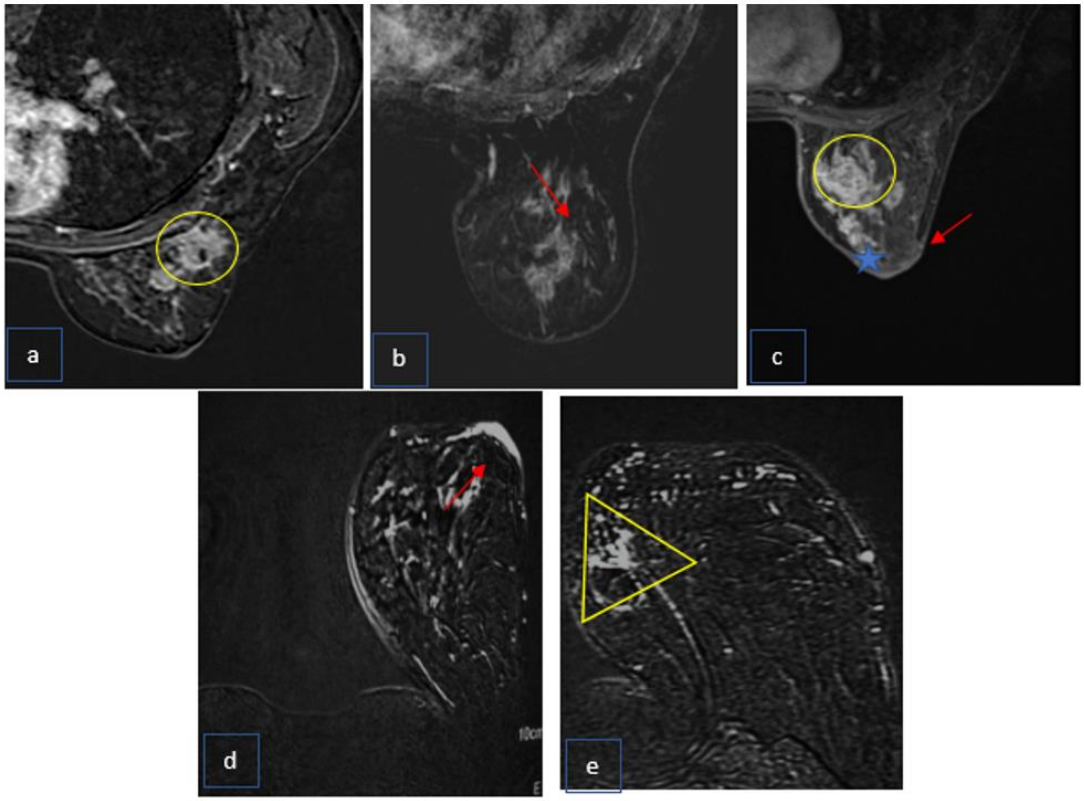

Figure 4: MRI aspects during Paget's disease. a: mass-like enhancement (mass) + areolar plaque enhancement (arrow), b: non-mass-like enhancement, c: mass (circle)+ non-mass-like enhancement (star) and plaque thickening (arrow) , d and e areolar plaque is (red arrow) + ductal non-mass-like enhancement (triangle) .

Histological diagnosis: Paget's disease of the nipple was diagnosed by punch biopsy, or removal of the nipple, showing the presence of Pagetoid cells in the nipple epidermis in 6 cases. Sub-adjacent cancer was diagnosed on micro biopsy in 14 cases (60.8%) and macro biopsy in 4 cases (17.4%).

Treatment was mastectomy in all our patients, combined with lymph node dissection in 18 cases. Surgical specimens revealed non-specific infiltrating ductal carcinoma in 15 cases, intraductal carcinoma in situ in 6 cases and 2 cases of isolated Paget's disease.

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DISCUSSION

Clinically, we noted a delay in diagnosis (1.2) compared with the literature, with the eczematous appearance of the nipple and the increased size of the mass (3), which can be explained by the covid 19 pandemic.

In terms of mammography and ultrasonography, radiological sensitivity is in line with the literature (30 to 80%) versus 78.2% in our study. The lesion type is more mass than microcalcification (4). MRI sensitivity is 100%, as in the literature (5).

CONCLUSION

Paget's disease of the nipple is a rare variant of ductal carcinoma. It is associated with an underlying breast carcinoma in over 80% of cases. It should be investigated systematically on imaging. Breast MRI is recommended before considering conservative surgery, to detect occult carcinoma as well as multifocality or multicentricity**,**

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