
IMAGING PATHOLOGICAL CORRELATION

Paget's Disease of the Breast

CY Lui,¹ KL Mak,² HS Lam,¹ LK Chan¹

¹Department of Radiology, and ²Department of Pathology, Kwong Wah Hospital, Hong Kong

ABSTRACT

Paget's disease of the breast is an uncommon entity. It is characterised by clinical findings of nipple changes, with or without an underlying palpable mass, and is invariably associated with underlying malignancy. We present a case of Paget's disease of the breast with radiological features of extensive breast involvement, and correlate the radiological and pathological findings for this condition.

Key Words: Diagnostic imaging, Paget's disease, mammary, Pathology

INTRODUCTION

Paget's disease of the breast is an uncommon disease. Patients typically present with nipple changes that are commonly associated with underlying malignancy. This report is of a patient with this uncommon condition, and focuses on the radiological and pathological features.

CLINICAL DETAILS

A 50-year-old woman presented with recurrent nipple ulceration of 4 weeks' duration. There was no family history of breast cancer. Physical examination showed right nipple ulceration and mild retraction. A 1 cm hard lump was detected in the upper part of the right breast. There were no palpable axillary lymph nodes. On the basis of the clinical findings, a provisional diagnosis of Paget's disease of the breast was made.

Subsequent bilateral mammography showed multiple clusters of pleomorphic and irregular microcalcifications, some showing casting and branching. The microcalcifications were predominantly distributed in the upper part and equatorial regions of the right breast. The glandular structure in the upper part of the breast showed retraction, as did the nipple, although no definite skin thickening was seen (Figures 1 and 2). At ultrasonography, multiple, ill-defined, heterogeneous hypoechoic masses were evident, some with internal

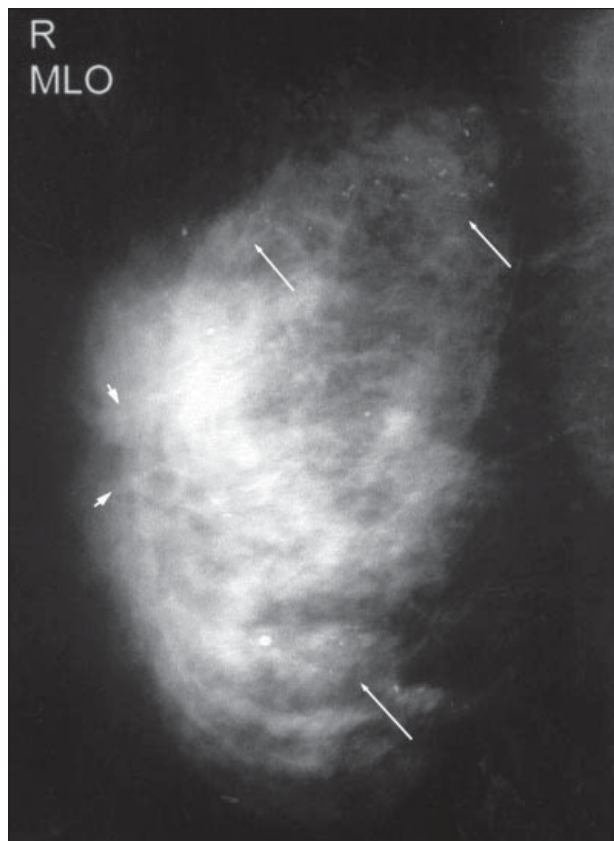


Figure 1. Mammographic findings of medial oblique view showing multiple clusters of pleomorphic and irregular microcalcifications (arrows), predominantly distributed in the upper part and equatorial regions of the right breast. Retraction of glandular structure (arrowheads) in the upper quadrant is also evident.

calcification (Figure 3). Diffuse architectural distortion of most of the right breast was seen (Figure 4). The largest mass measured approximately 1.9 x 1.76 x 1.4 cm and was situated at the 12 o'clock position.

Correspondence: Dr CY Lui, Department of Radiology, Kwong Wah Hospital, 25 Waterloo Road, Kowloon, Hong Kong. Tel: (852) 2781 5189; Fax: (852) 2781 5454

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Figure 2. Mammographic findings showing casting microcalcification (arrow). Magnification x 1.5.

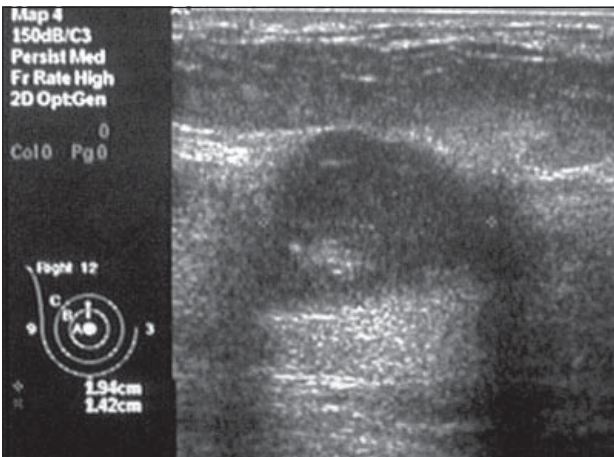


Figure 3. Ultrasound findings of multiple ill-defined heterogeneous hypoechoic masses with internal calcification can be seen.

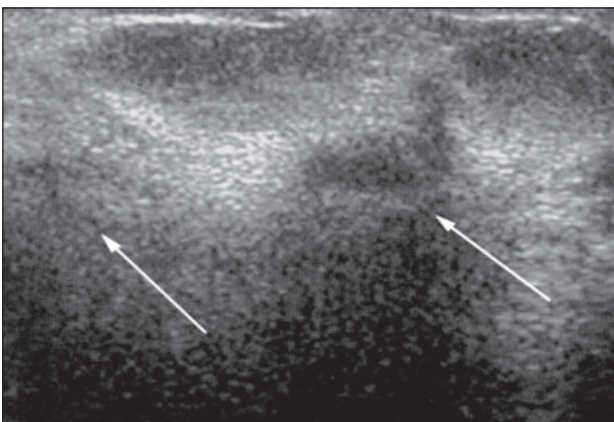


Figure 4. Ultrasound findings of diffuse architectural distortion, with ill-defined hypoechoic masses (arrows) throughout the breast.

There were multiple abnormal hypoechoic axillary lymph nodes, with loss of normal fatty hila in the right axilla.

Fine needle aspiration of the palpable mass was performed and showed multiple papillary fragments and

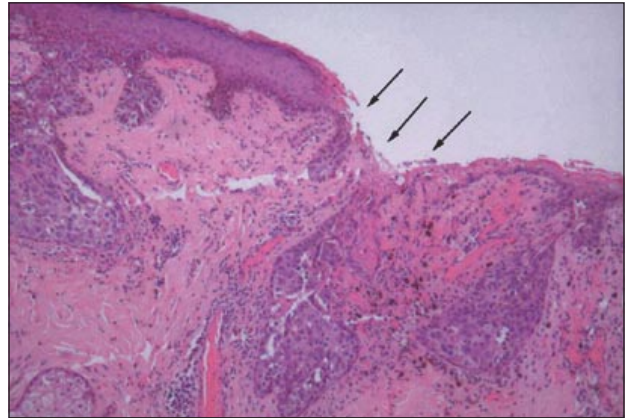


Figure 5. Paget's disease of the nipple with superficial ulcerations (arrows).

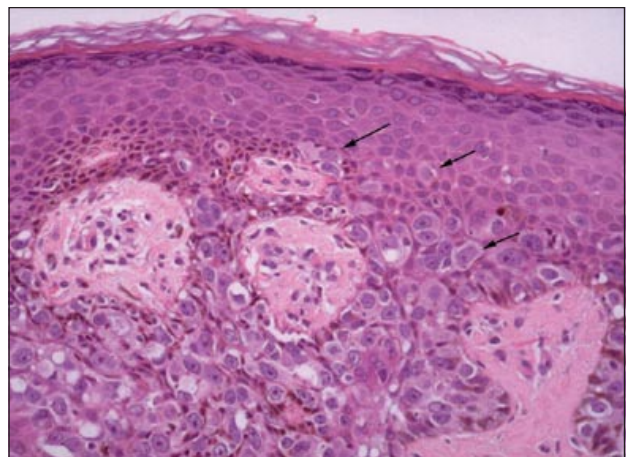


Figure 6. The histological hallmark of the disease is the presence of malignant cells, called Paget's cells, in the epidermis. The cells show clear or lightly staining cytoplasm, and pleomorphic and hyperchromatic nuclei with prominent nucleoli (arrows).

clusters of tumour cells, consistent with mammary carcinoma. The patient underwent mastectomy with axillary dissection. Histological examination showed multiple, widely-spaced foci of intraduct carcinoma of high nuclear grade, with comedonecrosis, and foci of invasive carcinoma. The nipple featured Paget's disease, with intraepidermal spread of ductal carcinoma cells (Paget's cells). A few superficial ulcerations were noted (Figures 5 and 6). Eight of 13 lymph nodes from level I axillary dissection were positive for metastatic carcinoma. The patient was treated with adjuvant chemotherapy and radiotherapy postoperatively.

COMMENTS

Paget's disease of the breast was first described by Sir James Paget in 1874.¹ The disease presents with eczematous eruption of the nipple and areola, and is invariably associated with underlying breast malignancy. It is an uncommon condition, accounting for

2% to 3% of all breast cancers.² The clinical features of nipple changes, including erythema, scaling, ulceration, retraction of the nipple, or a bloody nipple discharge, may mimic benign skin diseases such as eczema or contact dermatitis. However, these latter conditions usually present with bilateral signs and symptoms. Delay in the diagnosis of Paget's disease of 6.5 to 27 months has been reported, reflecting the rarity of this condition.²

The underlying malignancy is not consistently reflected in clinical examination or imaging findings. Only 46% of patients with clinical Paget's disease present with a breast mass. The reported rate for identification of tumours on mammography for patients with clinical Paget's disease without a mass is variable, ranging from 2.5% to 100% of patients.² A recent review of 212 patients with Paget's disease showed that 43% had normal mammograms.² For those with positive mammograms, findings included skin thickening, nipple retraction, identification of a subareolar mass, subareolar or diffuse malignant microcalcifications, a discrete mass, or multifocal masses. For more than half of the patients, the nipple appeared healthy at mammography, despite the presence of Paget's disease clinically.³

Sawyer and Asbury demonstrated multifocality of malignancy in 29% of patients.⁴ Bilateral views should be obtained to exclude contralateral disease, which is reported by Egan to be as high as 17.5%.⁵ Supplementary ultrasonography is helpful for further evaluation of abnormal mammographic findings. Currently, magnetic resonance imaging (MRI) of the breast is not recommended by the Royal College of Radiologists Breast Group Working Parties in the evaluation of the disease due to its non-specificity, although assessment of the nipple-areolar complex using MRI has been reported.⁶

The histological hallmark of Paget's disease is the identification of Paget's cells — a large, pale-staining cell, with round or oval nuclei and large nucleoli — occurring singly in the superficial layers, and in clusters toward the basement membrane. It does not invade through the dermal basement membrane and therefore is a form of carcinoma in situ. In 807 patients with clinical Paget's disease, who did not have a clinically or mammographically detectable mass, subsequent mastectomy

showed that 38% had invasive breast cancer and 62% had ductal carcinoma in situ (DCIS).² For those with clinical or mammographic evidence of a tumour, 93% were found to have invasive breast cancer, and 7% had DCIS.

The diagnosis of Paget's disease of the breast can be made using scrape cytology, superficial epidermal shave biopsy, punch biopsy, or incisional or excisional biopsy of the nipple. For a clinically palpable mass, the cytological or histological diagnosis should be obtained by percutaneous fine needle aspiration, or core biopsy. Mammography is indicated to determine whether image-guided biopsy is possible, and to confirm whether invasive disease is present.⁷ Subsequent management will depend on the nature of the pathological results, and the extent of disease, including whether or not there is axillary nodal involvement.

SUMMARY

The diagnosis of Paget's disease is generally based on clinical findings. However, the radiologist should be aware of mammographic findings of nipple or subareolar changes suggestive of Paget's disease, which should prompt directed clinical examination, even for asymptomatic patients. Awareness of the mammographic and ultrasonographic features of Paget's disease will facilitate the search for an associated malignancy, be it focal, multifocal, or bilateral. Mammography is also indicated to determine whether image-guided biopsy is possible, and to confirm whether invasive disease is present.

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