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## Case Report

# Unusual Radiological Features of a Breast Cancer Patient Presenting with Nipple Discharge in Hong Kong <sup>☆</sup>

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## ABSTRACT

A 62-year-old woman was presented with blood stained nipple discharge for many years. Mammograms and ultrasound study revealed a prominent left nipple, increase in nipple vascularity and nipple calcifications. Ductogram revealed an obstruction at the proximal part of the discharging duct. Surgical excision of the nipple demonstrated encapsulated papillary carcinoma. The excision margins appeared to be clear, but tumor tissue was found within 1 mm from the deep margin. Ultra-filtered sulfur colloid sentinel node examination was negative. Thus, simple left mastectomy was performed. The specimen was confirmed as ductal carcinoma in situ of the left breast.

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## Introduction

Breast cancer has become the most common cancer affecting women in Hong Kong since 1994. Female breast cancer cases diagnosed in Hong Kong has increased by 3.8 times from 1152 in 1993 to 4373 in 2017 [1]. On average, about 12 women are diagnosed with breast cancer every day. Many of the patients usually present with breast lumps and nipple discharge [2]. This report describes a postmenopausal lady in Hong Kong

who complained of nipple discharge and was diagnosed to have breast cancer with ultrasound and mammography techniques. The radiological findings were uncommonly seen for usual breast cancers.

## Informed Consent

Informed consent has been taken from the patient described in this case report.

<sup>☆</sup> **Competing Interests:** The authors declare that they have no competing interests.

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## Case report

A 62 year old postmenopausal female retired factory worker with type 2 diabetes mellitus, hypertension, and hyperlipidaemia came to our hospital in 2018.

She complained of left nipple blood-stained discharge since 2015. She had no family history of CA breast. She was nulliparous and not on any form of hormonal treatment. The blood-stained discharge was spontaneous, but she was unsure about whether the discharge was from a single duct or from multiple ducts [3]. There was no palpable breast mass clinically.

The patient first underwent breast ultrasound and mammographic study in August 2015 in a private medical centre. At that time, it was found that she only had benign calcifications in her right breast glandular tissues, but there was no focal mass or any enlarged axillary lymph node.

However, her symptoms persisted. In Feb 2018, the patient was referred to our public hospital by her family physician.

Clinical examination revealed blood stained discharge from a single ductal opening at 6 o'clock position of her left nipple upon mild hand compression. In addition, her left nipple appeared slightly retracted.

Her blood test results including serum prolactin and other tumor markers were all normal. Diagnostic breast ultrasound, ductogram, and mammograms were then arranged.

In March 2018, mammograms showed that both breasts were almost entirely fatty. The left nipple appeared prominent when compared with the contralateral side. There were fine pleomorphic microcalcifications in the left nipple (Figs. 1 and 2), which were newly developed. It was later

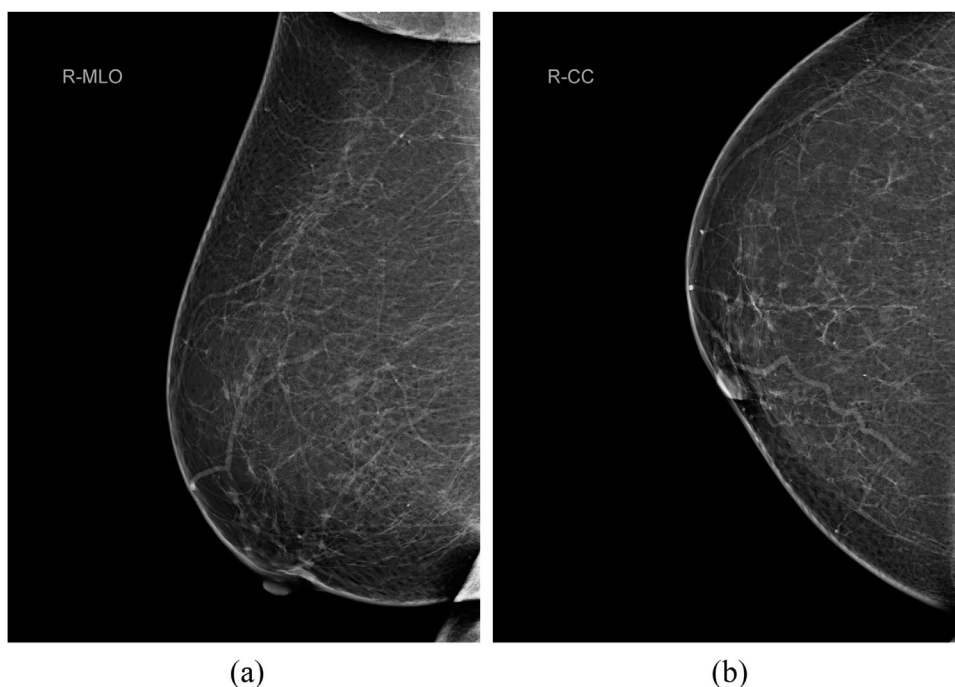


**Fig. 1** – The ultrasound image demonstrated echogenic foci within the left nipple.

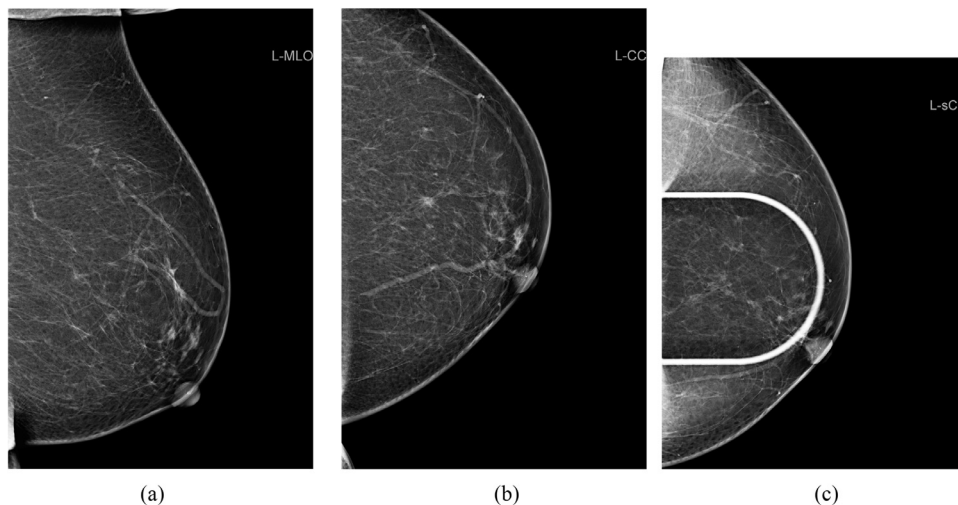
confirmed that there was no obvious associated mass noted under compression view [4] (Fig. 3).

On the same day, breast ultrasound showed prominent left nipple with diffuse hypervascularity (Fig. 4) Microcalcifications were noted within the left nipple. Features were suspicious of underlying malignancy or inflammation. The right nipple appears normal Fig. 4.

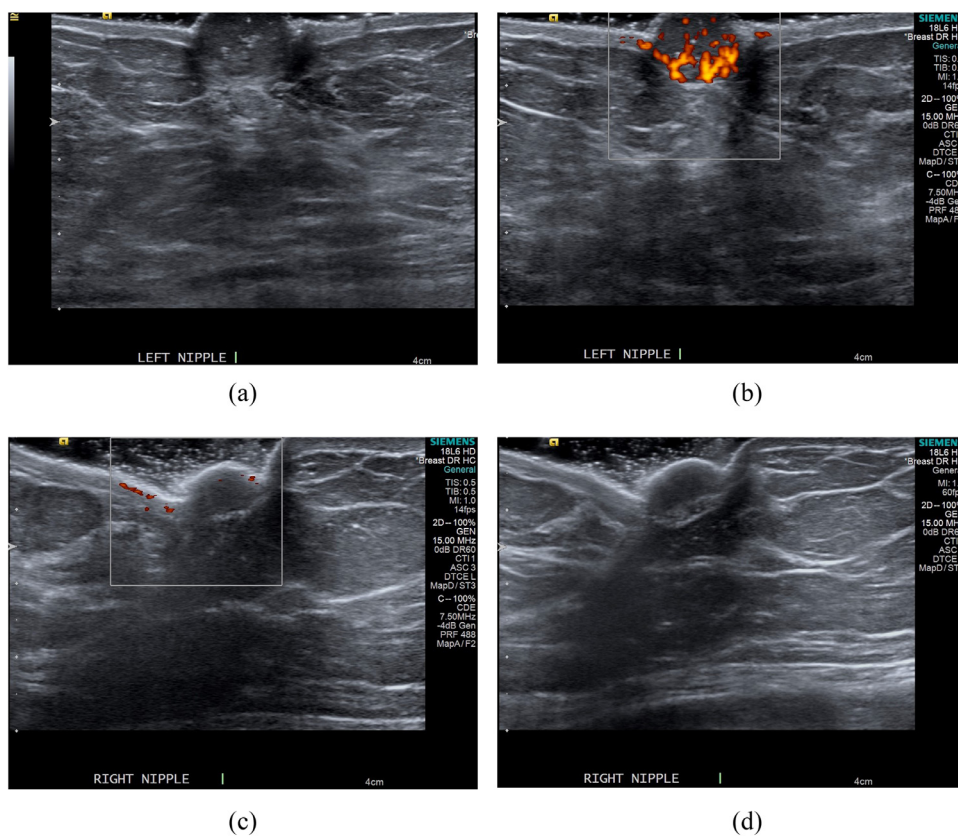
Later, a ductogram was performed. The left discharging ductal orifice was cannulated with a 30G sialogram needle. There was obstruction to the needle at about 1 cm distal to the orifice, therefore such needle could not be completely in-



**Fig. 2** – This is a compression view. There were clustered microcalcifications with mild pleomorphism seen in the left nipple, which were newly developed.



**Fig. 3 – (a) Left mediolateral oblique view. (b) Left craniocaudal view. (c) Compression view. There were clustered microcalcifications with mild pleomorphism in the left nipple.**



**Fig. 4 – (a) Left nipple appeared prominent. (b) There was diffuse increased vascularity shown in left nipple. (c) Normal right nipple vascularity. (d) Normal right nipple size.**

serted. Omnipaque 300 was instilled via a fine needle. However, all the injected contrast was refluxed via the orifice. Features were suggestive of an obstruction at a proximal part of the discharging duct.

Core biopsy was not performed as usual standard procedure in this case since the suspected lesion was completely confined within the sensitive nipple due to pain and disfigurement. The lesion was rated as BI-RADS 4b [5]. Subsequent

joint meeting with surgeons offered nipple excision to the patient as a result.

## Discussions

EPC is frequently visible on breast imaging. In our case, it was not obvious in the breast imaging may be due to the fact that it was completely confined to the nipple.

Paget disease of the nipple has been considered as an alternative diagnosis [6]. It usually presents with eczematous changes of the nipple include erythema, hyperkeratosis and crusting of the nipple skin surface. It was described as a kind of breast malignancy featured by malignant infiltration of the nipple epidermis. It can be confined to the epidermis or associated with ductal carcinoma in situ beneath the nipple or even associated with invasive ductal carcinoma. It is also commonly not detectable on mammography.

However, our patient's nipple did not demonstrate such skin features that were expected for Paget disease. Instead, her nipple appeared retracted and her chief complaint was nipple discharge.

Ductal carcinoma in situ associated with nipple discharge could be an alternative diagnosis [7]. It is more common than paget disease of the nipple. It requires ductal exploration regardless of radiological findings.

Subsequent pathology report of the nipple excision has confirmed the diagnosis of encapsulated papillary carcinoma.

Encapsulated papillary carcinoma (EPC), is a rare tumor that represents less than 2% of all breast cancers. It is also known as intracystic or encysted papillary carcinoma [8]. This subtype of breast tumor mainly affects elderly postmenopausal women and manifests as clinically palpable changes in the breast or bloody discharge [9]. Fine needle aspiration is sometimes required for diagnosis most of the time [10]. Histologically, it is characterized by an expansile papillary lesion which is surrounded by a thick fibrotic wall and an absent myoepithelial cell lining. The absence of the myoepithelial cell layer raises the possibility that EPC is a minimally invasive, low-grade, or indolent form of invasive carcinoma rather than an in-situ lesion. There is an excellent prognosis for patients diagnosed with EPC [11]. The outcome of EPC is similar to that of DCIS, with a good prognosis (10-year survival, 95%) [12].

According to the WHO classification of tumors of the Breast (2012), EPC is classified into encapsulated papillary carcinoma and encapsulated papillary carcinoma with invasion. [13]. Often, foci of low-grade ductal carcinoma in situ (DCIS) in the surrounding breast parenchyma are frequently observed, as in our case.

Owing to the rarity of this subtype of breast carcinoma, management principles have been established mainly on the basis of small patient series and case reports. The treatment of EPC patients consists of margin-free surgery with sentinel lymph node biopsy, and adjuvant hormonal therapy in cases with positive hormone receptor status [14]. According to previous case reports, mammography usually revealed lobulated, well-defined nodular masses. Clinically, EPC may appear like a benign lump. However, our patient neither showed a

lump clinically or radiologically. Instead, she was presented with bloody nipple discharge and sonographically nipple hypervascularity. The usual practice to offer core biopsy first before any excision or surgery was not feasible in our case due to the fact that the lesion was within the nipple. Core biopsy may cause unbearable pain and disfigurement in the inappropriate setting.

On the other hand, breast magnetic resonance imaging has been an integral component of breast imaging protocols, and its importance has increased in recent years. The overall sensitivity of MRI for breast cancer is relatively high, especially in cases of invasive ductal carcinoma. However, due to limited MR availability in our centre, the patient did not undergo MR evaluation for her breast condition.

Similar to other centres' experience, the excision biopsy specimen showed that the patient had another malignant focus in the resection margin and subsequently she was diagnosed with DCIS after total mastectomy.

Finally, our bring home message was that any prominent nipple size with hypervascularity should always alert a radiologist or clinician of any possible underlying malignant condition.

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