

Periductal Mastitis in a Male Breast¹

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Periductal mastitis and mammary duct ectasia are now considered as separate disease entities in the female breast, and these two diseases affect different age groups and have different etiologies and clinical symptoms. These two entities have very rarely been reported in the male breast and they have long been considered as the same disease as that in the female breast without any differentiation. We report here on the radiologic findings of a rare case of periductal mastitis that developed during the course of chemotherapy for lung cancer in a 50-year-old male. On ultrasonography, there was a partially defined mass with adjacent duct dilatation and intraductal hypoechogenicity, and this correlated with an immature abscess with a pus-filled, dilated duct and periductal inflammation on the pathologic examination.

Index words : Breast, male
Breast, US
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Periductal mastitis and mammary duct ectasia in the female breast are now considered as separate disease entities, and these diseases affect different age groups and have different etiologies and clinical symptoms (1, 2). These two entities have very rarely been reported in the male breast, and they have long been considered as the same disease as that in the female breast without any differentiation (3 - 9). To the best of our knowledge, only twelve cases of this disease have been reported in

the literature (3 - 9). We report here on a rare case of periductal mastitis in a male who had been treated with chemotherapy for lung cancer.

Case Report

A 50-year-old male presented with a mass of several months' duration in the subareolar region of the left breast. The physical examination revealed a tender subareolar mass without redness or heat. There were no palpable axillary lymph nodes on both sides, and the other breast was normal. There was no previous history of breast problem or trauma, and the patient had no family history of breast cancer. He had been a heavy smoker for 30 pack-years. He had diagnosed with lung cancer (adenocarcinoma) 18 months before. The patient had been treated with chemotherapy because the cancer stage was IIIB. The chemotherapy regimen consisted of cisplatin (Cisplan) and gemcitabine (Gemzar).

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When the patient had been hospitalized for the fourth cycle of chemotherapy, he had complaints of palpable discomfort in the left subareolar region.

Gray-scale ultrasonography (US) using a broad-band

linear probe (5 - 12MHz) revealed a partially defined heterogeneous hypoechoic mass with homogeneous posterior enhancement at the left subareolar portion (Fig. 1A). Adjacent hypoechoic tubular structures were also noted

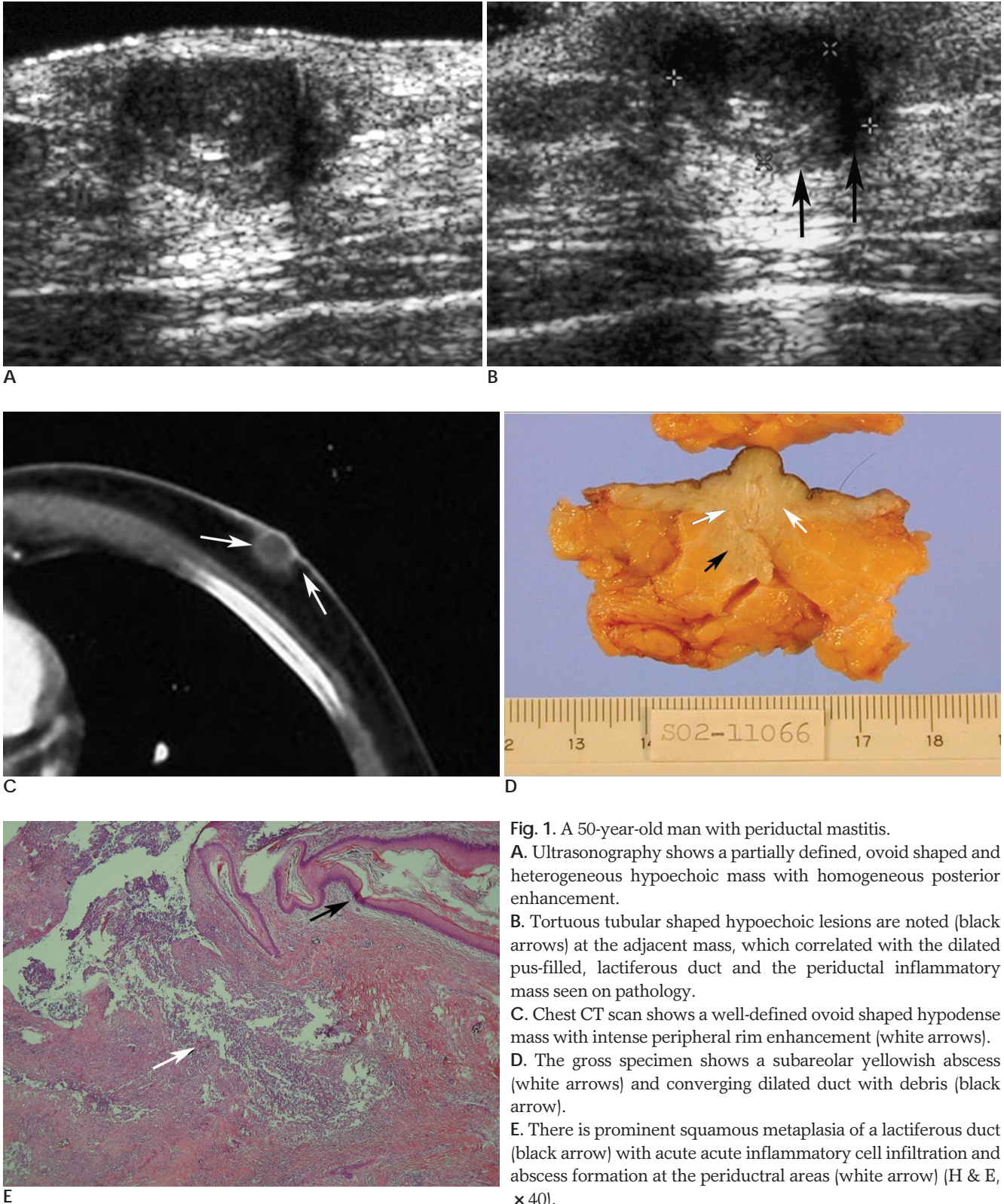


Fig. 1. A 50-year-old man with periductal mastitis.
A. Ultrasonography shows a partially defined, ovoid shaped and heterogeneous hypoechoic mass with homogeneous posterior enhancement.
B. Tortuous tubular shaped hypoechoic lesions are noted (black arrows) at the adjacent mass, which correlated with the dilated pus-filled, lactiferous duct and the periductal inflammatory mass seen on pathology.
C. Chest CT scan shows a well-defined ovoid shaped hypodense mass with intense peripheral rim enhancement (white arrows).
D. The gross specimen shows a subareolar yellowish abscess (white arrows) and converging dilated duct with debris (black arrow).
E. There is prominent squamous metaplasia of a lactiferous duct (black arrow) with acute acute inflammatory cell infiltration and abscess formation at the periductal areas (white arrow) (H & E, $\times 40$).

(Fig. 1B). On the color Doppler imaging, marginal flow was detected at the periphery of the mass. He didn't show gynecomastia on the clinical and ultrasonographic findings. A computed tomogram (CT) scan was performed to evaluate the lung cancer's response to chemotherapy, and the breast lesion was depicted as a well-defined ovoid hypodense mass with peripheral rim enhancement (Fig. 1C).

With arriving at the diagnosis of a metastatic breast lesion from lung cancer, excision biopsy of the mass was performed. The excised breast lesion showed cystic dilatation of a lactiferous duct that was filled with pale brown to gray amorphous pus material (Fig. 1D) and this corresponded to a partially defined mass with adjacent duct dilatation on US. On microscopic examination, there was prominent squamous metaplasia of a lactiferous duct with periductal acute inflammatory cell infiltration and abscess formation (Fig. 1E). Occasional multinucleated foreign-body-type giant cells and histiocytes were noted within the acute inflammatory lesion in the stroma. The pathologic diagnosis was periductal mastitis.

Discussion

The term mammary duct ectasia was first introduced by Haagensen in 1951 (10). Since then the studies have demonstrated that if periductal mastitis and mammary duct ectasia are part of the same disease process, then the periductal mastitis precedes the mammary duct ectasia (1). The current evidence now indicates that periductal mastitis and duct ectasia are two different clinical syndromes. Periductal mastitis affects non-lactating women between the ages of 19 and 48 years, and it is characterized by periareolar inflammation with or without a mass, a periareolar abscess or a mammary duct fistula. Patients may also display nipple inversion and pus nipple discharge. Etiologically, periductal mastitis seems to be related to bacterial infection and smoking. On the contrary, mammary duct ectasia affects women between the ages of 42 - 85 years. It usually involves nipple retraction and cheesy nipple discharge or both, with patients frequently having clinical or mammographic evidence of duct dilatation. Etiologically, it is considered to be an aging (involutionally) phenomenon and it is not related to sepsis or smoking. Duct ectasia is not preceded by a history of periductal mastitis, which indicates that these two syndromes are not interrelated (2). Recent evidence indicates that

smoking is a major factor in the etiology of periductal mastitis and its complications as smoking may damage the subareolar ducts by either a direct toxic effect or as an indirect effect on the hormones or blood flow, and the lesions may then become infected with anaerobic bacteria (1 - 9).

Even though there is now general agreement that mammary duct ectasia and periductal mastitis are different entities, most of the reported cases in male patients used the mixed term, i.e., mammary duct ectasia/periductal mastitis, because these diseases have long been considered to be different stages of the same condition and they were rarely seen in male patients (3 - 9).

Mammary duct ectasia/periductal mastitis is exceedingly rare in males. To the best of our knowledge, only 12 male cases of periductal mastitis/mammary duct ectasia have been reported on (3 - 9). Among them, two were associated with HIV infection and the breast disease in one case was attributed to the patient's impaired immunity and increased susceptibility to repeated nipple infections and the other was a case of Behcet's disease, which is a multisystem disorder characterized by a recurrent inflammatory reactions (8, 9). These findings suggest that immune factors may have an influence on the development of duct ectasia/periductal mastitis. As our patient had been treated with chemotherapy for lung cancer, his impaired immune system might have contributed to the development of periductal mastitis. Smoking and/or squamous metaplasia of the terminal lactiferous duct may have also had an important role in the development of the periductal mastitis in our case, as is noted in the female counterpart.

The radiologic features of duct ectasia/periductal mastitis in males were mentioned in 6 of the 12 reported cases. Mammography was performed in six of the 12 reported cases (2, 4 - 6) and this showed a retroareolar density or mass ($n = 6$) and thickening of the areola ($n = 1$). Of those six cases, two patients underwent galactography that showed duct ectasia with distal cystic dilations or cystic dilatation of the duct (6). The US findings of periductal mastitis in a male breast have not yet been reported before our case.

In our patient, there was a partial defined mass with adjacent duct dilatation and intraductal hypoechogenicity on US, which was correlated with the immature abscess with a pus-filled dilated duct and periductal inflammation on the histopathologic examination. On CT, it appeared as an ovoid nodule with central low attenuation and peripheral rim enhancement, correspond-

ing to an immature abscess. However, CT could not delineate the duct dilatation or periductal inflammation that was depicted on US.

This is the first case report of the US finding of periductal mastitis in a male breast, and this disease was developed in association with chemotherapy for lung cancer. Radiologists should be aware of this rare entity in the male breast in order to avoid unnecessary radical surgery.

References

1. Dixon JM, Ravisekar O, Chetty U, Anderson TJ. Periductal mastitis and duct ectasia: different conditions with different aetiologies. *Br J Surg* 1996;83:820-822
2. Ammari FF, Yaghan RJ, Omari AK. Periductal mastitis. Clinical

- characteristics and outcome. *Saudi Med J* 2002;23:819-822
3. Tedeschi LG, McCarthy PE. Involutional mammary duct ectasia and periductal mastitis in a male. *Hum Pathol* 1974;5:232-236
4. Mansel RE, Morgan WP. Duct ectasia in the male. *Br J Surg* 1979;66:660-662
5. Ashworth MT, Corcoran GD, Haqqani MT. Periductal mastitis and mammary duct ectasia in a male. *Postgraduate Med J* 1985;61:621-623
6. Detraux P, Benmussa M, Tristant H, Garel L. Breast disease in the male: galactographic evaluation. *Radiology* 1985;154:605-606
7. Chan KW, Lau WY. Duct ectasia in the male breast. *Aust N Z J Surg* 1984;54:173-176
8. Downs AM, Fisher M, Tomlinson D, Tanner A. Male duct ectasia associated with HIV infection. *Genitourin Med* 1996;72:65-66
9. Al-Masad JK. Mammary duct ectasia and periductal mastitis in males. *Saudi Med J* 2001;22:1030-1033
10. Haagensen CD. Mammary-duct ectasia: a disease that may stimulate carcinoma. *Cancer* 1951;4:749-761

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