Breast cancer in ectopic breast tissue

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Summary

Ectopic breasts usually develop along the mammary ridges. Their incidence has been reported as up to 5-6%. Development of malignancy is rare. We report three cases of postmenopausal female patients with breast cancer which developed in the axillary accessory breast. They were all successfully treated by surgery and adjuvant therapy. A review of the literature on the incidence and pathology of ectopic mammary tissue is also presented.

Key words: Ectopic breast; Accessory breast; Aberrant; Breast cancer.

Introduction

Ectopic breasts commonly develop along the embryonic milk line. They present as solitary or multiple masses and their incidence has been reported as high as 6% [1]. The most common site is the axilla.

This anomaly becomes noticeable only after hormonal stimulation, usually during puberty, pregnancy or lactation. Hyperplastic and neoplastic lesions similar to those that develop in the normal breast can occur in ectopic breast tissue [2].

We present three cases of breast carcinomas in the axillary accessory mammary gland that underwent surgical treatment in our Breast Unit during the last eight years.

Case Report

Case 1

A 75-year-old woman was admitted to our Breast Unit due to a left axillary tumor in February 1999. She had been postmenopausal since 1974 and there was no family history of breast cancer. She was operated on 11 years before for adenoma of the left parathyroid gland and colloid goiter of the right thyroid lobe. On examination she had ectopic axillary breast tissue bilaterally without areola or nipple. An axillary tumor with a maximum diameter of 5 cm was palpable along the outer border of the major pectoralis muscle, aside the left axillary cavity (Figure 1). Mammogram revealed a stellate mass in the left axilla. As occult breast cancer could be neglected, a total mastectomy with radical axillary lymph node dissection and excision of the homolateral accessory mammary gland was performed, following a positive result for malignancy by frozen section. Pathology showed invasive ductal carcinoma in the ectopic breast, 4.5 x 3.5 x 3.5 cm in size, grade II, without lymph node infiltration. No other tumor was found in the left breast. Enzyme immunoassays revealed a non-sensitive carcinoma for estrogen (ER) and progesterone (PR) receptors. The patient received six cycles of CMF chemotherapy plus tamoxifen 20 mg/d and she has been free of disease 18 months.

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Case 2

A 62-year-old postmenopausal woman was admitted in our Breast Unit due to a right axillary mass in an ectopic breast in September 1993. The tumor was 3 cm in maximum diameter, infiltrating the skin of the axilla. There was no family history of breast cancer. At physical examination there were no palpable lymph nodes. Mammography showed a typical malignant mass with irregular borders in the right axilla. Fine needle aspiration was performed and cytology was positive for carcinoma. The patient underwent a wide excision of the tumor and lymph node dissection of the right axilla. Histology showed a lobular, ER/PR positive breast cancer without nodal metastases. The patient received radiotherapy postoperatively of the right axilla along with tamoxifen treatment and she was free of disease at 7-years follow-up.

Case 3

A 69-year-old postmenopausal patient was admitted in our Breast Unit due to a left axillary mass in an ectopic breast in June 1992. She had no positive family history for breast cancer and no history of endocrine neoplasia. The patient reported the presence of the ectopic breast since puberty, but the left axillary enlargement for 12 months. At physical examination there were palpable nodes in the left axilla and a hard mass, 3-4 cm in maximum diameter, in the left ectopic axillary mammary gland. Preoperative tests were normal without any evidence of metastatic spread. Mammogram showed a 3.5 cm stellate lesion in the left axilla (Figure 2). Fine needle aspiration of the mass was indicative of cancer. She underwent a wide excision of the left ectopic breast and axillary clearance. Pathology showed a 3.2 cm invasive ductal carcinoma with 10 invaded nodes out of the 16 dissected. The receptor status of the tumor was positive for ER and negative for PR. The postoperative treatment of the patient included radiotherapy of the axilla, chemotherapy and tamoxifen for five years. She was free of local or systemic recurrence at 8-years follow-up.

Discussion

Ectopic breasts are both accessory and aberrant breasts. Accessory mammary glands result from a specific process during embryonic development. During the 5th - 6th week of gestation, two parallel ectodermal thickenings

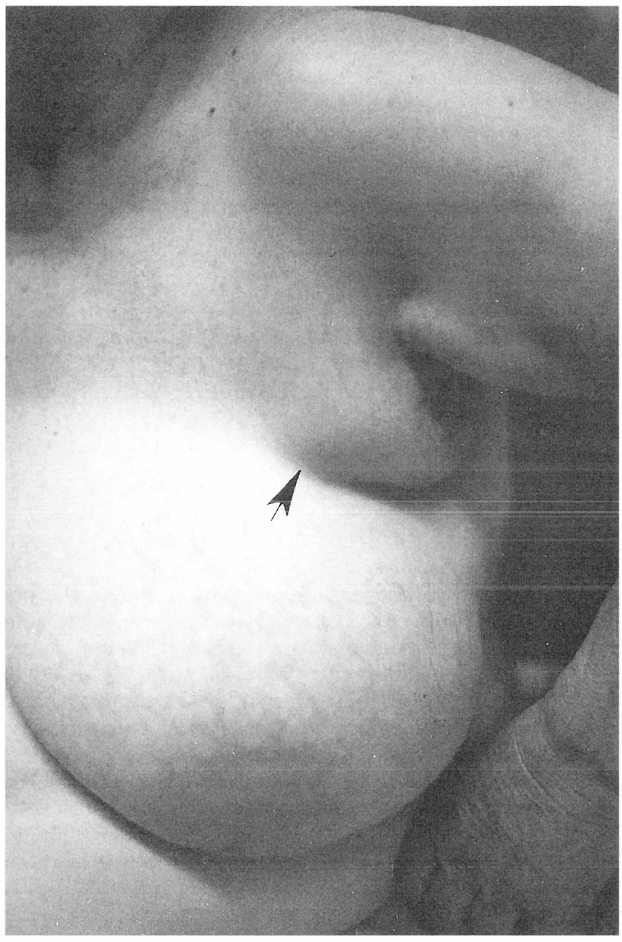

Figure 1. — Clinical presentation of a left axillary ectopic breast tumor.

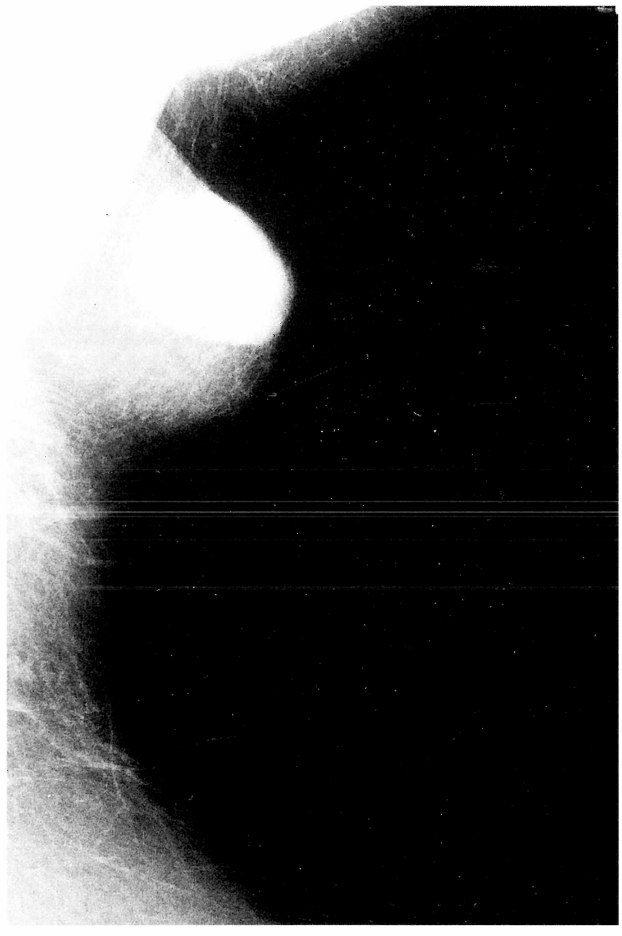

Figure 2. — Mammogram of a left axillary ectopic breast. A 3.5 cm stellate lesion indicative of carcinoma is present.

arise along the ventral surface of the embryo extending from the axilla to the inguinal region, forming the mammary ridges [3]. In humans, regression of mammary ridges is complete with the exception of pectoral areas [4]. Incomplete involution or excessive dispersion can result in the development of accessory breast tissue, that can consist of any or all components of the breast and be functional or non-functional. It is usually present in the axilla in 2-6% of women [5]. When an axillary mass is identified, several diagnoses could be evoked such as excess of axillary fat, lipoma, lymphadenitis, metastatic lymph node, tail of Spencer, etc. In the absence of a nipple or lactation the diagnosis of accessory breast is rarely made [1].

An aberrant mammary gland is an island of mammary tissue near the normal breast. Most common sites are axillary, parasternal, subscaplar and vulvar [6]. These glands are diverticular forms of the ipsilateral breast during the fetal period and lose all connection to the breast [2]. They do not have an organized secretory system [7].

Ectopic breast tissue is subject to the same pathological conditions as normal breast tissue. Fibroadenomas, fibrocystic disease [8], phylloides tumors [9], Paget's disease [10], and in situ or infiltrating carcinomas [11, 12] have been reported. Malignancies in ectopic breasts are very rare. However, ectopic breast tissue has been reported to be more prone to malignancy than normal mammary glands and malignant tumors occur more frequently than benign lesions in ectopic breasts [2].

Marshall *et al.* [3] reviewed the English literature till 1991 and reported 81 cases, while Nakao *et al.* [2] reported 37 cases in the Japanese literature till 1997. Most of those cases were located in the axilla or in close proximity to the axilla. Lymph node involvement was found up to 58%. A possible explanation of this finding is that ectopic breast cancer metastasizes via lymphatic channels more frequently than normal breast cancer due to the close proximity to axillary lymph nodes.

Mammography is usually helpful in the diagnosis of ectopic breast malignancies [1]. Mammograms were diagnostic in all our cases. Standard mammographic views of normal breasts usually do not reveal ectopic breast lesions because of their high axillary localization.

Fine needle aspiration cytology can be used for diagnosis of pathologic disease of the ectopic breast with very good results [13, 14]. Two of our cases underwent diagnostic FNA which was positive for malignancy.

The surgical procedure of choice in ectopic breast cancer is wide resection of the tumor with the surrounding tissue, the covering skin and the regional lymph nodes [15]. Mastectomy is not indicated if clinical examination, mammography and ultrasound tests of the anatomic breast show no signs of disease and should be performed sometimes for cosmetic reasons and when differential diagnosis is difficult [16]. Such a case is an axillary mass similar to an axillary lymph node infiltrated by an occult cancer of the normal breast. One of our cases underwent a mastectomy due to the above-mentioned reasons.

The principles of postoperative treatment of such cases are the same as those followed for normal mammary gland cancer. External radiotherapy of tumor location must be systematically performed because it permits increased local cancer control [1]. Radiation of the homolateral anatomic breast is not systematically performed. However, systemic adjuvant therapy is more frequently required because lymph node disease is usually found and is performed with the same rules as for anatomic breast cancer [1, 2].

Cohen *et al.* reported coexistence of multiple endocrine neoplasia IIA and ectopic breast tissue, suggesting a common embryonic ectodermal tissue origin [17]. One of our cases had parathyroid adenoma, without any evidence of other MEN IIA neoplasms, and ectopic breast carcinoma.

In conclusion, even though ectopic breast carcinoma is a rare clinical entity, it should be included in our differential diagnosis when aberrant breast enlargement is found, as early diagnosis and treatment of ectopic breast cancer is mandatory for a favorable prognosis [18].

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