

Case Report

Pulmonary metastases in men: primary tumor in an unusual location*

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Abstract

We report a case of breast cancer identified in a 75-year-old male as an accidental finding during the course of the investigation of a primary tumor and the search for pulmonary metastases. We address aspects related to the epidemiology, diagnosis, treatment, and prognosis of this condition in males.

Keywords: Neoplasm metastasis/lung; Breast neoplasms; Male.

Introduction

Clinicians frequently need to evaluate patients with multiple pulmonary nodules found through imaging studies. The etiology of such lesions is typically identified based on appropriate clinical examination and on the taking of a comprehensive patient history. In the present case, however, the identification of the primary site was an accidental finding on computed tomography scans. It is likely that the necessary attention was not given to the physical examination findings, which showed breast alterations, since breast carcinoma is unexpected in males.

Breast carcinoma in men is a rare entity, although its incidence has been increasing in the last 25 years.⁽¹⁾ It accounts for less than 1% of all breast carcinoma cases and 0.2–1.5% of all malignant tumors in men.^(1–3) Therefore, there is much less information regarding factors related to the prognosis and treatment of this neoplasia in men than there is regarding such factors in women. In contrast to the increasing incidence of cases in women, the incidence of male breast cancer has been stable in the last four decades, presenting an exponential increase with aging. The accu-

mulated information suggests that this neoplasia presents the same behavior and prognosis in both genders when the stages are the same. Unfortunately, the diagnosis in male patients is delayed due to the lack of knowledge of the problem on the part of the patient and, frequently, of the doctor.⁽²⁾ In addition, the proximity of the tumor to the skin and muscle plane explains the low frequency of cases in the initial stages, which, consequently, leads to a higher incidence of tumors invading adjacent structures, as well as of lymph node metastases and distant metastases.

Case report

A 75-year-old hypertensive male smoker with diabetes who had long presented chronic obstructive pulmonary disease was referred to our clinic for investigation of hemoptysis and pulmonary lesions through chest X-rays. The patient presented an approximately three-month history of progressive weight loss, intense cough, dyspnea, and recurrent hemoptysis.

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Physical examination revealed that the patient was pale, presented severe dyspnea, and had suffered significant weight loss. His left breast was discretely increased in size, painless, and hardened, without effusion or nipple retraction. Pulmonary auscultation showed decreased breath sounds, principally in the left lung, with wheezing, diffuse rales and crackles in the lung bases.

Chest X-rays showed multiple nodules in both pulmonary fields consistent with metastases, which were confirmed through tomographic study. In addition to the pulmonary metastases, there was an accidental X-ray finding of a mass consistent with neoplasia in the left breast (Figure 1).

A puncture biopsy of the lesion was carried out, and a diagnosis of invasive ductal breast carcinoma was made. The patient claimed to have no family history of breast cancer and refused to be submitted to any type of treatment.

Discussion

The incidence of pulmonary parenchymal metastases originating from primary extrathoracic neoplasias ranges from 20 to 54%. Metastases originating from solid tumors are the most common causes of multiple pulmonary nodules, accounting for approximately 80% of such cases (Chart 1).⁽⁴⁾ Computed tomography scans of the chest are the test of choice for the evaluation of multiple pulmonary nodules. Such lesions are typically smaller than 5 mm in diameter and are found in the subpleural region, although they can occasionally be

obscured by the mediastinal structures or by the hemidiaphragm.

Breast cancer most often metastasizes to the regional lymph nodes and subsequently to the bones (principally the pelvis and spine). Other affected sites are the liver, lungs, pleura, and brain. Pulmonary metastases from breast neoplasia occur principally through hematogenous and lymphatic dissemination.⁽⁵⁾

The symptomatology is related to the location and size of the tumor, and some patients are asymptomatic. Pulmonary involvement manifests as dyspnea, with or without cough, hemoptysis, or chest pain. Dyspnea results from endobronchial involvement, carcinomatosis, pleural effusion, or pneumothorax. Progressive dyspnea, with or

Chart 1 - Pulmonary nodules - Differential diagnosis.

Malignancy
Solid organ metaphases (most common cause)
Non-Hodgkin's lymphoma
Kaposi's sarcoma
Infections
Multiple abscesses
Septic embolism
Fungal
Inflammatory diseases
Wegener's granulomatosis
Rheumatoid arthritis
Sarcoidosis
Pulmonary arteriovenous malformations

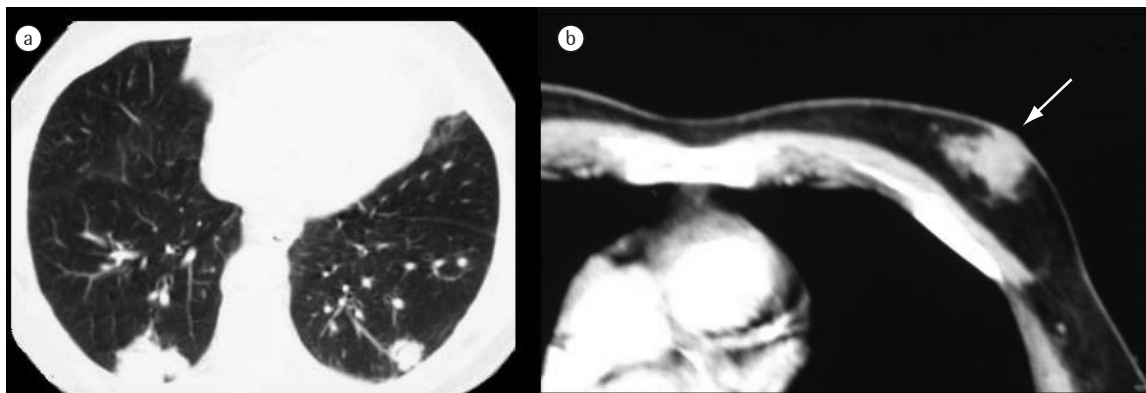


Figure 1 - a) Computed tomography of the chest showing the presence of multiple irregular nodules (arrows), which were heterogeneous after endovenous injection of contrast media (consistent with metastases), in both lungs; and b) The imaging shows the rate of soft-tissue attenuation. In the left breast, the soft tissue was permeable and nodular, with irregular borders and fibroglandular content (arrow).

without nonproductive cough, is characteristic of lymphatic dissemination. Endobronchial involvement or primary endobronchial metastasis can lead to cough with hemoptysis, and chest pain suggests involvement of the parietal pleura.^(6,7)

Male breast carcinoma is a rare entity and, consequently, is recognized late, which delays the treatment and worsens the prognosis. Currently, due to a better understanding of this pathology, the duration of the symptomatology before diagnosis has been decreasing, now ranging from one to eight months, whereas in the past it was as much as twenty-one months.

In contrast to in the situation for breast carcinoma involving women, the etiology of male breast carcinoma remains little understood. However, hormonal alterations are certainly implicated in the genesis of this pathology.^(1,2,8) The incidence of the disease remains higher among patients being treated with anti-androgens.⁽⁹⁾

From 15 to 20% of patients have a family history of breast neoplasia, which is especially important if among first-degree relatives. Gynecomastia occurs in 6 to 38% of patients, although there is no evidence that it is a predisposing factor for the development of cancer. There are other risk factors related to the appearance of this neoplasia (Chart 2).^(1,2,10)

Chart 2 – Risk factors for male breast cancer.

Testicular abnormalities
Cryptorchidia
Congenital inguinal hernia
Orchiectomy
Orchitis
Testicular trauma
Hormonal alterations
Infertility
Klinefelter's syndrome
Obesity
Cirrhosis
Family history of breast cancer
Benign breast lesions
Nipple discharge
Breast cysts
Breast trauma
Esposure to radiation and to high temperatures
Old age
Jewish descent
Schistosomiasis

Genetic mutations, as in the case of the BRCA2 gene, are associated with having at least one male family member who has had breast cancer, and the probability of having more cases in the family can be as high as 76%.^(1,11,12)

The age at the appearance of male breast cancer is from 60 to 67 years, which is at least 10 years later than that observed for female breast cancer. A painless palpable mass, typically located centrally (retroareolar), is the factor that motivates the individual to seek treatment in 85% of cases. Consequently, the principal differential diagnosis is gynecomastia. Other signs presented are nipple retraction, papillary effusion (occasionally hemorrhagic), and mastalgia; the bilateral form of the disease is rare.^(1,13) Axillary adenopathy is seen in 40-55% of patients. As in women, the involvement of the axillary lymph nodes, the size of the tumor, the histological grade, and the existence of hormonal receptors are important prognostic factors.⁽¹⁴⁻¹⁶⁾

The initial diagnostic procedure should be fine-needle aspiration biopsy, through which 27 to 49% of cases are diagnosed. A negative result does not rule out cancer, and the investigation should proceed with an excisional biopsy.⁽²⁾ Mammography has limited applications due to the technical difficulties involved, although it is very useful in obese patients with large breasts. It permits gynecomastia to be differentiated from carcinoma as well as the evaluation of the opposite breast. Mammography findings show the presence well-defined masses with spiculated margins and, less frequently, calcifications.

Although it is possible to find any histological type in the male breast, up to 90% of cases are of invasive ductal carcinoma. However, due to the absence of lobules in the rudimentary male breast, few cases of lobular carcinoma have been reported.⁽¹⁷⁾ Estrogen and progesterone receptors are positive in up to 81% and up to 74% of tumors, respectively, which makes it possible to obtain good results from hormonal therapy both as an adjuvant therapy and in the treatment of the metastatic form of the disease.⁽²⁾

Currently, for men with the nonmetastatic form of the disease, modified radical mastectomy with total axillary lymphadenectomy, followed by adjuvant radiotherapy, is recommended. Due to the small dimensions of the male breast and to the fact that men, unlike women, rarely present psychological

problems with respect to the procedure, conservative surgery is not usually performed.^(15,18)

Since the rates of hormonal receptor positivity are high in male breast cancer, adjuvant hormonal therapy with tamoxifen for five years appears quite promising. The role of adjuvant chemotherapy is less established at the moment, but it is indicated in cases involving positive lymph nodes or primary tumors larger than 1 cm in diameter.^(1,2)

In the metastatic form of the disease, hormonal treatment with tamoxifen is offered initially. When hormonal therapy is unsuccessful or if there are no hormonal receptors in the tumor, chemotherapy is recommended.^(19,20) The metastatic dissemination is similar to that seen in women, involving the bones, lungs, liver, lymph nodes, and skin.

More recent studies have shown that men and women with breast cancer have equivalent prognoses when compared by age and by disease stage, although the survival rate in males is lower due to the more advanced stage of the disease at diagnosis, higher age, and greater occurrence of comorbidities.⁽¹⁵⁾

The average five-year survival rate is 86%, ranging from 65% among patients presenting positive lymph nodes to 90% among those presenting negative lymph nodes. The presence of positive lymph nodes is the most significant adverse prognostic factor.⁽¹⁶⁾

Areas for future investigation are abundant, principally concerning tumor markers, the role of hormonal therapy and chemotherapy, new agents for treatment as well as the study of genetic mutations in the pathogenesis of male breast cancer.

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