Abstract

We describe the case of a patient with solitary and metachronic breast metastasis, 3 years after nephrectomy for renal cell carcinoma. Literature shows that breasts are an infrequent site of metastatic disease from extra mammary tumors, and likewise that renal cell carcinoma very rarely metastasizes to the breast.

Keywords

Breast metastasis, renal cell carcinoma, breast neoplasm.

Introduction

Breasts can be the site of metastatic lesions from primary extra mammary tumors, although it is a very infrequent situation. The origin is usually a malignant melanoma or the group of lymphomas/leukemia, breast metastasis from other primary tumors being very rare. Occasionally they are the initial manifestation of an occult extra mammary tumor.

Breast metastases generally appear as palpable painless tumorations, mostly in the superior external quadrant which can be associated to axillary adenopathy. There are clinical, radiological and pathological characteristics which point towards this diagnosis and which will be detailed throughout the presentation of the following clinical case.

Case presentation

71 years old, female patient, with a personal medical history of chronic arterial hypertension and colonic diverticulosis. In 2005 a radical right nephrectomy was performed due to renal tumor. Pathological anatomy revealed that it was a conventional clear cell renal carcinoma, Furhman grade 2, with extensive areas of necrosis and hemorrhage. It did not present capsular, supra renal, urethral, hilum invasion or invasion of the peri renal adipose tissue. Its stage was determined, after the corresponding studies, as pT1NOMO.

In 2008 the patient seek consultation after noting a mass in the right breast, for which a diagnostic mammography was indicated. The same reveals a mass of benign characteristics (rounded and well-defined) of 2 cm of major diameter, located in the superoexternal sector of the right breast (figure 1). Given the medical history of the patient (primary extra mammary tumor), and the presence of a new palpable mammary mass not present in previous studies, it is catalogued as a suspicious finding.
(final categorization BI-RADS 4) and etiological confirmation of the mass then performed. Intraoperative histological study was delayed due to abundant hemorrhage in the

Figure 1. **Mammography year 2008.** Right middle-lateral-oblique (a) projections and cranio-caudal (b) and magnified projection (c). A dense, ovoid and well-defined mass is observed, 2cm in major diameter, located in the superoexternal sector of right

by non imaging methods was suggested. Therefore a fine-needle puncture-aspiration of the lesion was performed and material extracted was sent to cytological study. This study showed some plaques of epithelial cells with a low grade of anisocariosis and suggested completing the study with histological analysis. Surgical resection of right breast nodule is specimen which prevented its correct evaluation. The delayed study of the removed piece revealed a carcinoma of clear cells, concluding that it is a metastatic nodule.

The extent of the patient’s disease was evaluated, studied by bone centellogram and thorax-abdominal-
pelvic CT which did not show other metastases.

By the end of 2009, another thorax-abdominal-pelvic CT is requested, as part of the oncologic control. The same was carried out in a multi-slice CT scanner (16 rows), performing fine cuts (2.5mm), with and without administration of intravenous contrast. This study revealed a new nodule, 10mm in major diameter, located in the superointernal quadrant of the right breast (figure 2), without evidence of other alterations in the rest of the study.

A bilateral mammography is requested (middle-oblique-lateral and cranio-caudal projections of both breasts) with diagnostic purposes, which informed an ovoid mass, well defined, 15 mm of major diameter, located in the internal sector of the right breast (figure 3). Its characteristics were similar to those shown in the previous (2008) mammography study, it was established that it could be a new metastasis, with a final categorization BI-RADS 4 in the mammographic report (suspicious finding, suggesting etiological confirmation using non imaging methods). The patient was again subjected to surgical resection of the right breast nodule, and histology revealed a clear cell carcinoma, being then a second breast metastasis derived from its known primary tumor: a conventional clear cell renal carcinoma.

Discussion

Malignant lesions of the breast can be divided into four major histological categories: (1) ductal carcinoma (in situ and invasive), which represents 90 percent of cases, (2) lobular carcinoma, (3) stromal tumors, not frequent (malignant Phyllodes tumor, liposarcoma, angiosarcoma, etc) and, even more rare (4) metastatic carcinomas, of extra mammary tumors. The presented case was therefore one of the less frequent malignant tumors of the breast.

Metastasis represents less than 1% of malignant mammary tumors and the majority originates from a carcinoma in the contralateral breast. Excluding metastasis from contralateral breast cancer and secondary lymphoma of the breast, some 400 cases of mammary
metastasis have been reported. Although not frequent, this finding may be the first manifestation of the disease (2).

Primitive tumors which most frequently metastasize to the breast are, in order of frequency (and excluding contralateral breast cancer and lymphoma): melanoma, leiomyosarcoma, lung cancer (especially the small cell variety) and, in men, prostate cancer (4). Renal cell carcinomas, like the case presented, rarely metastasize to the breast.

Of the 400 reported cases, only 15 were secondary to a renal cell carcinoma, which makes them very rare.

Renal cell carcinoma, which represents approximately 3% of all adult cancers, tends to metastasize and such metastases are present in up to 23 % of patients at the time of diagnosis. The most common sites of secondary affectation are lungs, bones, liver, suprarenal glands and encephalon; however, they can metastasize in practically every organ; as proved by our patient’s case.

Clinically, breast metastasis usually appears as asymptomatic tumor of

Figure 3. Mammography year 2009. Right mid-lateral-oblique (a) and cranio-caudal (b) projections and amplified image of a (c). A new nodule is observed, of similar characteristics to the one previously removed, located in the central sector of the right breast.
rapid growth, which do not compromise the breast’s skin. The key for diagnosis is in knowing an extramammary known primary tumor, data which is available in our patient, which led us to the diagnosis.

Breast metastases are in most cases multiple and bilateral; however in patients with renal carcinoma, breast metastases are mostly solitary (85% of cases) (5), and the case presented was not the exception to this rule. Perhaps because they form a nest of tumoral cells with centripetal growth, they tend to be oval lesions with well defined margins, as we can see in our patient’s mammograms. Microcalcifications are not a typical characteristic, and, although the lesion’s margins can be not very well defined, normally there are no spiculations (a more specific sign of primary breast carcinoma) (1).

In the case of patients with renal cell carcinomas which develop mammary metastasis, as we previously said, these tend to be solitary and usually appear within the first 10 years following nephrectomy as in the case of the patient described. The development of multiple metastases after nephrectomy means a decrease in survival rate, which does not exceed 10 years (5).

Cytologic/histological study of the metastasis will show atypical cells, different to the ones shown in the primary breast carcinoma (6). If a biopsy is not performed, the correct diagnosis may not be achieved.

Core-biopsy is nowadays acknowledged as an alternative to surgical biopsy of mammary lesions, being the chosen method in those lesions suspicious of malignancy by imaging (BI-RADS 4 or 5). It allows us to obtain samples for the histological and immunological-histological-chemical study of malignant lesions, preoperative information of great importance for the correct planning of therapeutic strategies. Finding negativity for estrogen and progesterone receptors must increase suspicion of secondary lesion. Immunological chemical histology will help characterize the primary tumor.

In this case, however, given that the preoperative imaging diagnosis was highly suspicious of metastatic lesion (and not of primary malignant mammary lesion) a sole invasive act (surgery) was chosen, which could achieve complete removal and a final histological diagnosis.

Conclusions

Breast metastases are not frequent, and those which develop from a primary kidney tumor are exceptional.

Breast metastases in patients with renal cell carcinoma are solitary in most cases.

A previous history of extra mammary carcinoma indicates the possibility that a new mammary mass could be a metastasis.
We do not count with ultrasound images because the patient reached us after the second mammography was performed; as the image was practically identical to the first mammography (when the complete study of the mass was carried out and metastasis diagnosis was achieved) an ultrasound was disregarded, assuming it was new metastatic lesion.

**Bibliography**


