Radiology Case Reports 13 (2018) 1166–1169

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journal homepage: www.elsevier.com/locate/radcr

Case Report

Breast metastasis from ovarian cancer: A case report

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ARTICLE INFO

Article history:
Received 3 June 2018
Revised 4 August 2018
Accepted 12 August 2018
Available online 13 September 2018

Keywords:
Breast metastasis
Intramammary metastasis
Ovarian cancer

ABSTRACT

Breast metastasis from ovarian cancer is a rare event, with vary clinical and imaging presentations, depends on the form of dissemination of the disease and may mimic primary benign and malignant lesions.Confirmation of the diagnosis is of pivotal importance to choice an adequate therapeutic planning, allowing to avoid unnecessary surgeries and to provide appropriate systemic therapy. In this manuscript, we present a case of breast metastasis from ovarian cancer. The patient presented to our Institute with a localized, palpable mass in the upper outer quadrant of the right breast. Mammography and breast sonography showed a singular, round, and homogenous mass with regular borders. No suspicious axillary node was observed. Lesion biopsy revealed the presence of epithelial malignant tumor cells, compatible with a tube-ovarian serous histotype. So, although it could be rare, secondary malignant neoplasm should be considered in the differential diagnosis of breast lesions in patients with a personal history of ovarian cancer.

Introduction

Intramammary metastases from solid neoplasms are rare, accounting about 0.33%-6.3% of breasts malignancies, and arise most frequently from melanomas, sarcomas, lung cancer ovarian tumors, and renal carcinomas [1,2].

Unfortunately imaging findings are not specific and diagnostic to differentiate primary or secondary etiology and no features are characteristic of different metastasis.

The 2 main radiological patterns observed in breast metastases are masses and architectural distortion. Generally, the masses are noncalcified even if sometimes metastases from ovary could contain microcalcification due to the presence of psammoma bodies [3,4]. On ultrasound intramammary metastases could be hypoechoic or isoechoic with well circumscribed margins and they could also exhibit posterior enhancement. Radiological features could vary considering different primary malignancies, even if, up to now, it was not well examined whether some entities are more likely to cause some pattern [2].

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https://doi.org/10.1016/j.radcr.2018.08.008

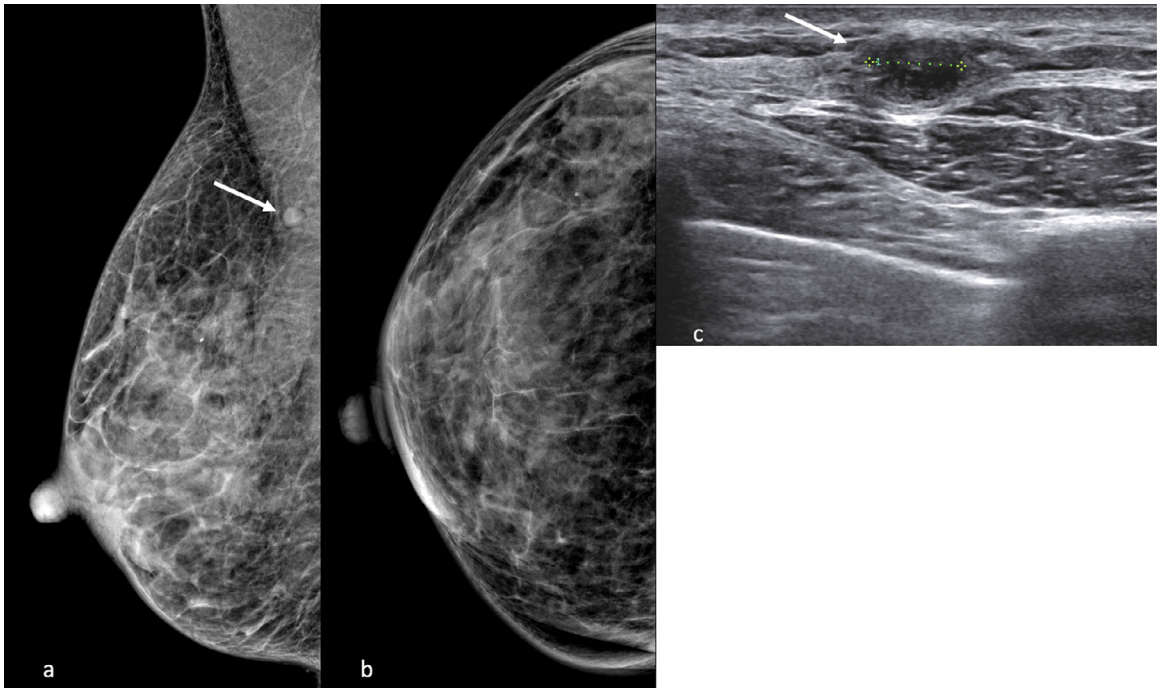

Fig. 1 – Medio-lateral oblique (a) and craniocaudal (b) mammogramms show an oval circumscribed dense mass in the upper-outer quadrant of the right breast (arrow). On ultrasound (c) the mass is hypointense and show circumscribed margins and posterior enhancement.

The diagnosis of breast metastases and the differentiation from primary mammary malignancy is of pivotal importance for patient management, allowing in some instances to avoid unnecessary surgery and to tailor systemic therapy [1]. Prognosis is generally poor, because most patients have concomitant disseminated disease [5].

In the present report, we describe a woman with breast metastases from ovarian cancer and we discuss the main findings of breast metastases in the different imaging methods.

Case report

A 54-year-old woman, who was diagnosed an ovarian high-grade serous adenocarcinoma FIGO IIIC in June 2015, presented to our Institute in January 2018 with a localized, palpable, painful, and mobile mass in the upper outer quadrant of the right breast. The patient had family history of breast cancer (maternal grandmother) and she had BRCA tests with the result of a variant of uncertain significance result.

Breast ultrasound and mammography revealed a singular, round, and homogenous nodule with well-defined border without calcifications in the upper outer quadrant of the right breast (Fig. 1). No suspicious axillary lymph nodes were observed. The lesion was 0.5 cm in size. Fine-needle aspiration with a 22 gauge needle was performed revealing the presence of epithelial malignant tumor cells, consistent with a tube-ovarian serous histotype (Fig. 2). Cytological examination was performed, instead of the core biopsy that is the standard of care, to quickly diagnose and perform timely therapy. Then the patient did not undergo surgery and she started ovarian cancer-specific chemotherapy.

Discussion

Breast cancer is 1 of the most common primary malignancies in women, yet metastatic tumor to the breast are infrequent with an overall incidence of primary ginecologic cancer of 0.17%, with 0.07% of metastatic disease originating from primary ovarian tumor [6]. Serous papillary carcinoma is the most common type of ovarian tumor that can metastatize to the breast [7] and is usually detected within 2 years from the initial diagnosis of primary ovarian cancer. In our case, breast metastases occurred after slightly more than 2 years from the diagnosis of primary ovarian carcinoma.

Because of the lack of specific clinical or radiological signs for breast metastases diagnosis, a multiple disciplinary approach is needed to differentiate these lesions from primary breast carcinoma or from benign breast lesions [5].

An accurate clinical history is crucial considering the simultaneous or previous diagnosis of extramammary malignancy, combined with a careful clinical examination, a radiological, and anatomopathological evaluation, to ensure the correct diagnosis and the most appropriate management of these patients [1,5].

Metastatic lesion presentation in the breast depends on routes of cancer dissemination, hematogenous or lymphatic.

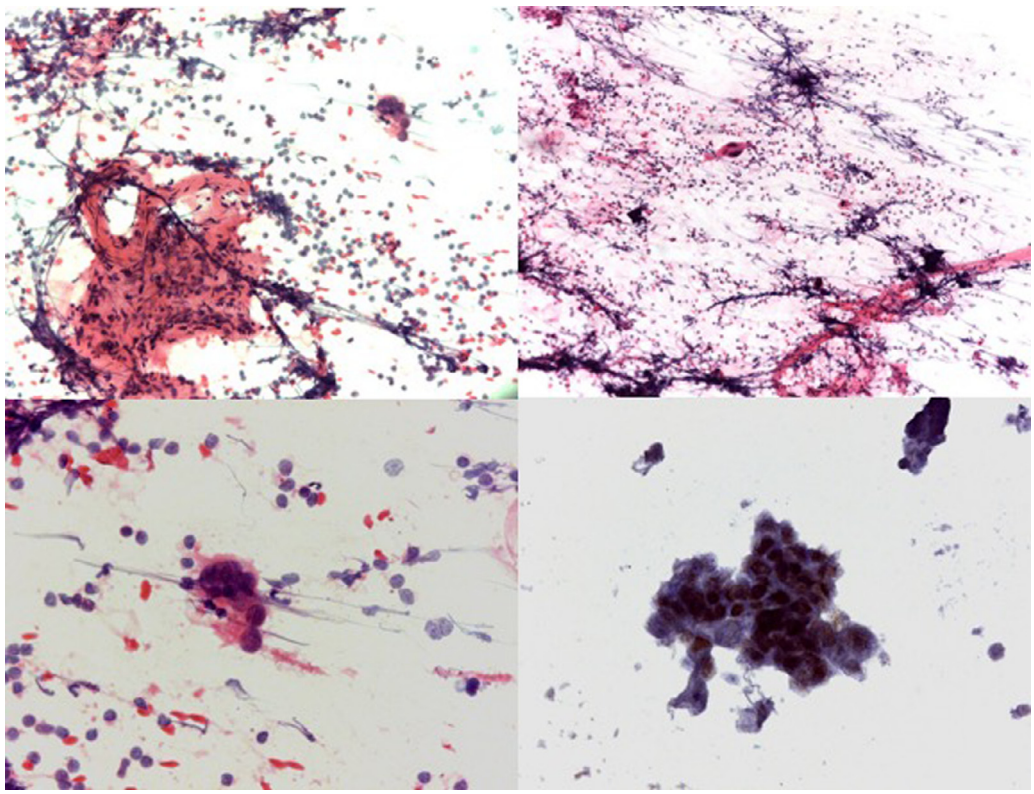

Fig. 2 – Highly cellular FNAB smear with papillary aggregates immunoreactive for WT-1 specific ovarian marker.

Generally, hematogenous disseminated lesions are circumscribed masses and may mimic benign masses, as occur in our case, or circumscribed malignant tumors (ie mucinous or papillary carcinoma). Instead lymphatic dissemination may lead to diffuse breast involvement, edema, trabecular thickening, and skin thickening which may mimic inflammatory process such as mastitis or inflammatory carcinoma [8].

Breast metastases could be identified in mammogram as round and circumscribed masses and generally without spiculated margins, skin or nipple retraction because of the absence of desmoplastic reaction, as in our case [2]. Margins could also be microlobulated or indistinct. Calcifications are not usually present and occur generally in patients with ovarian cancer due to the presence of psammomatous bodies [8–11], but in our case no microcalcifications were observed. As in mammography, most metastatic lesions present on ultrasound as round or oval masses, with circuscribed, insistinct or microlobulated margins. These lesions are frequently located superficially in the subcutaneous tissue or immediately adjacent to the breast parenchyma, due to the rich blood supply. Futhermore lesions are often hypoechoic, as in our case, but they could also be heterogeneous, with anechoic or hyperechoic areas, frequently associated with posterior enhancement [12]. Calcification, architectural distortion, and posterior acoustic shadow are not commonly observed in metastatic lesions and in addition axillary nodes involvement is less common than in primary breast cancer. Metastases with lymphatic dissemination usually present with diffuse and heterogeneously increased echogenicity of subcutaneous fat and glandular tissue, with skin thickening, lymphedema, and enlarged lymph nodes; this presentation makes very difficult differential diagnosis with inflammatory carcinoma [5,6,12]. In our case, we did not consider appropriate to perform magnetic resonance because, as also suggested in the literature, intramammary metastases had inconsistent magnetic resonance features, which cannot be clearly classify as benign or malignant [13].

Secondary breast involvement from ovarian cancer suggests widespread dissemination and is associated with a poor prognosis. It should be treated as systemic disease; surgical interventions are potentially palliative. The survival times after breast metastatic disease secondary to an ovarian cancer ranged from 13 days to 3.5 years, with many patients dying within 1- year [14–16].

In conclusion although it could be rare, secondary malignant neoplasm should be considered in the differential diagnosis of breast lesions in patients with a personal history of ovarian cancer.

This accurate differentiation is of pivotal importance to choice the best therapeutic option and to avoid overtreatment.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2018.08.008.

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