Breast Metastasis of Ovarian Origin: A Case Report with Literature Review

F. Nachite¹, F. Boukis¹, A. Belbachir¹, A. Amharech², M. Khouchani², A. Rhazaoui³, H. Asmouki³, H. Rais¹

¹Department of Anatomy Pathology, Mohammed VI University Hospital (CHU), Marrakech, Morocco
²Department Radiotherapy, Mohammed VI University Hospital (CHU), Marrakech, Morocco
³Department of Gynecology Obstetrics, Mohammed VI University Hospital (CHU), Marrakech, Morocco

Corresponding Author: Fatima Nachite
Ouabzriouil@gmail.com

ABSTRACT

Secondary mammary cancers are rare tumors and represent only 0.3% of all malignant breast tumors. Mammary metastases of ovarian origin are rarely reported in the literature. We report the case of a 48-year-old woman with antecedent peritoneal tuberculosis treated 2 years ago. She had chronic pelvic and lower back pain associated with weight loss and general impairment. Pelvic examination showed a bilateral mobile and painful latero-uterine mass. Serum CA 125 levels were elevated. Abdomino-pelvic ultrasound and CT scans showed the presence of a bilateral para-uterine pelvic liquid mass evoking a hydrosalpinx. The patient received a laparoscopy with an ovarian biopsy. The morphological and immunohistochemical aspect points to an invasive and sparsely differentiated primary ovarian adenocarcinoma. The patient benefited from 4 chemo treatments with a good radiological and biological response. Two years after the onset of symptoms, the patient presented a solitary 3-cm nodule in the left breast without associated axillary adenopathies. At mammography, the tumor was classified as ACR 4 and biopsies were performed. The histological study showed malignant tumor proliferation with the same morphological and immunohistochemical characteristics as an ovarian tumor. The patient was lost to follow-up after the diagnosis of breast metastasis.

Keywords: Breast, metastasis, ovarian, origin

1. INTRODUCTION

Secondary mammary cancers are rare tumors which often occur in a polymetastatic context [1]. They represent only 0.3% of all malignant breast tumors [4]. Metastatic breast lesions have a varied appearance and tumor characteristics vary with the site of the primary tumor. Many primary tumors have been reported. The most frequent are lymphomas, leukemias and melanomas. Primary ovarian cancers are rarely reported in the literature [2]. We report, through this observation, the anatomo-clinical particularities of a mammary metastasis of primitive ovarian origin.
2. CASE PRESENTATION

A 48-year-old woman, married, mother of 4 children, having an antecedent peritoneal tuberculosis treated 2 years ago. She presented a chronic pelvic and lumbar pain associated with weight loss and general deterioration. The clinical examination showed a supple abdomen increased in volume and sensitive. Vaginal examination showed a mobile and painful bilateral mass. Serum CA 125 level was significantly higher (566 U/ml). Abdomino-pelvic ultrasound showed the presence of a bilateral parauterine pelvic liquid mass evoking a hydrosalpinx associated with low-abundance ascites (figure1).

![Figure 1: Abdomino-pelvic ultrasound showed the presence of a bilateral parauterine pelvic liquid mass evoking a hydrosalpinx associated with low-abundance ascites](image1)

The left mass has a vascularized echogenic component displayed at the color doppler. Abdomino-pelvic CT scan confirmed the presence of a bilateral hydrosalpinx, measuring 70 mm (right) and 77 mm (left), associated with low-abundance ascites. The patient underwent a laparoscopy with a biopsy of the ovarian mass in order to make the diagnosis. Histopathological study shows smooth muscle and fibrous tissues containing dispersed tumoral focuses. They consist of papillary and micropapillary structures (figure2) with the presence of numerous calcospherites (figure3).

![Figure 2: Breast parenchyma infiltrated by a carcinomatous proliferation made of papillae and micropapillae (HE stain x 100)](image2)

Tumor cells with anisocaryotic nuclei and a reduced weakly eosinophilic cytoplasm. The stroma is dense, fibrous and punctuated by mononuclear inflammatory elements. Immunohistochemically, tumor cells were strongly and diffusely positive for CK7, CA125 and CD10 (figure4).

![Figure 3: Tumoral cells with numerous calcospherites (HE stains x 400)](image3)

No immunostaining with antibodies against CK20 and both progesterone and estrogen receptors. The morphological and immunohistochemical features were in favor of a poorly differentiated and invasive primary ovarian adenocarcinoma. The patient undergoes 4 chemotherapy cycles based avatin, paclitaxel and carboplatin with a good radiological and biological response.
The abdomino-pelvic CT performed after treatment showed a complete disappearance of the lateral right uterine mass and a regression of more than 50% of the left one. The CA 125 test was negative. Four months after the start of chemotherapy the patient underwent hysterectomy in addition to bilateral adnexectomy. On examination, the pelvis shows a frozen aspect with the presence of several parietal intestinal adhesions. No surgical procedure was possible due to the pelvic hardness. A peritoneal biopsy showed the same morphological and immunohistochemical features found in the first biopsy. The patient continued the same chemotherapy protocol.

Two years after the onset of the symptoms, the patient presented a solitary, painful, palpable mass in the upper outer quadrant of the left breast. It is movable relative to deep plane, measuring 3 cm. Without palpable axillary adenopathies on clinical examination. The mammography showed a circular spiculated mass with microlobulated contours and microcalcifications grouped into clusters. This tumor was classified as ACR4 and required a biopsy to confirm the histological type of the tumor. Differentiation between primary mammary tumor and metastasis is based essentially on the study of the morphological and immunohistochemical characteristics of the latter.

Ninety-five percent of mammary metastases of ovarian origin exhibited papillary carcinomas architecture (8,9).

This is the case of our patient, the histological study of the biopsy showed a carcinomatous proliferation showing a papillary architecture with the presence ofcalciospherite which in favor of an adenocarcinoma. The immunohistochemical study is not necessary in our case given the characteristic morphology of the tumor and the context of polymetastasis. The immunohistochemical study can be of great help in diagnosis, especially in the absence of a specific clinical context. Tumor cells are strongly and diffusely positive for CK7, CA125 and WT1, no immunostaining with antibodies against CK20, Anti-WT1 and anti-PAX8 antibodies are more specific for ovarian serous adenocarcinoma [4].

In our case, mammary neoplasm tumor cells were strongly and diffusely positive for CK7, CA125 and WT1, no immunostaining with antibodies against CK20 was recorded, confirming the ovarian origin of the breast metastasis.

**3. DISCUSSION**

Metastasis in a high-grade ovarian serous papillary adenocarcinoma is most often intra-abdominal in the form of peritoneal carcinomatosis. On the other hand, breast metastases from ovarian carcinoma have rarely been reported. Extramammary breast cancers are very rare and account for 0.3% of all breast cancers [4]. These tumors occur most often in a polymetastatic context, which is the case of our patient [1]. The age of patients with mammary metastasis varies between 21 and 67 years with a median age of 55 years [6]. The clinical presentation in our patient is in agreement with literature data. The most common forms appear as a solitary, painful, palpable nodule frequently localized in the upper outer quadrant of the left breast [1-7]. Typically, there is no cutaneous modification, nor nipple [1]. Multifocal and bilateral forms are rarer (25% of the cases reported), the clinical and radiological features may misleading the diagnosis and mimic primary breast cancer [6]. In mammography, metastatic lesions appear most often as benign lesions, or as well-circumscribed masses without microcalcifications [5]. In our case, the mammography showed a circular spiculated mass with microlobulated contours and microcalcifications grouped into clusters. This tumor was classified as ACR4 and required a biopsy to confirm the histological type of the tumor. The abdomino-pelvic CT performed after treatment showed a complete disappearance of the lateral right uterine mass and a regression of more than 50% of the left one. The CA 125 test was negative. Four months after the start of chemotherapy the patient underwent hysterectomy in addition to bilateral adnexectomy. On examination, the pelvis shows a frozen aspect with the presence of several parietal intestinal adhesions. No surgical procedure was possible due to the pelvic hardness. A peritoneal biopsy showed the same morphological and immunohistochemical features found in the first biopsy. The patient continued the same chemotherapy protocol.

Two years after the onset of the symptoms, the patient presented a solitary, painful, palpable mass in the upper outer quadrant of the left breast. It is movable relative to deep plane, measuring 3 cm. Without palpable axillary adenopathies on clinical examination. The mammography showed a circular spiculated mass with microlobulated contours and microcalcifications grouped into clusters. This tumor was classified as ACR4 and required a biopsy to confirm the histological type of the tumor. Differentiation between primary mammary tumor and metastasis is based essentially on the study of the morphological and immunohistochemical characteristics of the latter. Ninety-five percent of mammary metastases of ovarian origin exhibited papillary carcinomas architecture (8,9).

This is the case of our patient, the histological study of the biopsy showed a carcinomatous proliferation showing a papillary architecture with the presence ofcalciospherite which in favor of an adenocarcinoma. The immunohistochemical study is not necessary in our case given the characteristic morphology of the tumor and the context of polymetastasis.

The immunohistochemical study can be of great help in diagnosis, especially in the absence of a specific clinical context. Tumor cells are strongly and diffusely positive for CK7, CA125 and without immunostaining with antibody against CK20. Anti-WT1 and anti-PAX8 antibodies are more specific for ovarian serous adenocarcinoma [4]. In our case, mammary neoplasm tumor cells were strongly and diffusely positive for CK7, CA125 and WT1, no immunostaining with antibodies against CK20 was recorded, confirming the ovarian origin of the breast metastasis.

4. CONCLUSION

Metastatic mammary carcinomas of ovarian origin are rare. They may simulate clinically and radiologically the primary cancer whose management and prognosis are different [3]. The anatomo-pathological and immunohistochemical study allows us to make a positive diagnosis and to distinguish from mammary carcinoma, avoiding unnecessary mutilating surgery and would lead to appropriate treatment of the secondary tumor [6].

REFERENCES