

Breast Metastasis of Serous Ovarian Papillary Carcinoma: A Report of Two Cases Diagnosed by Fine-Needle Aspiration

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Abstract

Breast metastases from gynecologic cancer are infrequent and are mainly from the ovary. They usually appear in advanced stages and have poor survival rates after diagnosis. Two cases of breast metastasis of serous ovarian carcinoma are presented. In both cases fine-needle aspiration (FNA) study of breast revealed a lesion with morphologic characteristics of serous carcinoma, while one of them was with immunocytochemical study. Origin was confirmed by histological examination of this lesion.

Keywords: Breast metastasis; Ovarian carcinoma; Serous carcinoma; Cytology

Introduction

Breast metastases are infrequent, ranging from 0.4% to 2.7% according to different series [1-3], and from 1.7% to 6.6% in autopsy studies [4].

Their low frequency is due to anatomic breast characteristics such fibroadipous tissue and poor vascularization [1,5] as well as to hormonal effects being more frequent during puberty, gestation and in lactating women [5]. Dissemination can be lymphatic or hematogenous [5]. Breast metastases have also been described in males [6,7].

The appearing metastasis interval from primary lesion diagnosis ranges from 1 week to 44 months [7] and when they occur, mean survival time is about 10-1.9 months [8,9].

Clinically, breast metastasis appears as a palpable mass in the breast or axilla as a diffuse growth of the mammary gland, or can be asymptomatic [6,8]. They can be uni- or bilateral, solitary, or multiple [1,4,6,8,10].

Two cases of breast metastasis of ovarian papillary serous carcinoma diagnosed by fine-needle aspiration (FNA) are presented.

Cases

Case 1

A 50 year-old female diagnosed 5 years ago with stage IIIc serous papillary carcinoma of the ovary with intestinal occlusion. The patient was treated with chemotherapy and interval surgery where small tumor implants remained only in the omentum. Two years after finalizing chemotherapy treatment a recurrence in the form of peritoneal carcinomatosis was diagnosed with elevated CA125. A complete response was seen with CT after 6 cycles of chemotherapy. After 1 year another elevation of CA125 and a recurrence in the

perisplenic region led to a new chemotherapy session followed by surgery that demonstrated diffuse serous involvement in the small bowel.

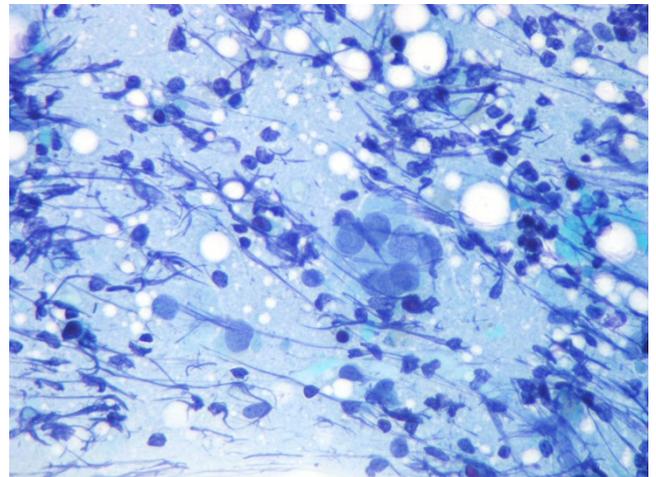


Figure 1: Small groups of cells with enlarged and hyperchromatic nuclei (400x).

At consultation the patient has a nodule in the right breast. Ultrasonography shows a well delimited 8 mm hypoechoic nodule. The patient is pending admission into a clinical trial. In order to exclude a primary breast tumor FNA, was performed. Cytological smears showed an epithelial lesion with small groups of cells with hyperchromatic and enlarged nuclei (Figure 1). Carcinoma, probably metastatic, was diagnosed. A core biopsy was performed with a histopathologic result of papillary carcinoma. The tumor cells expressed WT1 (Leica Microsystems, Newcastle Upon Tyne, United Kingdom) and CA125 (Novo Casrtra, Newcastle Upon Tyne, United Kingdom). Mammaglobin (Biocare Medical, Concord, California) and

GCDFP-15 (Leica Microsystems, Newcastle Upon Tyne, United Kingdom) were negative (Figure 2).

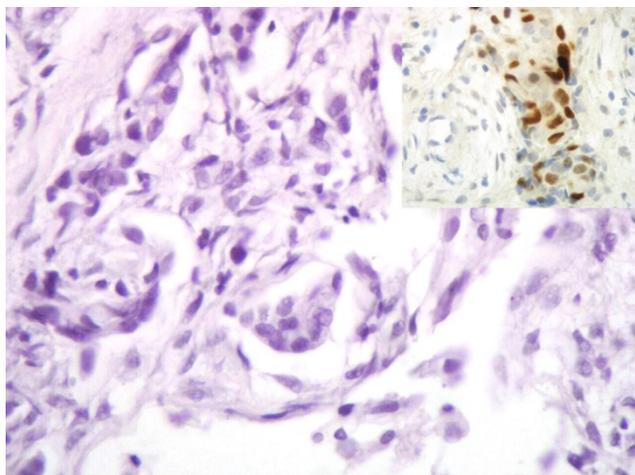


Figure 2: Pseudopapillary groups of epithelial cells that were immunohistochemically positive for WT1 (cell marker expressed in ovarian serous tumor, mesothelium and fallopian tube epithelium) (inset) (400x).

The patient died six months after the metastases were diagnosed.

Case 2

A 59 year-old female diagnosed 8 years ago with stage IIIc serous ovarian carcinoma surgically treated with that showed involvement in both ovaries and aortic lymph nodes. The patient underwent chemotherapy with multiple lymphatic and pulmonary recurrences.

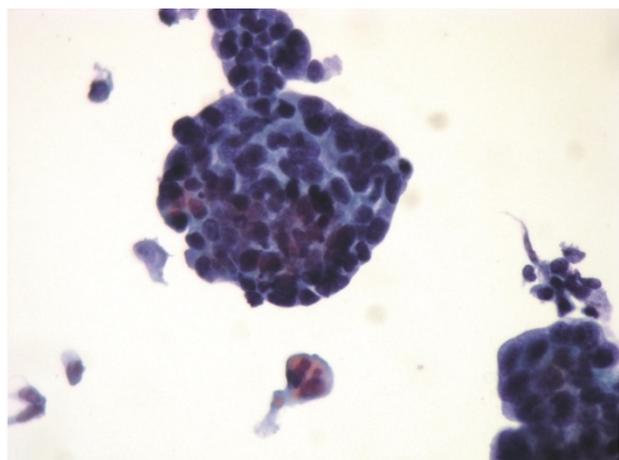


Figure 3: Pseudopapillary groups of cells with enlarged, hyperchromatic and irregular nuclei (400x).

At consultation, the patient has pulmonary, mediastinal and mesenteric involvement.

Ultrasonography of the right breast depicted a nodular image of 11 mm and an enlarged lymph node in the right axilla that were both studied by FNA.

Cytological study revealed the presence of pseudopapillary groups of cells with enlarged, hyperchromatic and irregular nuclei (Figure 3). Scant psammomatous microcalcifications were also seen (Figure 4).

Immunocytochemical techniques on smears were positive for WT1 (Leica Microsystems, Newcastle Upon Tyne, United Kingdom), and negative for mammaglobin (Biocare Medical, Concord, California) (Figure 5). It was diagnosed as carcinoma, probably metastatic from the ovary, involving both the breast and the axillary lymph node.

The patient is alive with disseminated disease four months after breast metastasis diagnosis.

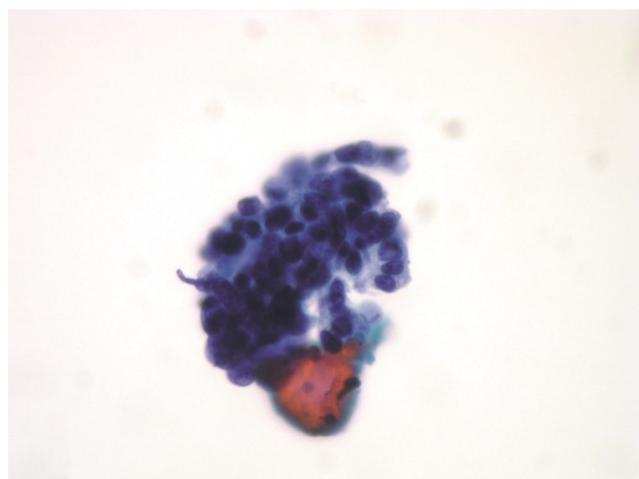


Figure 4: Scant microcalcifications were also seen (400x).

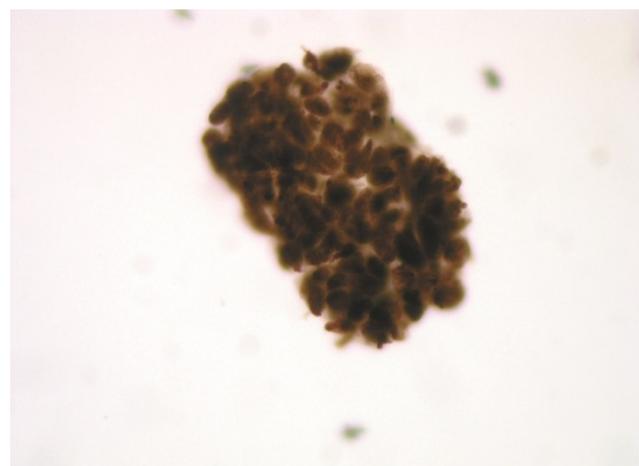


Figure 5: Immunocytochemical techniques were positive for WT1 (cell marker expressed in ovarian serous tumor, mesothelium and fallopian tube epithelium)(400x).

Discussion

The most frequent breast metastases are those originating in the contralateral breast, followed by hematologic neoplasms, melanoma and finally those originating in other organs [4,6], mainly the stomach, lung, liver, colon, thymus, ovary, thyroid, soft tissue and unknown origin [1,5,8,10]. In males the most frequent are from the prostate. In children the most frequent are from rhabdomyosarcoma [7].

Fine-needle aspiration is a useful and effective method for diagnosing breast gland metastases, frequently allowing, with the help of morphology, cell characteristics and immunocytochemical features, for the determination of the primary origin [2,3,5,7].

There are few studies found in literature illustrating breast metastasis diagnosed by FNA. Domansky [7] describes 5 cases from 1,295 FNAs of breast malignant tumors that were diagnosed over 12 years. The patients' ages ranged from 42 to 82 years (mean 61). The author found two pulmonary carcinomas, one squamous cell carcinoma of the uterine cervix, one endometrial carcinoma, one gastric carcinoma and one myeloma. The interval between the primary diagnosis and the metastasis was from 1 week to 44 months.

Deshpande et al. [2], found 6 patients between 35 and 65 years old diagnosed by FNA with metastasis from ovarian mucinous carcinoma, cervical squamous cell carcinoma, two melanomas, one lymphoma and one plasmacytoma. The primary neoplasm was demonstrated in the ovary, cervix and in one of the melanomas, but not in the other 3 cases.

Rodríguez-Gil et al. [3] illustrated 7 cases from 14,029 breast FNAs in two years in patients between 10 and 92 (mean 51) years old, with the following histologic derivatins: synovial sarcoma, alveolar rhabdomyosarcoma, mixed malignant Müllerian tumor, colonic carcinoma, gastric carcinoma, medullar thyroid carcinoma and melanoma.

Breast metastases of gynecologic origin were about 0.17 and 5% [4], being its origin in frequency: ovary, cervix, vagina, endometrium and peritoneum [4]. The histological types among ovarian origin metastases were the following: serous papillary carcinoma, dysgerminoma, endometrioid carcinoma, carcinoïd, granulose cell tumor and choriocarcinoma [10].

Recine et al. [10] described a series of 14 ovarian and 4 peritoneal metastatic serous carcinomas of the breast in patients between 21 and 67 (mean 52) years old with an interval ranging from 7 to 135 months between the primary diagnosis and the metastasis with 12 months mean survival. Twelve of these cases were diagnosed by FNA.

By ultrasonographic studies, metastatic tumors in the breast appears as an ovoid hypochoic mass with an noncircumscribed margin that can resemble benign lesions [1,6] which make necessary to study the lesion with FNA or biopsy procedure. Sometimes the ultrasonographic pattern is diffuse [1,6] or may show microcalcifications in mammography [5]

Immunocytochemical techniques can be useful to establish the origin diagnosis. WT1 (Wilm's Tumor 1) is a cell marker expressed in

ovarian serous tumor, mesothelium and fallopian tube epithelium. GCDFP-15 (Gross cystic disease fluid protein-15) is an apocrine gland marker. Mamoglobine is expressed in breast tissue, and CA125 is expressed in the epithelial linings of female genital tract, respiratory and digestive tract [11].

The differential diagnosis of breast metastases with ovarian origin included a primary breast tumor, mainly the invasive micropapillary type, expressing WT1 and GCDFP-15 (apocrine gland marker) negative [9,12]. Papillary neoplasms in other organs such as the thyroid, bladder and pancreas should also be considered.

In conclusion, breast metastases are infrequent and generally diagnosed in advance stages. FNA could be useful in their diagnosis with the help of clinical history and, sometimes, immunocytochemical techniques.

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