SHORT COMMUNICATION

RECURRENT BREAST CANCER PRESENTS AS A SINGLE SOLID OVARIAN MASS AND ASCITES

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SUMMARY

Objective: Ovarian malignancy is highly suspected when patients present with an ovarian cystic mass lesion accompanied with ascites. However, aside from the primary origin, a metastatic lesion should be considered, since the ovary is frequently metastasized from cancers of other organs, such as the genital tract, gastrointestinal tract, and breast. Herein, we report the case of a patient with a left adnexal mass and ascites to emphasize consideration of metastatic ovarian tumors from non-gynecologic organs.

Case Report: A 47-year-old woman with a history of right breast infiltrating lobular carcinoma, T3N0M0, grade 3, was treated with modified radical mastectomy and axillary lymph-node dissection in July 2001. Tumor recurrence was noted in December 2003. Therefore, she underwent palliative radiotherapy and various kinds of chemotherapy. In March 2006, she experienced poor appetite and abdominal fullness, and was found to have a 12-cm adnexal mass accompanied with ascites. Ovarian cancer was suspected, and exploratory laparotomy was performed. However, metastatic carcinoma of the ovary of breast origin was finally diagnosed.

Conclusion: In cases of pelvic tumors in patients who have a history of other primary cancers, metastasis should be suspected initially. Although the prognoses of these patients seem to be worse, intensive cytoreductive surgery would improve quality of life and offer a chance of better survival in highly selected patients. [Taiwanese J Obstet Gynecol 2006;45(4):356–359]

Key Words: breast cancer, metastatic ovarian carcinoma

Introduction

Ovarian malignancy is highly suspected when patients present with an ovarian cystic mass lesion accompanied with ascites. However, aside from the primary origin, the ovary is also a common site of metastasis from other organs, such as the genital tract, gastrointestinal tract, and breast. Differential diagnosis of primary or metastatic ovarian cancers is sometimes difficult to achieve, although in many cases of ovarian metastasis, there is a known history of malignancy. Metastatic ovarian tumors are thought to account for 10–30% of all malignant ovarian tumors, but the precise incidence of ovarian metastasis is unknown [1,2].

There have been several reports regarding metastatic ovarian tumors that are diagnosed at autopsy and/or surgery. The tumor may spread to the ovary via a blood-borne, lymphatic route, transperitoneally, or by direct extension. Gastric carcinomas are the most frequent primary malignancy that metastasize to the ovary, through a direct extension or “drop” metastasis mechanism. The pathway of cancer cell metastasis from non-gynecologic cancer to the ovary remains unclear except for cases of direct dissemination. Although advances in imaging analysis have made it easier to find lesions, metastatic ovarian tumors from non-gynecologic organs are rarely diagnosed before primary treatment; therefore, their prognosis is generally poor. Herein, we report the case of a patient with breast cancer metastatic to the ovary, with the manifestation of a left adnexal mass and

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Accepted: July 27, 2006
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ascites, and highlight the importance of considering the possibility of ovarian tumors metastatic from non-gynecologic organs.

Case Report

A 47-year-old woman, gravida 3, para 3, had been in menopause for 5 years. She had a history of breast infiltrating lobular carcinoma, right side, T3N0M0, grade 3, which was treated with modified radical mastectomy and axillary lymph-node dissection in July 2001. Postoperatively, she received six cycles of adjuvant chemotherapy with complete remission. Then, oral tamoxifen citrate was used for maintenance therapy.

Local tumor recurrence in the right breast was diagnosed in December 2003 and was treated with radiotherapy. In March 2006, the patient experienced poor appetite and abdominal fullness. A transabdominal sonogram disclosed a 12-cm adnexal mass and ascites. Tumor markers showed an elevated CA125 level (180 U/mL) but normal CA153. She underwent exploratory laparotomy in May 2006, which revealed a left 12-cm ovarian mass and 300 mL of yellowish ascites. Other evaluations showed nothing remarkable. Staging surgery, including total hysterectomy, bilateral salpingo-oophorectomy, pelvic lymph-node sampling and partial omentectomy, was performed without incident (Table).

The final pathologic diagnosis was metastatic ovarian cancer (Figures 1 and 2), similar to the original breast carcinoma with marked discohesiveness resulting in a pseudoalveolar pattern in many areas (Figure 3).

Meanwhile, the immunostaining profile performed on the previous breast carcinoma and ovarian tumor showed identical results: ER(+++), PR(+++), Her-2/neu(−), and E-cadherin(−). That the other markers for

Table. Characteristics and disease course of a 47-year-old patient with breast cancer metastatic to the ovary

<table>
<thead>
<tr>
<th>Time (mo)</th>
<th>Date</th>
<th>Clinical events</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>July 2001</td>
<td>Right breast cancer (T3N0M0, grade 3)*</td>
<td>Modified radical mastectomy + axillary dissection</td>
</tr>
<tr>
<td>+1</td>
<td>August 2001</td>
<td>Chemotherapy started†</td>
<td></td>
</tr>
<tr>
<td>+8</td>
<td>March 2002</td>
<td>Tamoxifen citrate use</td>
<td></td>
</tr>
<tr>
<td>+28</td>
<td>December 2003</td>
<td>Right chest wall recurrence†</td>
<td>Adjuvant external radiotherapy Chest wall (50.4 Gy) Scar boost (14 Gy)</td>
</tr>
<tr>
<td>+28</td>
<td>December 2003</td>
<td>Left ovarian metastasis</td>
<td>Anastrozole use</td>
</tr>
<tr>
<td>+57</td>
<td>May 2006</td>
<td>Staging surgery§</td>
<td></td>
</tr>
</tbody>
</table>

*Pathology: infiltrating lobular carcinoma, grade 3, estrogen receptors(++)+, progesterone receptors(++)+, 5-fluorouracil 500 mg/m² + epirubicin 50 mg/m² + cyclophosphamide 500–700 mg/m² for six courses; †pathology: carcinoma recurrence, estrogen receptors(++)+, progesterone receptors(++)+, Her-2/neu(−); §staging surgery included total abdominal hysterectomy, bilateral salpingo-oophorectomy, pelvic lymph-node sampling and partial omentectomy; |
primary ovary tumor were all negative further supported the diagnosis of metastatic carcinoma. On surveillance examination, the patient was clinically without evidence of disease.

**Discussion**

The ovaries are frequent targets of metastasis for malignant tumors, as are the lung and liver. Besides metastasis from gynecologic organs, the gastrointestinal tract and breast cancers are the most common non-gynecologic tumors metastatic to the ovaries [3–6]. Primary colon malignancies are the most common non-gynecologic malignancy resulting in metastatic tumor to the ovary, followed by malignancies of the appendix, breast, and upper gastrointestinal tract. The average ovarian mass secondary to the metastatic tumor has been shown to range from 9 to 12 cm in diameter, which was also found in this case (a 12-cm solid ovarian tumor).

The Krukenberg tumor may be the typical metastatic ovarian cancer and often arises from gastric cancers. The World Health Organization reports that the following features should be present when making the diagnosis of a Krukenberg tumor [7]: the presence of stromal involvement [8]; the presence of mucin-producing neoplastic signet-ring cells [9]; and ovarian stromal sarcomatoid proliferation [10]. In more recent years, the term Krukenberg tumor has been more loosely applied to describe any lesion metastatic to the ovary.

Patients with breast cancer are at increased risk of developing ovarian cancer and vice versa. This is especially so in the subset of patients with a hereditary predisposition to breast and ovarian cancer because of BRCA1 or BRCA2 mutations [11]. With the increasing risk of developing ovarian cancer in victims of breast cancer, metastatic ovarian cancer from the breast cancer is also sometimes found, even accidentally during prophylactic oophorectomy in patients with breast cancer [12]. Breast cancer metastatic to the ovary is often of the ductal or lobular type [12,13]. Ovarian metastasis from the breast tends to be bilateral in most cases [12,13], so it was easy to miss the diagnosis of metastatic ovarian cancer in our case. Grossly, the ovaries are usually enlarged, but only mildly so, with a smooth surface and a bosselated nodular appearance. Microscopically, the ovary reveals the typical patterns associated with primary breast neoplasms. Sometimes, it is difficult to make a differential diagnosis of primary or metastatic ovarian cancer because ductal carcinoma metastatic to the ovary may mimic a primary ovarian endometrioid adenocarcinoma. Lobular carcinoma within the ovary may be relatively subtle, and not obvious with scanning magnification. The rate of accurate diagnosis can be improved by high-power field microscopic examination because the metastatic lesion usually reveals characteristic growth patterns, including Indian-file arrangements, and characteristic cytologic features, including intracytoplasmic lumina. In addition, signet ring cells may be present.

CA125 is a tumor-associated antigen commonly seen in ovarian carcinoma and is used to assess the response to chemotherapy and for early detection of relapse [14]. Elevations in serum CA125 have also been documented in other tumors and non-malignant disease [15]. Unlike other tumor markers such as carcinoembryonic antigen, data on CA125 in breast cancer is limited and its cause and significance have been poorly defined. A limited role for the use of CA125 measurement may exist in metastatic breast cancer, particularly in the population of patients with involvement of the pleura or other coelomic-derived tissues, in which CA125 levels are often elevated. In reviewing all reports documenting the serologic values of CA125 in breast cancer in the English language literature, very low detection rates were found (1–27%), and only one study documented CA125 levels according to stage [16]. At present, CA125 measurement in breast cancer is likely to pose more questions than answers. Early detection and treatment of metastatic breast cancer with the aid of tumor markers, however, has not been shown to improve outcome. The optimal use of this marker in breast cancer remains ambiguous.

The prognosis of patients with breast cancer symptomatically metastatic to the ovary is almost uniformly poor, with actuarial 5-year survival rates of 0–27% [17–20]. Surgery has a key role in the management of
primary ovarian cancer; however, this has not been clearly established in cancers metastatic to the ovaries. There are discordant results regarding the role of surgical resection or tumoral debulking in patients with malignancies metastatic to the ovaries. The 5-year survival rates after resection of metastatic tumors in the ovaries from gynecologic and non-gynecologic organs were significantly different (47% vs. 19%) [21]. In the first report evaluating the role of debulking surgery in patients with breast cancer metastatic to the abdomen and pelvis, Abu-Rustum et al reported that the median survival in patients with no gross residual disease after operation was longer than that of patients with visible residual disease, although this did not reach statistical significance [22]. In addition, Eitan et al found that survival was better in optimally debulked patients (<2 cm of residual disease) than suboptimally debulked patients with breast cancer metastatic to the pelvis [23]. Surgical resection of breast cancer metastatic to the abdomen and pelvis should be considered in candidates. In cases of pelvic tumors, metastatic ovarian tumor should always be included in the differential diagnoses. If metastatic tumor is noted, cytoreductive surgery seems to have a beneficial effect on the survival of selected patients.

In conclusion, the genital tract organs of patients with breast cancer should be carefully and routinely checked, not only for the possibility of endometrial lesions secondary to tamoxifen citrate treatment, but also for either primary or metastatic ovarian cancers. Prompt and intensive treatment may prolong survival and improve the quality of life.

References