Case Report

A Case of Brain Metastasis of Ovarian Cancer in the Elderly

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Abstract

Ovarian cancer is the most lethal gynecological malignancy. Because of the lack of specific clinical symptoms, approximately 70% of women diagnosed with the disease have metastases beyond the regional lymph nodes. The most common metastatic sites of ovarian cancer are peritoneum, liver and lung, while brain metastasis that indicates a worse prognosis is rarely seen. This is a case report of a 73-year-old woman who was initially diagnosed with stage IIIIC ovarian cancer and developed brain metastasis 10 years later. After surgical treatment and chemotherapy, the quality of life of the patient was significantly improved, and the survival time was prolonged.

Introduction

Although brain metastasis is common in other malignant tumors, such as lung cancer and breast cancer, it is considered to be a rare late complication in ovarian cancer. Previous literature showed that the incidence of ovarian brain metastasis was about 0.29%. With the progress of imaging and the prolonged survival in patients with ovarian cancer, the incidence of brain metastasis of ovarian cancer is increasing. As it leads to fatal outcome in patients and shortens patient survival time, brain metastasis of ovarian cancer should be paid more attention in the clinic.

Observation

The patient is a 73-year-old woman who was found to have space-occupying lesions in the left adnexal area above the uterus during a physical examination in February 2009. Laparoscopic exploration and biopsy showed that "moderately-poorly differentiated serous papillary adenocarcinoma of the ovary”. Then, after 2 cycles of TC (paclitaxel + carboplatin) chemotherapy, tumor reduction surgery was performed, and achieved satisfactory results. Postoperative pathology showed bilateral ovarian moderately and poorly differentiated serous papillary carcinoma with the uterine serosa invaded, right fallopian tube and greater omentum, and lymph node metastasis (1 to 23), FIGO stage IIIC. TC chemotherapy was continued for 6 cycles after surgery, and the last chemotherapy session was on August 25, 2009.

In August 2015, the patient found a left supraclavicular mass with abdominal pain, especially upper abdominal pain, and shortness of breath. The results of CT scan of the chest and abdomen showed there was a 6cm-sized mass between the pancreatic head and duodenum. A left supraclavicular lymph node biopsy on October 6, 2015 revealed metastatic cancer indicating ovarian cancer recurrence. On October 8, 2015, the patients began to receive chemotherapy, paclitaxel + carboplatin, 2 cycles. Carboplatin hypersensitivity (rash, chest tightness, dyspnea) appeared in the second cycle, and topotecan chemotherapy instead was given in the next 4 cycles. Serum CA125 level returned to normal after chemotherapy, and abdominal masses were evaluated by PR. After discharge, the patient did not have regular serum CA125 level and imaging examinations.

In November 2017, the patient experienced a recurrence of abdominal pain and shortness of breath while exercising. Enhanced abdominal CT scan suggested metastases of multiple lymph nodes in the lesser curvature of the stomach, the root of the mesentery, retroperitoneum,
ports hepati, first-line periphery and mediastinum, and pleural and peritoneal effusion. On November 22, 2017, paclitaxel combined with carboplatin was given (dexamethasone desensitization therapy before chemotherapy) for 8 sessions. The serum CA125 level turned out to be 343 U/ml, and the imaging evaluation showed PR.

In July 2019, the patient began to develop headaches, followed by language disorders and memory loss, but had normal myodynamia of the extremities. CT examination showed left parietal lobe nodule, indicating brain metastasis (Figure 1). The left medial lobe and the lower segment of the right posterior lobe of the liver might have been metastasized. CA125 was 77.7 U/ml. On August 28, 2019, the patient underwent resection of the brain tumor. The patient recovered well after the operation (Figure 2). The left medial lobe and the lower segment of the right posterior lobe of the liver might have been metastasized. CA125 was 77.7 U/ml. On August 28, 2019, the patient underwent resection of the brain tumor. The pathology after left frontal tumor resection suggested 'left frontal mass' malignant tumor. Immunohistochemistry revealed metastatic adenocarcinoma of ovarian origin. Gene detection showed BRCA gene wild type. The aphasia was relieved after surgery, and the KPS score was 90. In October 2019, the patient received another 6 cycles of paclitaxel + carboplatin chemotherapy, with normalization of the CA-125 level, and the size of metastatic lymph nodes in the abdominal cavity significantly shrank. So far, the patient is in stable condition.

**Discussion**

The incidence of brain metastasis of ovarian cancer varies from 0.49%–12% [1-4]. The median age of primary ovarian malignant tumor is 52 years old, and the median age of brain metastasis is 54.3 years old. In the pathological classification of brain metastasis of ovary, serous cystadenocarcinoma is the most common [1, 5]. A multicenter retrospective study collected 4277 cases of ovarian cancer and found that 71.6% of the patients had serous ovarian cancer [6]. According to the literature report, ovarian cancer patients with FIGO III-VI and histology 2-3 are more likely to have brain metastasis [7]. There is a certain correlation between the continuous increase of serum CA125 level and brain metastasis in patients with ovarian cancer. In 2009, a retrospective study by Chen et al. found that the average level of serum CA125 in patients with brain metastasis of ovarian cancer was more than 35 U/ml before treatment [8]. However, no scholar recommended detecting the level of CA125 to predict the possibility of brain metastasis of ovarian cancer. Previous studies have shown that extraperitoneal diseases, including BM, may be more common in patients with BRCA1/2 gene mutations [9, 10]. Recent studies have shown that in ovarian cancer and patients with known BRCA status, patients with BRCA gene mutations have a four-fold higher risk of brain disease than patients with BRCA WT [11]. Therefore, BRCA mutations may be an important consideration in promoting brain metastasis screening in women with ovarian cancer. In this case, each progression of the disease was accompanied by an increase in CA125, which was consistent with the reports in the literature. But the BRCA gene of the patient is wild type.

Surgery combined with radiotherapy is a common choice. If there is no chance of surgery, radiotherapy can also achieve a good therapeutic effect. Radiotherapy is often used as an important adjuvant therapy after the operation. The main method of early radiotherapy is whole-brain radiotherapy (WBRT). Whole-brain radiotherapy has been playing an important role in relieving neurological symptoms and prolonging survival. Therefore, surgery plus radiotherapy is recommended for solitary intracranial lesions [12]. For 1 to 3 intracranial metastatic lesions, WBRT+SRS (stereotactic radiosurgery, SRS) has better clinical results than WBRT [13]. If the patients with brain metastasis of ovarian cancer are classified according to the number, location and general condition of the patients with brain metastasis, they can be treated by surgery supplemented by postoperative whole-brain radiotherapy or radiotherapy and chemotherapy. Those who cannot operate can be treated with the appropriate radiotherapy, such as stereoscopic radiotherapy combined with whole brain radiotherapy or radiotherapy and chemotherapy, which can improve the quality of life of patients [14].

In our case, in addition to brain metastasis, there was also significant progress in the intraperitoneal lymph nodes. The effect of previous chemotherapy was good. In order to control the enlargement of metastatic lymph nodes, patients need systemic chemotherapy. However, considering the age of the patients, only systemic chemotherapy was chosen after brain metastases. Radiotherapy can be used as an option for follow-up brain metastasis.
Conclusion

The incidence of brain metastasis of malignant ovarian tumor is not high, but it has an upward trend in recent years, which may be related to the progress of imaging and the prolonged survival of patients. Brain metastasis will bring poor prognosis and seriously affect the survival time of patients. Late disease stage, high-grade serous ovarian cancer, elevated serum CA125 level and BRCA gene mutation may be high-risk factors for brain metastasis. At present, surgery combined with radiotherapy is the main treatment of brain metastasis, especially in patients with brain metastasis with isolated intracranial foci. Surgery combined with radiotherapy can significantly prolong survival. It has been reported in China that the survival time of patients treated with surgery combined with radiotherapy for solitary brain metastases of ovarian cancer could be more than 85 months [15].

Patient’s Perspective

From the point of view of the whole treatment process, the patient is a platinum-sensitive with a long survival time, and she has obtained 10 years or more of OS. Although the patient was 73 years old at the time of brain metastasis, the patient had an isolated intracranial metastasis with a KPS score of 70, without fundamental disease. So far, 6 months after the surgery, the patient is still alive with the quality of life. Her expected survival is over 1 year.

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Conflicts of Interest

None.

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