Successful treatment of an advanced ovarian serous cystadenocarcinoma in pregnancy with cisplatin, adriamycin and cyclophosphamide (CAP) regimen. Case report

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Introduction

Ovarian cancer during pregnancy is seldom encounterd. Only a few cases of pregnant women complicated with an advanced ovarian cancer have received chemotherapy during pregnancy. Here, wo present a case of an advanced ovarian serous cystadenocarcinoma that received adjuvant chemotherapy during pregnancy with a successful outcome.

Case Report

A 22-year-old female, gravida 0, para 0, visited our outpatient clinic with the complaint of enduring amenorrhea on September 19, 1995. On pelvic examination, an enlarged uterus and an elastic soft tumor posterior to the uterus were palpated. Ultrasonography showed a right cystic tumor 8.5 x 11 cm in diameter with mural nodules. Fetal heart movement was detected and the crown-rump length was concurrent with that of 7 weeks of gestation. Serum CEA and CA19-9 were below the cut-off values but CA125 was 110U/ml. After the diagnosis of an ovarian neoplasma, enucleation of the right ovarian tumor was performed at 16 weeks of gestation. The left ovary was almost intact and no ascites was retained. Histological diagnosis was an ovarian serous cystadenocarcinoma with papillary mural nodules. On the 9th day postoperation, serum CA125 declined to 12U/ml. Since she strongly desired to continue the pregnancy, a right salpingo-oophorectomy, wedge resection of the left ovary and partial omentectomy were performed at 15 weeks of gestation. Histologically, the metastases to the omentum were confirmed and the left ovary revealed a papillary serous cystadenocarcinoma with low grade malignancy. At the end of 18 weeks of gestation, adjuvant chemotherapy with four courses of CAP regimen (cisplatin of 100 mg, day 1; cyclophosphamide of 150 mg, day 1-4; adriamycin of 10 mg; day 1-3) were conducted. At 33 weeks of gestation on May 18, 1996, a cesarean section followed by total hysterectomy, left salpingo-oophorectomy, appendectomy and complete omentectomy were performed. There were no findings of ascites or disseminations in the pelvic cavity. The newborn was a normal appearing 1896 g male infant with Apgar scores of 9/10. No anomalies or deformities were noted in the newborn. Histological findings demonstrated metastases to the mesentery, omentum and the posterior wall of the uterus. After surgery, seven courses of the CAP regimen were added because of the existence of residual cancer lesions. After chemotherapy had finished, laparoscopy was performed on October 23, 1996, resulting in no disseminations and a negative finding for residual cancer cells in ascites. She has had no evidence of recurrence up to today and the growth of her child has been normal.

Discussion

Epithelial ovarian neoplasmas represent a common ovarian malignancy co-existing with pregnancy. The majority are of low malignant potential or stage I disease but a few cases of advanced ovarian cancer have been reported in pregnancy.

The prognosis of pregnant patients with ovarian cancer is considered to be associated with the stage at the time of diagnosis but there is no evidence that pregnancy alters the prognosis of ovarian cancer.

Whenever ovarian cancer is diagnosed during pregnancy, surgical therapy is indicated with the aim of complete cytoreduction. When future fertility is not an important issue, a standard operation with total abdominal hysterectomy, bilateral salpingo-oophorectomy and omentectomy are appropriate. However, if a patient desires future fertility, stage Ia disease can be managed only with unilateral oophorectomy. Thus, the definitive surgical treatment must be individualized according to the stage of ovarian cancer. However, two different opinions are advocated for the treatment of advanced ovarian cancer during pregnancy at present. The first opinion supports a standard operation followed by postoperative adjuvant chemotherapy and the second opinion recommends the preservation of the uterus while performing surgical staging and cytoreduction as complete as possible followed by adjuvant chemotherapy after the critical period, especially when a patient strongly desires the continuation of pregnancy.

In the latter case, chemotherapy should be avoided in the first trimester of pregnancy since most chemotherapeutic agents are teratogenic during the period of fetal organogenesis. Chemotherapeutic agents during the first trimester may cause anomalies of the fetal organs. However, several reports have indicated that most mul-

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tiagent chemotherapies can be safely administered in the second and third trimester of pregnancy without adverse fetal effects.

There are few reports using platinum-based regimens during pregnancy in patients with advanced ovarian epithelial carcinomas [1-3] or malignant teratoma [4].

Malfetano and Goldkrand [1] administered seven cycles of chemotherapy with cisplatin and cyclophosphamide during pregnancy for a stage IIIc ovarian serous cystadenocarcinoma. The patient delivered a 3275 g infant at term but no anomalies were noted and no abnormalities of the kidneys, liver, bone marrow function or auditory-evoked potential could be detected in the newborn. Similarly, King *et al.* [2] noted no adverse effects in a newborn delivered from a patient with a stage III serous cystadenocarcinoma who was treated with five courses of cisplatin and cyclophosphamide during gestation. However, Henderson *et al.* [3] reported that cisplatin-DNA adducts were detected in amniotic cells and cord blood by the antepartum chemotherapy and assumed that the fetus sustained platinum drug exposure and possibly DNA damage in utero. In our patient, the growth of her son has been normal and he has no functional dysfunctions such as an auditory function at present. Good fetal outcome may be obtained by treatment with conservative surgery and postoperative adjuvant chemotherapy after the second trimester.

In conclusion, treatment for ovarian cancer during pregnancy must be individualized according to the stage or a patient's desire for childbirth. Although antineoplastic agents have a teratogenic nature, cisplatin-based chemotherapy can usually be safely used in the second and third trimester if a patient decides to continue the pregnancy. In such a case, it is important to counsel the patient on the potential risks that antineoplastics may have on the mother and fetus at that time and in the future.

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