Case Report

Abraxane in the treatment of ovarian cancer: The absence of hypersensitivity reactions

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Abstract

Background. Paclitaxel is one of the most active agents in the treatment of ovarian carcinoma. However, paclitaxel is solubilized in cremophor, a polyoxyethylated castor oil. Cremophor is allegedly responsible for many paclitaxel-associated hypersensitivity reactions (HSR). Novel agents such as abraxane are solvent free and currently being evaluated to potentially avoid certain patient side effects.

Case. We present a case involving a 60-year-old ovarian cancer patient with a significant history of chemotherapy induced HSR. She underwent optimal cytoreductive surgery and began adjuvant chemotherapy in 2000 until she suffered a severe HSR to paclitaxel. In 2002, she was diagnosed with recurrent disease and underwent subsequent treatment with carboplatin, cisplatin, and doxorubicin, all of which resulted in severe HSR. The patient began abraxane therapy in 2005 and has shown no signs of HSR.

Conclusion. Abraxane is a solvent free taxane, which can be administered without the pre-medications routinely used to prevent HSR. Abraxane may offer paclitaxel HSR patients the benefit of continued taxane treatment. Although the clinical activity of abraxane has not been extensively investigated in ovarian carcinoma, the distinct activity of paclitaxel and good results with recurrent metastatic breast cancer patients suggest additional evaluation with this drug is important.

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Introduction

Ovarian cancer is the fifth most common gynecologic malignancy and is the leading cause of death in gynecologic disease [1]. Fortunately, this disease is very responsive to chemotherapy. Paclitaxel is an anti-neoplastic agent that interferes with the reorganization of cells prior to mitosis and is considered one of the most effective chemotherapies for the treatment of ovarian cancer [2]. Since paclitaxel is insoluble and requires the toxic solvent cremophor to administer, there is a high incidence of dose limiting hypersensitivity reactions (HSR) [2,3]. Consequently, patients must be treated with steroidal and anti-histamine pre-medications. Novel agents like abraxane are being studied for their potential to prevent these HSR while retaining the effective spectrum of clinical activity.

Abraxane is an innovative cremophor-free, protein-stabilized variant of paclitaxel [4]. This albumin-based compound appears to provide greater access of the drug from the bloodstream to the tumor tissue [5,6]. Since abraxane is solvent free, the drug can be administered without the pre-medications routinely used to prevent HSR. Furthermore, the albumin-based compound permits a higher dose of drug with a decreased infusion time [4–6].

The clinical activity of abraxane was compared to paclitaxel in a phase III metastatic breast cancer trial [5]. The study reported that the patients treated with abraxane had a higher response rate, prolonged time to tumor progression, and an absence of HSR. Although the clinical activity of abraxane is currently being studied in ovarian cancer, there have been no reported studies. We present the first abraxane treatment case study involving a recurrent ovarian cancer patient with a significant history of HSR to paclitaxel.

Case report

A 60-year-old, right-handed Caucasian woman was originally diagnosed with stage IIC serous papillary adenocarcino-
ma in November 2000. She underwent a laparotomy, total abdominal hysterectomy, and bilateral salpingo-oophorectomy. Subsequently, she was treated with paclitaxel but suffered a severe HSR to the chemotherapy, including cardiac arrest. Following her recovery, the patient completed three cycles of carboplatin and cyclophosphamide in March 2001. Her CA-125 serum levels declined from 87 to 9 U/ml.

In February 2002, a CT of the abdomen and pelvis revealed a 6-cm pelvic mass. A laparotomy and resection of the pelvic mass were performed, and all gross tumor was resected. The patient was then referred to our gynecologic oncology service in March 2002 for follow-up and chemotherapy.

The patient began carboplatin (AUC = 5) in March 2002 but suffered an HSR upon completion of her second cycle. In April 2002, she began monthly doxorubicin (30 mg/m²) but suffered another HSR during her first cycle. The patient was subsequently followed without any further chemotherapy at her request.

In June 2002, the patient had a CT of the pelvis, which revealed two 0.9-cm left common lymph nodes. A CT scan in October 2002 demonstrated no significant change in disease status. However, in April 2003, a CT scan of the pelvis revealed a 1.6×1.7 cm low-density cystic lesion in the left aspect of the pelvis and new small nodules along the right pelvic sidewalls and in the mesentery. She began eight cycles of weekly topotecan (4.7 mg/m²) in April 2003. The patient’s CA-125 serum levels remained normal (<15 U/ml) throughout this chemotherapy regimen. A CT of the pelvis in August 2003 revealed decreased size of the cystic lesion (1.3 cm) with no change in lymph nodes. The patient’s CA-125 serum levels remained stable at 13 U/ml. The patient started on anastrozole (1 mg) in November 2003. In August 2004, a CT of the pelvis exhibited further decreased size of the patient’s cystic lesion (1.0 cm) and internal iliac lymph node (5 × 10 mm).

The patient’s September 2004 CT of the pelvis revealed multiple solid and cystic septated masses in the peritoneal cavity, which were suspicious for metastatic disease. The largest lesion measured 3.0 × 3.5 cm, and the remaining two lesions were 2.3 × 2.7 cm and 2.7 × 3.2 cm. The patient began weekly cisplatin (30 mg/m²) in October 2004 but subsequently suffered an HSR. The patient was very reluctant to be treated with any medication to which she had a previous HSR. Although our medical group has not been successful with prior attempts at desensitization, we did make an attempt to desensitize her.

In November 2004, the patient began day 1 and day 8 vinorelbine (30 mg/m²). She completed seven cycles in March 2005, and her CA-125 serum levels declined from 33 to 10 U/ml. However, her follow-up MRI exhibited multiple central pelvic complex cystic and solid lesions consistent with metastatic disease, the largest of which measured 4.1 × 3.2 cm. In April 2005, she exhibited a slightly elevated CA-125 serum level of 38 U/ml and began weekly abraxane (30 mg/m²). Despite the patient’s history of HSR, she tolerated the chemotherapy well without pre-medications. She has since completed three cycles without incident.

Discussion

We report the long-term treatment status of an ovarian cancer patient with a significant history of HSR. The patient’s chemotherapy options were severely limited due to her HSR to paclitaxel, carboplatin, cisplatin, and doxorubicin. However, she has been treated with three cycles of abraxane without HSR.

Abraxane is a novel taxane that represents a significant advancement in the field of chemotherapy. Since this drug is albumin-based, patients are at less risk for developing an HSR, which is commonly associated with cremophor-based paclitaxel [4,5]. Pre-medications are not required for dose administration of abraxane, and a higher dose can be delivered which potentially improves the drug’s efficacy. Abraxane has been shown to achieve higher tumor drug concentrations than paclitaxel [7]. In addition to reduced side effects, abraxane appears to be superior to paclitaxel in terms of disease-free survival and response rate in the treatment of recurrent breast cancer [5].

Abraxane has demonstrated great promise in treating women with metastatic breast cancer [5]. Currently, this drug is also being studied for its efficacy in several tumor types [8], although no reported studies in ovarian cancer have been published. We present the first case report involving abraxane in the treatment of ovarian carcinoma. Abraxane appears to offer paclitaxel induced HSR patients the option for continued taxane therapy. We suspect that future studies will result in abraxane replacing paclitaxel in the treatment of ovarian carcinoma.

References