

Adverse Reactions Such as Fecal Incontinence Occurred in 1 Patient with Ovarian Cancer Induced by Paclitaxel Liposome Allergy

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Abstract

Paclitaxel is one of the commonly used drugs in postoperative chemotherapy for ovarian cancer patients. However, affected by drug dosage and individual differences in the course of medication, patients will have different degrees of adverse reactions, which will cause damage to the patient's body once they occur. This paper retrospectively analyzed the clinical data of patients with severe allergic reactions such as fecal incontinence and numbness of hands and feet caused by the use of paclitaxel liposome during postoperative chemotherapy in a case of ovarian cancer admitted to our hospital. The causes and corresponding treatment measures were analyzed, in order to provide the reference for medical staff to take effective countermeasures in advance in the future.

Keywords

Paclitaxel, Drug Allergy, Adverse Reactions, Ovarian Cancer

1. Introduction

Ovarian cancer is one of the common malignant tumors of female reproductive system, the incidence is increasing year by year seriously threatening women's life and health [1]. Its clinical characteristics are not obvious, early detection is not

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easy, 70% of newly diagnosed patients have been diagnosed in the advanced stage, and often lose the best opportunity for surgical treatment. Therefore, the current treatment plan for patients with ovarian cancer needs to adopt chemotherapy or chemotherapy combined with surgery and other comprehensive treatments [2]. Paclitaxel, as a secondary metabolite extracted from the bark of *Taxus chinensis*, is a kind of natural anticancer drug. Its molecular formula is “C₄₇H₅₁NO₁₄”. It has significant anti-tumor effects, especially on breast cancer, cervical cancer and ovarian cancer. [3] Studies have found that paclitaxel [4] has a significant role in the treatment of ovarian cancer patients, and the adverse reactions are relatively mild. Studies have shown [5] that about 60% of advanced ovarian cancer patients are more sensitive to paclitaxel combined with carboplatin chemotherapy, and this chemotherapy regimen is often used for treatment.

Traditional paclitaxel uses polyoxyethylene castor oil as a drug carrier, which often causes allergic reactions [6] [7] and limits the use of this drug. In 2003, the paclitaxel liposome for injection successfully developed in China replaced polyoxyethylene castor oil and anhydrous ethanol complex solvent with liposome, which can increase the solubility of paclitaxel, has the advantages [8] [9] of stable physical and chemical properties, long storage time, can reduce the toxicity of paclitaxel and avoid the allergic reaction caused by the solvent. At the same time, the study [8] showed that the paclitaxel liposomes had similar anti-tumor effect to the traditional paclitaxel injection, and the incidence of adverse reactions was significantly reduced. As mentioned in the instructions [10] of paclitaxel preparation in China, the main adverse reactions are myelosuppression, including neutropenia, leukopenia, thrombocytopenia, anemia, followed by gastrointestinal reactions, including nausea, vomiting, diarrhea, mucositis, etc. Other adverse reactions include myalgia, arthralgia, peripheral neuropathy, elevated bilirubin, elevated alkaline phosphatase, infection, bleeding, bradycardia, hypotension, etc. Once the patient is allergic to use, it may cause serious adverse reactions. One of the most common is neurotoxicity, which can include sensory nerve disorders such as numbness in the hands and feet. In severe cases, hypersensitivity reactions such as dyspnea can occur. Rare signs and symptoms include diarrhea, incontinence, vomiting, and anxiety. In 2006, there was only one report on urinary incontinence in patients with acute and severe allergies to paclitaxel in China [11]. Therefore, this article reported the adverse reactions, such as fecal incontinence caused by paclitaxel allergy in a patient with ovarian cancer after chemotherapy, as well as the diagnosis and treatment process, to provide reference for clinical work. Informed consent was obtained from the patients for this study.

2. Medical Records

A 52-year-old female patient was admitted to hospital at 9:19 PM on October 25, 2024 due to “chemotherapy for ovarian cancer more than 50 days after surgery”. She was healthy in the past and denied any history of drug or food allergies. Surgical history: R0 transabdominal ovarian cancer cell reduction was performed

under general anesthesia on 2024-09-04 (total extrascial uterus + double adnexectomy + pelvic and para-aortic lymph node dissection + omentectomy + rectal surface lesion resection + diaphragmatic surface lesion resection + hilar lymph node resection + posterior hilar nodule resection + minor omentous cyst lesion resection + diaphragm + caudal resection). Chemotherapy history: Intravenous chemotherapy with paclitaxel injection + carboplatin was administered on 2024-06-28, 2024-07-20, 2024-08-10. After surgery, paclitaxel injection + carboplatin was given intravenous chemotherapy on 2024-09-13, 2024-10-05. After the last discharge, the patient had occasional nausea, numbness in the hands and feet, no vomiting, abdominal pain, abdominal distension, frequent urination, urgency of urination, fever and other discomfort. Regular reexamination of blood routine and liver and kidney function were generally normal. Now for further treatment, outpatient “ovarian cancer” was admitted to the hospital. Admission for physical examination T36°C, P86 times/min, R19 times/min, BP124/68 mmHg, no obvious cardiopulmonary abnormalities, abdominal tenderness, no tenderness, no swelling pain in both lower limbs, gynecological examination: short postoperative time, not checked. Now the patient had no fever, abdominal pain, abdominal distension, vaginal bleeding and drainage discomfort. Laboratory tests: Blood cell analysis (white blood cell count $4.64 \times 10^9/L$, hemoglobin 117 g/L, platelet count $214 \times 10^9/L$, neutrophil percentage 65.1%). There were no significant abnormalities in blood coagulation, HE4, liver and kidney function, electrolytes and glucose. Electrocardiogram: Sinus rhythm, electrical axis normal. The patient was admitted to hospital to improve the various laboratory examinations, and was planned to give paclitaxel injection + carboplatin intravenous chemotherapy in 2024-10-26. According to the patient, 52 years old, height 153 cm, weight 51 kg, body surface area 1.49 square meters, the calculation actually gave paclitaxel injection 240 mg + carboplatin 550 mg intravenous chemotherapy. According to the doctor's advice, dexamethasone 10 mg orally was given to the patient, and the patient could rest quietly without complaining of discomfort. At 9:30, 2024-10-26, line of paclitaxel + carboplatin chemotherapy, in the process of infusion of paclitaxel at 15:30, sudden head discomfort, confusion of consciousness, followed by palpitation, immediately check the patient, the patient complained of palpitation, accompanied by sweating, skin clammy cold, fecal incontinence, restlessness, physical examination uncooperation, blood pressure 113/87 mmHg, Pulse 104 times/min, breathing 19 times/min, finger pulse oxygen 98%, bilateral pupils are round, lip mucosa is not pale, the heart valve auscultation is not obvious abnormalities, abdominal flat soft. Fingertip blood glucose was measured at 7.1 mmol/L. Considering paclitaxel drug allergy reaction, the infusion set should be replaced immediately with sodium chloride injection (original sodium chloride injection 500 ml + paclitaxel injection 240 mg remaining about 15 ml), and nasal catheter oxygen inhalation (2 L/min) and dexamethasone sodium phosphate injection 10mg intravenous injection should be given. Urgent electrocardiogram examination indicated: sinus tachycardia, normal electrical axis, T-wave changes, the patient's consciousness gradually

improved, palpidity and other uncomfortable symptoms also improved, carboplatin infusion was stopped, fluid therapy was continued, and the patient's condition changes were closely observed. Due to the severe anaphylaxis of the patient, in order to reduce subsequent adverse drug reactions, the renal department was invited to consult and evaluate whether hemoperfusion treatment was feasible. The hemoperfusion began at 21:50 and ended at 23:55, a total of 2 hours. The process was smooth, the patient's vital signs were stable, and no complaints of discomfort were reported. Routine infusion continued the next day, and the above symptoms did not appear again. Blood routine review: white blood cell count $5.02 \times 10^9/L$, hemoglobin 103 g/L, platelet count $274 \times 10^9/L$, neutrophil 100% 74.3%. No abnormal electrolytes were found. Due to previous grade III myelosuppression, the patient was given subcutaneous injection of PEGylated recombinant human granulocyte stimulating factor 6 mg to prevent severe myelosuppression. The patient was discharged from hospital on 2024-11-04 without complaining of special discomfort.

3. Discussion

One of the common adverse reactions of paclitaxel is hypersensitivity, which limits the clinical application of violanol and even endangers the patient's life [12] in severe hypersensitivity. Hypersensitivity in 95% of patients occurs during the first or second infusion, and if no hypersensitivity occurs during the first two infusions, the probability of hypersensitivity occurring during subsequent infusions is about 3% [13] [14]. In order to reduce the occurrence of anaphylaxis, patients were pre-treated [12] with dexamethasone 20 mg orally for 12 h and 6 h before paclitaxel infusion. In this case, the patient underwent pre-treatment before infusion of paclitaxel liposome, and it was the sixth administration. Due to drug allergy, the patient had serious adverse reactions such as fecal incontinence, confusion, head discomfort, palpitation, sweating, nausea, and bone marrow suppression. In the 121 patients who received the anti-tumor drug paclitaxel in Lingxiao [15] study, the incidence of adverse reactions was very high, including bone marrow suppression (94.21%), alopecia (88.43%), gastrointestinal reaction (63.64%) and limb numbness (53.72%). This is similar to the adverse reactions in this patient, but the patient with the symptoms of fecal incontinence is an isolated case. The fecal incontinence is considered to be related to the strong cytotoxic effect of paclitaxel, which may damage the nervous system.

Hemoperfusion is a widely used blood purification method that can remove pathogenic substances in the blood with a specific device and improve [16] the blood volume and oxygen function of the patient. Paclitaxel allergy treatment is mainly based on fluid replenishment, inhibition of drug absorption and promotion of excretion, and hemofunction can effectively remove the residual drug amount in the body. The emergency treatment for the patient was to immediately stop drug infusion, change fluid therapy, and consult the renal department. Hemoperfusion was given for a total of 2 hours. The process was smooth, the

patient's vital signs were stable and there was no discomfort. Routine infusion continued the next day, and the above symptoms did not appear again. The electrolyte test results of the patient were not abnormal. Due to timely treatment, no further damage was caused to the patient's body.

4. Conclusion

In summary, the incidence of adverse reactions in anti-tumor patients treated with paclitaxel is extremely high. Therefore, the rationality of its use should be paid attention to in clinical treatment, so as to improve the safety of its treatment. In the event of a drug allergic reaction, vital signs should be monitored in time, symptomatic treatment should be performed, drug excretion should be promoted, hemoperfusion therapy should be performed if necessary, and patients should be monitored for heart block, electrolyte disturbance and dyspnea.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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