Effect of concurrent chemoradiotherapy with cisplatin and paclitaxel on immunological function and serum CYFRA21-1 and SCC-Ag in patients with middle and advanced cervical cancer

Wu-Song Tong, Song-Lin Wang, Jin-Hua Pan

Department of Oncology, People’s Hospital of Zhongxiang City, Hubei, 431900, China

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ABSTRACT

Objective: To explore the effect of concurrent chemoradiotherapy with cisplatin and paclitaxel on the immunological function and serum CYFRA21-1 and SCC-Ag in patients with middle and advanced cervical cancer. Methods: A total of 80 patients with middle and advanced cervical cancer who were admitted in our hospital from January, 2014 to January, 2016 were included in the study and randomized into the observation group and the control group with 40 cases in each group. The patients in the control group were given three-dimensional conformal radiotherapy of whole pelvic fields cassette, in a routine segmentation way, 2 GY/time, 5 time/week, DT50 GY/25F. On this basis, the patients in the observation group were given concurrent chemoradiotherapy with cisplatin and paclitaxel. The fasting venous blood before and after chemotherapy in the two groups was collected. FCM was used to detect the peripheral blood T lymphocyte subsets levels (CD3⁺, CD4⁺, and CD8⁺), and CD4⁺/CD8⁺ was calculated. ECLIA was used to detect the serum CYFRA21-1 and SCC-Ag levels. Results: CD3⁺, CD4⁺, and CD4⁺/CD8⁺ after treatment in the observation group were significantly elevated, and the reduced degree of CD8⁺ was significantly greater than that in the control group (P<0.05). The reduced degree of serum CYFRA21-1 and SCC-Ag after treatment in the observation group was significantly greater than that in the control group (P<0.05). Conclusions: Concurrent chemoradiotherapy with cisplatin and paclitaxel in the treatment of cervical cancer can effectively improve the immunological function, reduce the serum CYFRA21-1 and SCC-Ag levels, and enhance the therapeutic effect.

1. Introduction

Cervical cancer is a common malignant gynecological tumor. With the development of society and alteration of life style, the morbidity is gradually increasing, and more and more young women are involved[1]. Early operation is the most effective method in the treatment of cervical cancer, and can significantly improve the living quality, but due to the atypical early symptoms of cervical cancer, most patients are already in the middle and advanced stage when paying a visit to the clinic, and lose the best operation timing[2]. With the continuous breakthrough, the concurrent chemoradiotherapy with cisplatin and paclitaxel has been the important therapeutic scheme in the treatment of cervical cancer and lung cancer, obtained the preferable clinical effect[3]. The study is aimed to explore the effect of concurrent chemoradiotherapy with cisplatin and paclitaxel on the immunological function and serum CYFRA21-1 and SCC-Ag in patients with middle and advanced cervical cancer.

2. Materials and methods

2.1. Clinical materials

A total of 80 patients with middle and advanced cervical cancer who were admitted in our hospital from January, 2014 to
January, 2016 were included in the study and randomized into the observation group and the control group. In the observation group, there were 40 cases, aged from 35 to 67 years old, with an average age of (51.3±6.4) years old; 35 had squamous carcinoma, and 5 had adenocarcinoma; 10 had high differentiation, 24 had moderate differentiation, and 6 had low differentiation. In the control group, there were 40 cases, aged from 36 to 67 years old, with an average age of (52.4±5.7) years old; 34 had squamous carcinoma, and 6 had adenocarcinoma; 9 had high differentiation, 25 had moderate differentiation, and 6 had low differentiation. Exclusion criteria: (1) those who were confirmed with middle and advanced cervical cancer by the pathology; (2) those who had not taken radiotherapy, chemotherapy, hormone, and operation; (3) those who had no obvious abnormal heart, liver, and renal function; (4) those who had no history of other primary malignant tumors; (5) those who were in stage IIb-IV; (6) those whose expected lifetime was greater than 6 months; (7) those who had signed the informed consents. Exclusion criteria: (1) those who had distant metastasis; (2) those who had previously received neoadjuvant chemotherapy; (3) those who were allergic to related drugs and had contraindications; (4) those who were pregnant or at the lactation period.

2.2. Methods

The patients in the control group were given three-dimensional conformal radiotherapy of whole pelvic fields cassette, in a routine segmentation way, 2 GY/time, 5 time/week, DT50 GY/25F. On this basis, the patients in the observation group were given concurrent chemoradiotherapy with cisplatin and paclitaxel, i.e. Paclitaxel (produced by Yangtze Pharmaceutical Co. Ltd, Approval No.H20058719), 175 mg/m², ivdrip on the first day; cisplatin (produced by Shanghai Luxoix Biotechnology Co. Ltd, Approval No. H20046375), 25 mg/m², ivdrip from the first to third day, 3-week treatment as one course, for 2 courses; intramuscular injection of diphenhydramine (40 mg) 30 min before being administrated with paclitaxel, intravenous injection of dexamethasone (10 mg), and cetirizine (300 mg), po. V omit-stopping, anti-diarrhea, and diuresis were performed during the chemotherapy process. The efficacy was evaluated after the end of treatment.

2.3. Observation indicators

The fasting venous blood before and after chemotherapy in the two groups was collected. FCM was used to detect the peripheral blood T lymphocyte subsets levels (CD3⁺, CD4⁺, and CD8⁺), and CD4⁺/CD8⁺ was calculated. ELISA was used to detect the serum CYFRA21-1 and SCC-Ag levels.

2.4. Statistical analysis

SPSS 18.0 software was used for the statistical analysis. The measurement data were expressed as mean±SD. The paired t test was used for the intra-group comparison, while the independent t test was used for the comparison between the two groups. P<0.05 was regarded as statistically significant difference.

3. Results

3.1. Comparison of immunological function before and after treatment

CD3⁺, CD4⁺, and CD4⁺/CD8⁺ after treatment in the observation group were significantly elevated, while CD8⁺ was significantly reduced when compared with before treatment (P<0.05). The elevated degree of CD3⁺, CD4⁺, and CD4⁺/CD8⁺ after treatment in the observation group, and the reduced degree of CD8⁺ were significantly greater than those in the control group (P<0.05) (Table 1).

3.2. Comparison of serum CYFRA21-1 and SCC-Ag before and after treatment

The serum CYFRA21-1 and SCC-Ag after treatment in the two groups were significantly reduced when compared with before treatment (P<0.05). The reduced degree of serum CYFRA21-1 and SCC-Ag after treatment in the observation group was significantly greater than that in the control group (P<0.05) (Table 2).

4. Discussion

The cervical cancer is a common malignant gynecological tumor,
with higher morbidity and death rate. According to the statistics, the median survival time in patients with cervical cancer is less than 6 years, and the 5-year survival rate in patients with middle and advanced cervical cancer is only about 70%[5]. Due to the expanded local infiltration range, insensitivity of hypoxic cells to the radiotherapy, and secondary group lymph node and hematogenous metastasis in patients with middle and advanced cervical cancer, the pure radiotherapy can not kill the tiny metastatic lesions beyond the irradiation field, and has been the origin of recurrence, spreading, and metastasis shortly after radiotherapy[6]. In recent years, there are many researches on concurrent chemoradiotherapy in the treatment of cervical cancer, and the clinical effect is also confirmed, in that it can significantly shrink the tumor volume, enhance the local control rate, reduce the distant metastasis rate, and lessen the risk of recurrence and death[7].

Platinum and paclitaxel are the common chemotherapeutic drugs currently, and play a vital role in the treatment of cervical cancer, lung cancer, and other various cancers. The mechanism of platinum is to produce intrastrand cross-linking and interstrand cross-linking with DNA, damage DNA, and inhibit the replication and transcription of DNA; therefore, it has been the indispensable drug for the treatment of various cancers. Paclitaxel is a new type cell cycle specific agent and anti-microtubule drug, can specifically combine with the microtubule to form the stable microtubule polymer with no activity, inhibit the normal recombination of microtubule network, and affect the tumor cell division into stage M and stage G2, finally resulting in the tumor cell death[8,9].

T lymphocyte subsets are the important components of tumor immune response, and the first defence line of anti-tumor[10]. Some researches demonstrate that the immunological function in patients with cervical cancer is reduced, resulting in the insensitivity to chemotherapy or poor efficacy, and even treatment withdrawal due to intolerance of the adverse reactions of chemoradiotherapy[11]. The results in the study showed that CD3+, CD4+, and CD4+/CD8− after treatment in the observation group were significantly elevated, and the reduced degree of CD8− was significantly greater than that in the control group (P<0.05), indicating that the concurrent chemoradiotherapy can effectively improve the expressions of CYFRA21-1 and SCC-Ag, with a significant therapeutic effect.

In conclusion, concurrent chemoradiotherapy with cisplatin and paclitaxel in the treatment of cervical cancer can effectively improve the immunological function, reduce the serum CYFRA21-1 and SCC-Ag levels, and enhance the therapeutic effect.

References