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Clinical Application Effect of Paclitaxel Combined with Cisplatin Neoadjuvant Chemotherapy in Treatment of Early and Mid Stage Cervical Cancer

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Abstract: ***Objective:*** To study the application effect and value of paclitaxel combined with cisplatin neoadjuvant chemotherapy in treatment of early and mid stage cervical cancer. ***Methods:*** A total of 92 patients with early and mid stage cervical cancer admitted to our department from 2016 to 2018 were enrolled in the study. The patients were divided into two groups according to random number table. Reference group (n=46) was treated with cervical cancer radical resection combined with postoperative chemotherapy. On the same basis, experimental group (n=46) was given neoadjuvant chemotherapy regimen of paclitaxel combined with cisplatin. Total effective rate, adverse reaction and score of life quality of the two groups were compared. ***Results:*** Total effective rate of experimental group was 76.09% which was higher than reference group, 41.30%. Score of life quality of the experimental group was higher than that of reference group, the comparison between two groups showed $P<0.05$. There was no difference in incidence of adverse reaction between the two groups, $P>0.05$. ***Conclusion:*** Application of neoadjuvant chemotherapy of paclitaxel combined with cisplatin had ideal tumor controlling effect for early and mid stage cervical cancer with lesser adverse reaction. Postoperative quality of life was high. It should be promoted in clinics.

Keywords: Paclitaxel, Cisplatin, Neoadjuvant chemotherapy, Cervical cancer, Adverse reactions, Quality of life

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1 Introduction

Clinically, cervical cancer is a common gynecological malignant tumor. Its occurrence is related to HPV infection, multiple sexual partner, multiple pregnancies, trichomoniasis infection and other factors[1]. Patients usually have no obvious characteristics in early stage of disease. As the disease aggravates, symptoms such as vaginal bleeding, fluid drainage and ureteral obstruction will gradually arise. This poses double trauma to body and psychology of patient, and also decline patient's quality of life[2]. For patients in early and mid stages, tumor control effect and prognosis can be improved if a scientific and effective treatment plan is adopted. At present, preoperative neoadjuvant chemotherapy is often used in clinics to reduce tumor size for surgical preparation. In order to search for more ideal treatment plan, our department applied neoadjuvant therapy using paclitaxel combined with cisplatin for some patients with early and mid stage cervical cancer. Results were satisfactory. Research process and results are reported as follows:

2 General information and methods

2.1 General data

Patients with early and mid stage cervical cancer admitted to our department from January 2016 to December 2018 were recruited into research group. Sample size was 92, all were confirmed diagnosis by imaging findings and pathological results. The patients were grouped according to random number table method. In experimental group (n=46), age

distribution of patients was in the range of 30–63 years old, with median value of (51.2±6.1) years. There were 27 cases of squamous cell carcinoma and 19 cases of adenocarcinoma. Tumor diameter ranged from 2.8 to 6.4 cm, with median value of (4.4±0.5) cm. Tumor stage: 30 cases of stage Ib and 16 cases of stage IIa. In reference group (n=46), age distribution was in the range of 29–61 years old, with median value of (51.7±6.4) years. There were 28 cases of squamous cell carcinoma and 18 cases of adenocarcinoma. Tumor diameter ranged from 2.9 to 6.2 cm, with median value of (4.2±0.7) cm. Tumor stage: 29 cases of stage Ib and 17 cases of stage IIa. Statistical analysis of the data from the two groups of patients yielded $P>0.05$, indicated that they could be compared experimentally.

Exclusion criteria: Patients with cardiopulmonary liver and kidney dysfunction, those with congenital disease, those with infectious disease, those with drug allergy, those who were pregnant or breast-feeding were excluded from the study group.

All the enrolled patients and their families had the right to know about this study, and they signed informed consent form.

2.2 Methods

Reference group: this group of patients did not take chemotherapy before surgery. Pelvic lymphadenectomy and extensive hysterectomy were carried out according to the actual condition of patient for treatment. Patients who wished to conceive could perform bilateral ovarian tissue anatomical treatment. Patients showed negative cervical cancer cells could undergo bilateral ovarian suspension. After surgical treatment, adjuvant chemotherapy was performed according to patient's surgical and pathological results.

Experimental group: this group of patients received neoadjuvant chemotherapy before surgery. Drug used was paclitaxel (Chenxin Pharmaceutical Co. Ltd., National Pharmaceutical Standard: H20057404). Twelve hours and 6 hours before injection of paclitaxel, oral administration of 10 mg dexamethasone was given to patients for desensitization. Dose of paclitaxel was 135–175 mg/m^2, mixed with 500 ml of physiological saline, administered by intravenous drip, administration time was preferably 3 hours. Dose of cisplatin (Qilu Pharmaceutical Co. Ltd., Guoyao Zhunzi H37021362) used was 50–75 mg/m^2, mixed with 500 ml of physiological saline, administered by intravenous drip, and hydration was initiated 12 hours before administration in patient. Throughout the entire treatment period, ECG and electrolyte monitoring were performed. Magnesium isoglycyrrhizinate and Omeprazole were used for protection of liver and nourishment of stomach. Patients were given chemotherapy for twice, interval between the two chemotherapy was 3 weeks. Surgery treatment was performed 3 weeks after the second chemotherapy.

2.3 Efficacy evaluation criteria[3, 4]

Efficacy in patient was evaluated according to efficacy evaluation criteria of solid tumor. Patients with tumor disappeared as shown by post-operative imaging examination and serological examination results, and maintenance time greater than 4 weeks were determined as complete remission. Those with tumor lesion reduced by more than 30%, and maintenance time greater than 4 weeks were determined as partial remission. Patient with tumor reduction of less than 30% or enlargement of less than 20% were determined as stable. Patients with tumor enlargement degree greater than 20% were considered in progress.

Total effective rate of treatment was calculated as "(number of complete remission+partial remission) / total number of cases×100%".

2.4 Evaluation of indicators

(1) Incidence of adverse reaction.

(2) Score of life quality: pre-operative and 3-month postoperative life quality of patients were assessed using Simple Life Rating Scale (SF-36). Score ranged from 0 to 100 points. Quality of life is positive correlated with assessment value[5].

2.5 Data analysis

Data of this study by our research institute were input into statistical software SPSS21.0 for analysis. Comparison results of measurement data ($\bar{x}$±s) and x^2count data (n, %) were validated using t value and 2 value test respectively. $P<0.05$ was used as the validation standard for significant difference between groups.

3 Results

3.1 Difference in total effective rate of treatment between two groups

Total effective rate of treatment group (76.09%) was significantly higher than reference group (41.30%). Statistical analysis results showed $P<0.05$; see Table 1.

Table 1. Difference in total effective rate of treatment between two groups (n, %)

Group	Number of cases	Complete remission	Partial remission	Stable	In Progress	Total effective rate
Experimental	46	17	18	8	3	76.09%（35/46）
Reference	46	7	12	18	9	41.30%（19/46）
χ^2						11.4776
P						0.0007

3.2 Difference in incidence of adverse reaction between two groups

Incidence of adverse reaction in experimental group was 36.96%, which was not significantly different with reference group (34.78%). Statistical validation results showed $P>0.05$, there was no statistical significance. See Table 2 for details.

Table 2. Difference in incidence of adverse reaction between two groups (n, %)

Group	Number of cases	Gastrointestinal reaction	Neurotoxicity	Myelo-suppression	Rate of adverse reaction
Experimental	46	12	3	2	36.96%（17/46）
Reference	46	10	3	3	34.78%（16/46）
χ^2					0.0473
P					0.8279

3.3 Difference in score of life quality between two groups

Before treatment, there was no difference in score of life quality between two groups ($P>0.05$). Three-month postoperative life quality score of experimental group were significantly better than reference group. Statistical validation results were $P<0.05$. See Table 3 for details.

Table 3. Difference in score of life quality between two groups($\bar{x} \pm s$, score)

Group	Number of cases	Before surgery	Three months after surgery	t	P
Experimental	46	63.5±5.1	72.6±4.8	8.8125	0.0000
Reference	46	64.1±5.4	61.5±5.1	2.3741	0.0197
t		0.5479	10.7494		
P		0.5851	0.0000		

4 Discussions

In China, incidence of cervical cancer shows an upward trend in the recent years, which seriously jeopardizes women's physical and mental health. For patients in early and mid stages, the main therapeutic goal is to reduce risk of tumor metastasis and prolong survival through timely and effective treatment[6]. In the past, patients with cervical cancer were usually treated with surgery combined with adjuvant chemotherapy. However, difficulty and riskiness of surgery were higher due to large tumor volume, patient's fertility requirement and poor tolerance. At present, neoadjuvant chemotherapy is widely used for treatment of cervical cancer patients. It can reduce size of tumor and downgrade stage of tumor, thereby expanding indication for surgery and striving for greater surgical radicalization opportunities for patients. Implementation of neoadjuvant chemotherapy before surgical treatment can effectively improve the degree of infiltration into parametrial tissues in patients. Some studies showed that implementation of 2–4 weeks of pre-operative neoadjuvant chemotherapy could effectively prolong survival and improve 5-year survival rate in patients with cervical cancer[6].

Drugs selected by our department for chemotherapy were paclitaxel and cisplatin. Of which, paclitaxel belongs to microtubule drug. It can accelerate

dissolution of microvascular protein and inhibit mitosis process of tumor cell, thereby it inhibits proliferation of tumor cell and promotes death of tumor cell[7, 8]. Cisplatin is a metal complex that binds to DNA base in tumor cell and inhibits DNA synthesis and repair in cancer cells[9]. When paclitaxel and cisplatin are used in combination, their respective advantages can be exerted and better tumor control effect can be achieved. In addition, combined use of the above two drugs will not give rise to drug cross-resistance. Paclitaxel can also reduce the side effects of cisplatin-based chemotherapy drugs[10]. This method is more suitable for patients with early and mid stage tumor. It has great significance for surgical treatment and retention of patient's reproductive function.

Results of this study showed that total effective rate of experimental group was significantly higher than that of reference group. Postoperative score of life quality in experimental group was also higher than that of reference group, comparison between groups showed $P<0.05$. There was no difference in incidence of adverse reaction between two groups, $P>0.05$. This indicates that this neoadjuvant chemotherapy regimen could improve efficacy and life quality of patients with early and mid stage cervical cancer, and at the same time will not significantly increase its adverse reaction.

Based on the above results, it was concluded that application of neoadjuvant chemotherapy of paclitaxel combined with cisplatin was effective for early and mid stage cervical cancer and it had lesser adverse reaction. It is a treatment regimen valuable for clinical promotion.

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