RESEARCH COMMUNICATION

Early Efficacy of Taxotere and Cisplatin Chemo-Radiotherapy for Advanced Cervical Cancer

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Abstract

The aim of this study was to investigate the early outcome of the taxotere and cisplatin chemoradiotherapy for advanced cervical cancer. Fifty-six cases (FIGO II b to IVa) were divided randomly into two groups: radiotherapy alone (28 cases) and radiation plus chemotherapy (TP) group. There was no difference in radiotherapy between the two groups. The RT+C cases who received TP regimen during the radiation, and DDP once weekly injection of vain, according to 20mg/m^2 and taxotere once weekly iv according to 35 mg/m^2. These regimens were given for 4~5weeks, and some medicines to control vomiting were available for the RT+C cases. The two groups received an oral medicine MA 160mg every day during the treatment. Regarding early outcome, the complete remission rate was 64.3% and partial remission rate was 35.7% in RT+C. The complete remission rate was 32.1% and partial remission rate was 39.3% in RT. The total response rate and complete remission in the RT+C group were higher than that in the RT group. We conclude that taxotere and cisplatin chemoradiotherapy can improve the early outcome of the advanced cervical cancer, the adverse effects being endurable.

Keywords: Cervical cancer - taxotere and cisplatin - chemoradiotherapy

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Introduction

Cervical cancer is the most common gynecologic cancer. Surgery or radiotherapy can achieve satisfactory effect for early stage cervical cancer, while in the late stage (II b-IV a period) the main treatment therapy is radiation. At present, many studies all over the world reported that radiotherapy combined with chemotherapy can improve the survival rate of patients with cervical cancer.

Concurrent chemoradiation, using cisplatin-based chemotheraphy (either cisplatin alone or cisplatin/5-fluorouracil), is the treatment of choice for stages Ib-IV a disease based on the results of 5 randomized clinical trials (Rose et al., 1999; Morris et al., 1999; Thomas, 1999; Peters et al., 2000; Green et al., 2001; Higgins et al., 2003; Lorvidhaya et al., 2003; Lu et al., 2003; Dubay et al., 2004; Eifel et al., 2004; Rose et al., 2007; Duenas-Gonzale et al., 2009). These 5 trials have shown that the use of Concurrent chemoradiation results in a 30%-50% decrease in the risk of death compared to RT alone. Although the optimal Concurrent chemotheraphy regimen to use with RT requires further investigation, these trails clearly established a role for Concurrent cisplatin-based chemoradiation. Cisplatin and taxotere are active in cervical cancer and both are able to potentiate the effects of radiotherapy. In this study we evaluated the low dose of taxotere in combination with a fixed dose of cisplatin when given weekly concurrently with pelvic radiotherapy to patients with carcinoma of the cervix uteri. To investigate the early outcome of the taxotere and cisplatin chemoradiotherapy to the advanced cervical cancer 56 patients with cervical cancer in II b-IV stage, who hospitalized in oncology unit from September 2009 to October 2010, were randomly divided into chemoradiotherapy group and radiotherapy group for comparison.

Materials and Methods

Samples

All cases were pathologically confirmed in II b-IV stage, according to FIGO staging (Rose et al., 1999) and in their initial treatment. They all had KPS ≥ 70 points. Before treatment, their blood routine, liver and kidney function and ECG were normal. These 56 patients were randomly divided into two groups: radiotherapy (RT group) 28 cases, concurrent chemoradiotherapy group (RT + C group) 28 cases in the oncology hospital of jingzhou from September 2009 to October 2010 with ethical approval.

Patients' characteristics were shown in Table 1. There is no statistically significant in the difference between the two groups on general characteristics, past history and clinical performance.

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Table 1. Characteristics of Samples

Group	Cases	Age		Pathological type		Clinical Stage			
		Range	Median	SCC	Adenocarcinoma	IIb	IIIa	IIIb	IVa
RT	28	34-65	54	20	8	6	12	6	4
RT+C	28	33-64	53	21	7	7	13	5	3

SCC, squamous cell carcinoma

Treatment

Radiotherapy: They all accepted the 15 Mv X-ray of 23-EX Varian linear accelerator and Ir 192 high dose rate brachytherapy. The treatment to the pelvic was the first. The brachytherapy and the 4 beams radiotherapy to the pelvic were fulfilled simultaneously after the center of the pelvic got 40 Gy/20f/4weeks. The brachytherapy was fulfilled once a week, which gave the A point 6 Gy, the total doses 18-30 Gy. At the same time, the 4 beams to the pelvic gave the parauterus 10-16 Gy, 2 Gy every time. And the two methods didn't happen on the same day. The upper bound of the exobody radiotherapy was L4-L5, the low upper bound was lower margin of the obturator foramen, and the outer margin was 2 cm to the real pelvic.

RT + C group began with a weekly radiation therapy used cisplatin 20mg / m^2 iv drop d1 and docetaxel 35 mg/ m^2 intravenously d1 for 4-5 weeks. Routinely antiemetic drugs and proper hydration used and oral dexamethasone used for anti-allergic reaction.

Both two groups of patients were taking megestrol acetate 160 mg everyday from the start of treatment to the end of treatment.

Observation target

The items need to be evaluated and monitored are clinical symptoms and signs, adverse reactions, blood tests every week, vaginal speculum examination once a week, electrocardiogram before and after treatment, liver and kidney function and related imaging tests before and after treatment, record tumor size (maximum diameter and the anteroposterior diameter), parametrial invasion; tumor shrinkage percentage = (volume before radiotherapy - radiotherapy volume) / volume before radiotherapy, after three months of treatment, efficacy and toxicity.

Statistics

All statistical analyses were conducted using the SPSS 13.0 statistical package for Windows. X^2 test was used to compare efficient and incidence of side effects in two groups. Statistical significance was available when the difference was $P<0.05$.

Results

Effect of treatment

According to general standard for solid tumor treatment efficacy (Sun and Zhou, 2002), the outcome of treatment divided into complete remission (CR), partial remission (PR), stable (NC) and deterioration (PD). Recent cancer treatment efficacy was shown in Table 2.

In RT group: CR 9 cases are squamous cell carcinoma, PR 11 cases are squamous cell carcinoma, NC 8 cases are adenocarcinomas; In RT + C group: CR 17 cases are squamous cell carcinoma, 1 case of adenocarcinoma. PR 4 cases are squamous cell carcinoma, 6 cases of adenocarcinoma; two groups compared, RT + C group's squamous cell carcinoma CR rate was significantly higher than that of RT group, the difference was statistically significant ($X^2 = 5.71>3.84$, $P<0.05$); RT + C group's Adenocarcinoma effective rate (CR + PR) was significantly higher than the RT group, the difference was statistically significant ($X^2=15>3.84$ $P<0.05$).

Table 2. Comparison of Treatment Effect

Group	number	CR	PR	NC	PD
RT	28	9(32.1%)	11(39.3%)	8(28.6%)	0
RT+C	28	18(64.3%)	10(35.7%)	0	0

$X^2=9.33>3.84$ $P<0.05$ ($P=0.025$)

Acute toxicity

(1) Mainly reaction are fatigue, loss of appetite, stool frequency increased. Few cases have nausea, vomiting, stool sense of falling, urinary urgency, frequent urination. (2) hematological toxicity: according to common grading criteria of anticancer drugs toxicity (Wang, 2002). RT group has 8 patients with grade I myelosuppression and no grade II, III degree, IV myelosuppression. RT + C group has 14 cases with grade I myelosuppression, 7 cases with grade II myelosuppression, 2 cases with grade III myelosuppression and no grade IV myelosuppression, ($X^2=16.29>3.84$, $P<0.05$). Subcutaneous injections of recombinant human granulocyte colony stimulating factor were given for grade I, II, III myelosuppression. Before and after treatment, patients within both two groups have their liver and renal function, ECG normal.

Discussion

Cervical cancer is one of the common gynecologic malignancies. It is a very important issue in gynecology. Radiation therapy is an effective choice for advanced cervical cancer treatment, but radiotherapy effect itself is not satisfactory, therefore, the US. National Cancer Institute (NCI) in February 1999 announced to the world, that the combination of radiotherapy and chemotherapy treatment at the same time in advanced cervical cancer have good effect and suggested for patients who received radiotherapy, chemotherapy should be given the same time (Peters et al., 2000). Recent studies confirmed that concurrent radiotherapy and chemotherapy in advanced cervical cancer is safe and feasible, have good effect.

Chemotherapy drug cisplatin is not only has the ability to kill tumor cells, but also can sensitize the effect of radiation and inhibit the repair of radiation damaging cells. The American National Cancer Institute stated cisplatin-based concurrent chemoradiotherapy as the

standard treatment for locally advanced cervical cancer and early stage high-risk cervical cancer (Morris et al., 1999). Pingnata et al. (2000) used paclitaxel and cisplatin with concurrent chemoradiotherapy achieved initial results. Docetaxel and cisplatin used with concurrent chemoradiotherapy in this study get more effective sensitized, the reason is the radiotherapy major role in the G1, M phase, while the chemotherapy drug cisplatin is non-specific drugs for cell cycle, which could kill cells in all stages, specific drugs Taxotere major role in the M phase, these three have synergistic effect. Two groups have radiation in the same manner. RT + C group had the recent efficacy rate at 100.0%, RT group was 71.4%. Specially in CR cases, RT + C had 18 patients, RT group had 9 patients with significant difference (X^2=9.33>3.84, P <0.05). Compared the two groups, RT + C group was significantly higher at squamous cell carcinoma CR than that of RT group, the difference was statistically significant (X^2=5.71>3.84, P <0.05); RT + C group for adenocarcinoma effective (CR + PR) was significantly higher than RT group, the difference was statistically significant (X^2=15>3.84, P<0.05)

Paclitaxel and cisplatin used in concurrent chemoradiation for cervical squamous cell carcinoma and adenocarcinoma were increased efficacy, particularly more pronounced sensitizing effect of cancer, but in this study a small number of cases with adenocarcinoma may make the limitation. Study on large number of cases still needs to be done. Toxicity compared two groups: the recent reaction of fatigue, loss of appetite, RT + C group emphasis without statistically significant, which did not affect the treatment. Hematological toxicity: the incidence in RT + C group was 82.1%, gradeI, grade II and grade III myelosuppression required recombinant human granulocyte colony stimulating factor treatment, but no grade IV myelosuppression; RT group had light hematologic toxicity, the incidence was 28.6% with grade I myelosuppression. Compared two groups, the difference between incidence was statistically significant (X^2=16.29>3.84, P<0.05). The toxicity in two groups could be tolerated, which may be related to taking progesterone. Research has shown that megestrol acetate significantly assisted the role of cancer chemotherapy to increase food taken, reduce gastrointestinal side effects of chemotherapy, improve the role of quality of life (Bai and Zhao, 2001). This study shows that docetaxel and cisplatin in concurrent chemoradiotherapy in advanced cervical cancer has a good short-term effect, but also increased the toxicity, but it can be tolerated after taking megestrol acetate. The sample size in this study is small with a short time follow up. The long-term effect needs further observation.

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