Clinical Application and Curative Effect of Preoperative Neoadjuvant Radiotherapy for Cervical Cancer in IB2-IIB Stage

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Abstract: Preoperative treatment with californium (Cf252) neutron intracavity and afterloading radiotherapy for patients withIB2-IIB. stage cervical cancer can effectively reduce intraoperative bleeding and reduce the risk of postoperative local invasion and lymph node metastasis. The incidence of complications was not increased, and the value was superior to that of simple operation. In general, neoadjuvant therapy can cause a significant reduction in tumor volume and the side effects are within acceptable range. Compared with direct surgery and radical operation after neoadjuvant radiotherapy, neoadjuvant chemotherapy via vein and artery can significantly reduce the proportion of high risk postoperative patients and patients who need adjuvant treatment. The ratio of However, in this study, all neoadjuvant therapies can not significantly improve the survival and prognosis of patients with cervical cancer.

1. Introduction

Objective to investigate the effect of simple operation and intracavitary afterloading radiotherapy on preoperative adjuvant treatment of cervical cancer ofIB2-IIB, and to evaluate the clinical indexes of two different regimens in perioperative stage of cervical cancer withIB2-IIB. The influence of survival time and postoperative complications. Methods A total of 40 patients withIB2-IIB. cervical cancer from January 2014 to May 2015 were randomly divided into two groups: group A (20 patients with), B). Preoperative adjuvant treatment of stageIB2-IIB. cervical cancer by intracavitary afterloading radiotherapy the operative time, intraoperative bleeding, hospital stay and postoperative complications were compared between the two groups. Results there was significant difference between group A and group B ($P < 0.05$), but there was no significant difference in operation time and hospital stay between two groups. The vascular invasion rate, deep muscle invasion rate and lymph node positive rate in group B were significantly lower than those in group A ($P < 0.05$), but there was no significant difference in the incidence of postoperative complications between the two groups. Conclusion intracavitary afterloading radiotherapy for cervical cancer inIB2-IIB. stage. The preoperative adjuvant therapy for cervical cancer can effectively reduce the amount of intraoperative bleeding, reduce the risk of local invasion and lymph node metastasis, and do not increase the incidence of complications.

Cervical cancer is one of the most common malignant tumors in female genital tract. The incidence of cervical cancer is second only to breast cancer among women in the world. At the same time, cervical cancer occupies the second place in the cause of death related to malignant tumor in women in the world. Although there are many early screening methods for cervical cancer, cervical cancer is still a major threat to the lives and health of women in developing countries [2]. The prevalence of cervical cancer in developed countries has led to a gradual decline in the incidence and mortality of cervical cancer; in contrast, cervical cancer continues to be high in developing countries due to a lack of medical resources, and most of the patients are found at the time of visit Local late stage. According to the World Health Organization (World Health Organization,WHO), nearly half a million new cervical cancer patients worldwide died in 2005, and nearly 260000 died of cervical cancer, nearly 95 percent of whom came from developing countries. In China, the number of new cervical cancer cases is about 130000 per year, which accounts for 1/3 per year in the world. The surgical treatment of early cervical cancer is similar to that of radical radiotherapy alone, and good results can be obtained. According to the recent annual report of the International

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Federation of Obstetrics and Gynecology, stageIB2-IIB. cervical cancer patients have more local and distant recurrence than other cervical cancer patients in earlier stage, and the survival and prognosis of cervical cancer patients with stageIB2-IIB. are worse than that of other cervical cancer patients. This paper is devoted to the application of californium (Cf252) neutrons as a new radioactive source to the study of intracavitary reloading radiotherapy as an adjuvant treatment for cervical cancer stageIB2-IIB., and to find out the best method for the treatment of stage IB2-IIB. cervical cancer. The report is as follows.

2. Data and Methods

General data: 40 cases of cervical cancer in stageIB2-IIB. (January 2014 to May 2015) were randomly selected in our hospital. Californium (Cf252) neutron intracavity afterloading radiotherapy was used as a group, 20 cases of experimental group were treated with B group.

The inclusion criteria of this study were as follows: histologically diagnosed cervical cancer, including luteal cell carcinoma, adenocarcinoma and adenocarcinoma, clinical stage IB2-IIB, age 40 ~ 60 years old; ECOG score: 1, diameter of cervical cancer focus of pelvic nuclear magnetic resonance > 4 cm,. (body test score: liver and kidney function was normal, total bilirubin of serum transoxygenase, muscle urea nitrogen, bone marrow function were normal; Neutrophils count and platelets are normal.

Exclusion criteria are as follows: previous history of radiotherapy or chemotherapy; history of oncology; pregnancy; mental disorders. Before entering the group, the patient should undergo general physical examination, gynecologic examination, pathological section consultation, blood routine, blood biochemistry examination, pelvic and abdominal magnetic resonance imaging or chest radiography. Cystoscopy and colonoscopy may be performed on patients with suspected involvement of the bladder and rectum. The research project was approved by the third affiliated Hospital Ethics Committee of Qiqihar Medical College. All patients signed informed consent before entering the study.

Treatment methods:

The patients in group A were treated with simple operation and pelvic lymph node dissection with extensive hysterectomy (or appendage) without adjuvant radiotherapy and chemotherapy before operation. The patients in group B were treated with preoperative neoadjuvant radiotherapy, that is, the patients were treated with californium (Cf252) neutron intracavity reloading radiotherapy once a week, three times a week, if they were younger than 45 years old, and the patients in group B were treated with preoperative neoadjuvant radiotherapy. After radiotherapy, the patients were treated with radical cervical cancer surgery after 3 weeks' rest, and the patients with cervical cancer were treated with radical cervical cancer surgery after 1 week of radiotherapy and evaluation of their body function. The operation was the same as that of group A.

Observation measures: the operative time, intraoperative blood loss and hospital stay were recorded and the mean value was calculated. The number of vascular invasion, nerve invasion, deep muscle invasion and lymph node positive cases were recorded and the percentage was calculated. The incidence of postoperative complications including urinary retention lymphedema ureteral injury hydronephrosis vaginal stump infection and ureterovaginal fistula were recorded. The radiation injury was observed and recorded.

Statistical methods: the data were analyzed by SPSS 20.0 software, in which the measurement data were analyzed by ANOVA, and the pairwise comparison was performed by SNK test (mean ±standard deviation). The count data were expressed as percentage (%) by χ^2 test or exact probability method, and the difference was statistically significant ($P < 0.05$). Using χ^2 test, the difference was statistically significant ($P < 0.05$).

3. Result

Comparison of perioperative clinical indexes between the two groups: the volume of intraoperative bleeding in group B was significantly less than that in group A, and the difference

between the two groups was statistically significant, and there was no significant difference in the operative time and hospital stay between the two groups.See table 1

Table 1. Comparison of perioperative clinical indexes between two groups

group	Number of examples	Operative time (min)	Intraoperative bleeding volume (ml)	Length of stay (d)
Control group (A)	20	266±13	665±63	14.1±2.3
Control group (B)	20	266±10	460±65	13.4±2.2
p		>0.05	<0.05	

The changes of tumor size before and after radiotherapy in the experimental group: the mean diameter of tumor before and after radiotherapy in the experimental group was 45.98 (S = 612) mm,. The mean diameter of tumor was 18.5 (S = 9.12) mm, before and after radiotherapy ($P < 0.001$). The results suggest that the difference of tumor size before and after radiotherapy is statistically significant.

Radiotherapy injury: most patients feel abdominal distension and urine discomfort during treatment without special treatment. Acute radiation injury was mainly caused by bone marrow suppression, radiocolitis, cystitis, gradeIbone marrow suppression in 2 cases (10%), gradeIbone marrow suppression in 1 case (5%), grade I radiation proctitis 1 case.Cases (5%) and 2 cases (10%) of grade I radiocystitis. All cases were followed up until 2015.In July, no serious radiation damage occurred in grade III and IV.

The vascular invasion rate, nerve invasion rate and deep muscle infiltration rate in group B were significantly lower than those in group A, and the positive rates of vascular invasion, deep muscle invasion and nerve invasion in group B were significantly lower than those in group A. The difference between groups was statistically significant ($P < 0.05$), as shown in Table 2.

Table 2. Comparison of positive rate of invasive tissue between the two groups

group	Number of examples	Vascular invasion rate (%)	Rate of nerve invasion (%)	Infiltration rate of deep muscle layer (%)
Control group (A)	20	8（40）	12（60）	10（50）
Control group (B)	20	8（40）	3（15）	1（5）
p		<0.05	<0.05	<0.05

Comparison of the incidence of postoperative complications between the two groups: the incidence of postoperative complications such as urinary retention, lymphedema, ureteral injury, hydronephrosis, guided stump infection, ureterovaginal leakage and other complications were compared between the two groups. The difference was not statistically significant ($P > 0.05$).

4. Discussion

The study shows that [6] for patients with cervical cancer inIB2-IIB. stage, high-dose radiotherapy can effectively prolong the survival time, but may be complicated with perineal edema, radioproctitis and cystitis, which seriously affect the quality of life; The follow-up intravenous chemotherapy has been proved that the total survival time and no progress of survival time has not been significantly improved, and ovarian, vaginal function loss risk, can not meet the clinical needs [7]. Simple radical cervical cancer surgery can preserve ovarian and vaginal function, but the tumor is too large and adjacent to the surrounding organs, so it is difficult to effectively control the amount of blood loss during the operation, positive incision margin after surgery, medical sources. Perisexual organ and tissue injury rate is higher, prone to local infiltration.

In recent years, a large number of studies have shown that preoperative neoadjuvant chemotherapy and radiotherapy, although controversial in improving the long-term survival rate of cervical cancer, can reduce tumor load and improve the rate of pathological remission. The advantages of avoiding local recurrence and surgical complications have been widely recognized. At the same time, the ovarian and vaginal functions of some patients can also be preserved, which is

helpful to improve the quality of daily life and improve the treatment compliance. After brachytherapy, there is no serious complication of radiotherapy in patients with 2IB-IIB. cervical cancer. It was found that the amount of intraoperative bleeding in group B was significantly lower than that in group A (P < 0. 05), which can effectively reduce the amount of intraoperative bleeding, reduce the degree of iatrogenic injury, and have no adverse effect on the operation and postoperative rehabilitation process. There was no significant difference in operation time and hospital stay between the two groups.

The vascular invasion rate, deep muscle invasion rate and lymph node positive rate in group B were significantly lower than those in group A (P < 0. 05). It was confirmed that preoperative intracavitary radiotherapy with californium (Cf252) was helpful to reduce the risk of tumor invasion and metastasis in patients with cervical cancer inIB2-IIB. stage. However, there was no significant difference in the rate of postoperative nerve invasion between the two groups. The author thinks that this may be related to the small sample size.

In this study, there was no significant difference in the incidence of postoperative complications among the three groups, suggesting that the risk of postoperative complications of the three treatment regimens for IB2-IIB cervical cancer was close. No serious complications occurred, and the safety was in line with the clinical needs. Preoperative neoadjuvant radiotherapy has been considered to be helpful in reducing the incidence of surgical complications in patients with cervical cancer [9]. This study is not consistent with this, I think it may be related to clinical stage, age, The dosage of chemotherapy and the insufficient sample size are related, and need to be confirmed in larger clinical studies.

To sum up, preoperative treatment with californium (Cf252) neutron intracavity and afterloading radiotherapy for patients withIB2-IIB. stage cervical cancer can effectively reduce intraoperative bleeding and reduce the risk of postoperative local invasion and lymph node metastasis. The incidence of complications was not increased, and the value was superior to that of simple operation. In general, neoadjuvant therapy can cause a significant reduction in tumor volume and the side effects are within acceptable range. Compared with direct surgery and radical operation after neoadjuvant radiotherapy, neoadjuvant chemotherapy via vein and artery can significantly reduce the proportion of high risk postoperative patients and patients who need adjuvant treatment. The ratio of However, in this study, all neoadjuvant therapies can not significantly improve the survival and prognosis of patients with cervical cancer.

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References

[1] Hosaka M, Watari H, Kato T, et al. Clinical efficacy of paclitaxel /cisplatin as an adjuvant chemotherapy for patients with cervicalcancer who underwent radical hysterectomy and systematic lymphadenectomy. J Surg Oncol, 2012, 105: 612-616.

[2] Yu C X, Tang G. Intensity-modulated arc therapy: Principles, technologiesand clinical implementation. Phys Med Biol, 2011, 56:R31-54.

[3] Zhao Y B, Wang J H, Chen XX, et al. Values of three differentpreoperative regimens in comprehensive treatment for young patientswith stage Ib2 cervical cancer. Asian Pac J Cancer Prev, 2012, 13:1487-1489.

[4] Mazeron R, Kamsu Kom L, Rivin del Campo E, et al.Comparisonbetween the ICRU rectal point and modern volumetric parameters inbrachytherapy for locally advanced cervical cancer. Cancer Radiother, 2014, 18: 177-182.

[5] Fu J H,Gao Z, Ren C C,et al.Comparison of Clinical Efficacy of Three Different Neoadjuvant Approaches(Chemotherapy Combined Vaginal Intracavitary Irradiation, Neoadjuvant Chemotherapy Aloneor Radiotherapy) Combined with Surgery for Patients with Stage Ib2and IIa2 Cervical Cancer. Asian Pacific J Cancer Prevention, 2013, 14: 2377-2381.

[6] Vizza E, Corrado G,Zanagnolo V,et al.Neoadjuvant chemotherapy followed by robotic radical hysterectomy in locally advanced cervicalcancer: a multi-institution study.Gynecol Oncol,2014,133:180-185.

[7] He L, Wu L, Su G, et al. The efficacy of neoadjuvant chemotherapyin different histological types of cervical cancer. Gynecol Oncol, 2014, 134: 419-425.

[8] Feng S, Wu Y M, Kong W M, et al.Clinical comparative analysis of intracavitary radiotherapy combined with surgery and simple surgical treatment for cervical cancer in stage b2-a. [J] .Chinese Cancer Clinical, 2008 ~ 35 (14):797-800.