CLINICAL OBSERVATION ON PROGNOSIS SURVIVAL RATE AND SIDE EFFECTS OF SEQUENTIAL RADIOTHERAPY AND CHEMOTHERAPY IN PATIENTS WITH STAGE II-III GASTRIC CANCER

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ABSTRACT

Objective: *To investigate the prognosis survival rate of patients with stage II - III gastric cancer treated by sequential radiotherapy and chemotherapy, and the clinical observation of the side effects of radiotherapy and chemotherapy.*

Methods: *A total of 126 patients with stage II - III gastric cancer from April 2014 to August 2016 were randomly selected and randomly divided into a study group and control group according to the random number table method, with 63 patients in each group. The patients in the study group were treated with sequential radiotherapy (chemotherapy radiotherapy chemotherapy), whereas the patients in the control group were treated with simple chemotherapy. The clinical data, recurrence rate, distant metastasis rate, prognosis survival rate and the occurrence of side effects were compared between the study group and the control group.*

Results: *there was no significant difference in age, gender, TNM stage and differentiation between the study group and the control group (P>0.05). Compared with the control group, the recurrence rate of patients in the study group was significantly lower, the overall prognostic survival rate was significantly higher (P < 0.05) and the distant metastasis rate had no significant difference (P>0.05). There was no significant difference between the two groups (P > 0.05). The overall prognosis survival rate was significantly higher in the study group than in the control group. Compared with the control group, the patients in the study group had decreased nausea, vomiting, oral mucositis, appetite decline, leucopoenia, thrombocytopenia, etc., but there was no significant difference between the two groups (P>0.05). The incidence of liver and kidney dysfunction and diarrhoea in the study group was significantly lower than that in the control group (P<0.05).*

Conclusion: *The prognosis survival rate of patients with stage II-III gastric cancer undergoing sequential chemoradiotherapy is significantly higher than that of chemotherapy alone. However, in terms of the toxic and side effects of radiochemotherapy, sequential radiochemotherapy is safer.*

Keywords: *Stage II-III, gastric cancer, sequential chemoradiotherapy, prognostic survival rate, toxic and side effects.*

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Introduction

Gastric cancer is the main cause of death worldwide and the fourth most common malignant tumour in the world. According to statistics, there are more than 400,000 new cases of gastric cancer every year in China, and more than 300,000 patients die of gastric cancer every year, which has a serious impact on their families and society[1]. According to relevant statistics, gastric cancer has a certain family tendency, and the closer the blood relationship, the higher the incidence of gastric cancer. In addition, the occurrence of gastric cancer is closely related to bad eating habits, smoking, drinking and negative psychological emotions[2]. Surgical resection is the main method for curing gastric cancer patients. However, due to the lack of specific clinical symptoms and signs in the early stage of gastric cancer, most are in the middle and late stage at the time of diagnosis and miss the best treatment time. The prognosis of gastric cancer patients is generally poor, and the 5-year survival rate is low[3]. At present, the treatment of advanced gastric cancer is mainly radiotherapy and chemotherapy. In this study, 126 patients with stage

II- III gastric cancer admitted to our hospital from April 2014 to August 2016 were selected to explore the effect of radiotherapy and chemotherapy on the survival rate of prognosis and the incidence of side effects in stage II- III gastric cancer patients.

Materials and methods

General information

From April 2014 to August 2016, 126 patients with stage II- III gastric cancer in our hospital were randomly selected and randomly divided into the study group and control group according to the random number table method, with 63 patients in each group. There were 94 males and 32 females, aged 35-72 years, with an average age of 55.44±5.71 years.

Admission criteria were as follows:

• All patients met the diagnostic criteria for gastric cancer formulated by the National Health and Family Planning Commission of the People's Republic of China, and were confirmed by the hospital's laboratory pathological examination[4];

• All patients were stage II- III according to TNM stage;

• This study was approved by the hospital's ethics committee;

• All patients and their families were informed and signed the informed consent form; the score of the Eastern Cooperative Oncology Group (ECoG) was no more than 2 points.

Exclusion criteria were as follows:

• Patients have a history of severe mental illness and cannot cooperate with treatment;

• Patients with infectious diseases;

• Patients with liver and kidney function and heart dysfunction;

• Allergic to chemotherapy drugs;

• Pregnant or lactating patients.

Method

During the treatment, the patients were given acid suppression, stomach protection and leukocyte promotion therapy, and blood routine, liver function and kidney function were checked weekly.

Study Group

Patients in the study group were treated with sequential radiotherapy (chemotherapy radiotherapy chemotherapy). Patients began postoperative adjuvant chemotherapy approximately three weeks after operation, followed by two cycles of intravenous chemotherapy, and two weeks later started local radiotherapy (patients were in a supine position after 8 hours of fasting and drinking prohibition, hands crossed and palms facing down, the ulnar edge of the little finger was close to the eyebrow arch, and the position was fixed with a vacuum fixed bag; according to the marked position, the area needed to be irradiated was irradiated). After radiotherapy, the patients continued to take four cycles of chemotherapy in the original plan.

Control group

Patients in the control group were treated with simple therapy. Approximately three weeks after the operation, patients began to receive postoperative adjuvant chemotherapy, and directly received eight cycles of intravenous chemotherapy [oxaliplatin (Zhejiang Haizheng Pharmaceutical Co., Ltd., production batch number: 20173487, specification: 50mg/s), 130mg/ m2 was added into 500ml of 5% glucose for dilution+fluorouracil (shanghaixu donghaipu Pharmaceutical Co., Ltd., production batch number: 31160593, specification: 10ml:0.25g) 300mg/m^2, Continuous administration of 24h + calcium folinate (Jiangsu Hengrui Pharmaceutical Co., Ltd., production batch No.: 20160584, specification: 10ml:0.1g) 300mg/m^2 was added into 250ml normal saline for dilution] and repeated every two weeks.

Observation indicators

The clinical data of the patients in the study group and the control group were compared, including sex, age, TNM stage, differentiation degree and tumour location.

Recurrence rate and distant metastasis rate

Follow up was conducted by telephone and outpatient re-examination. The follow-up time was 36 months after the end of treatment, and the difference of recurrence rate and distant metastasis rate between the study group and the control group was compared. The recurrence of anastomotic stoma, meal position and regional lymph nodes was regarded as the standard of local recurrence. Non regional lymph node metastasis, touch metastasis and liver metastasis were considered as distant metastasis.

Prognosis survival rate

The Kaplan Meier survival curve was used to compare the changes of survival rate between the two groups of patients with abnormal or normal serum carcinoembryonic antigen (CEA) or carbohydrate antigen 125 (CA125), and the changes of prog-

nosis survival rate between the study group and the control group.

Toxic and side effects

The study found that the main side effects of the patients were nausea, vomiting, liver and kidney dysfunction, oral mucositis, appetite decline, leucopoenia, thrombocytopenia, diarrhoea and so on. The two groups were compared for toxic and side effects.

Statistical methods

In this study, the measurement data were compared by independent sample t-test ($\bar{x}\pm s$). A χ^2 test was used to compare the counting data, and a Kaplan Meier survival curve was used to compare the change of survival rate between the study group and the control group. If the experimental result is $P<0.05$, then there is statistical significance. SPSS18.0 software package was used for statistical data analysis.

Results

Comparison of clinical data between study group and control group

There was no significant difference between the two groups ($P>0.05$). The patients were mainly male, aged over 50 years old, TNM stage III, low differentiation and tumour site distal; see Table 1.

Group		Cases (n)	Study group (n=63)	Control group (n=63)	χ^2	*P*
Gender	Male	94	48 (76.19)	46 (73.02)	0.168	0.683
	Female	32	15 (23.81)	17 (26.98)		
Age (years)	>50	38	43 (68.25)	45 (71.43)	0.151	0.698
	≤50	88	20 (31.75)	18 (28.57)		
TNM stages	II stage	25	11 (17.46)	14 (22.22)	0.143	0.986
	IIIa stage	15	7 (11.11)	8 (12.69)		
	IIIb stage	40	19 (30.16)	21 (33.33)		
	IIIc stage	59	26 (41.27)	33 (52.38)		
Distant metastasis	Yes	27	16 (25.39)	11 (17.46)	1.179	0.278
	No	99	47 (74.61)	52 (82.54)		
Degree of differentiation	High	7	4 (6.35)	3 (4.76)	1.663	0.435
	Middle	40	23 (36.51)	17 (26.98)		
	Low	79	36 (57.14)	43 (68.25)		
Tumour size (cm)	>5	51	28 (44.44)	23 (36.51)	0.824	0.364
	≤5	75	35 (55.56)	40 (63.49)		
Tumour site	Distant	60	33 (52.38)	27 (42.86)	3.201	0.202
	Gastric body	19	6 (9.52)	13 (20.63)		
	Near	47	24 (38.09)	23 (36.51)		

Table 1: Comparison of clinical data between the two groups cases (%).

Comparison of recurrence rate and distant metastasis rate between study group and control group

Compared with the control group, the recurrence rate of the study group was significantly lower ($P<0.05$), but the distant metastasis rate of the two groups had no significant difference ($P>0.05$); see Table 2.

Group	Cases (n)	Recurrence rate	Distant metastasis rate
Study group	63	8(12.69)	23(36.51)
Control group	63	18(28.57)	30(47.62)
χ^2		4.846	0.207
P		0.028	0.649

Table 2: Comparison of recurrence rate and distant metastasis rate between study group and control group cases (%).

Change of prognosis survival rate in patients with abnormal or normal CEA or CA125

According to the Kaplan Meier survival curve, the survival rate of patients with abnormal CEA or/and CA125 in the study group was significantly higher than that in the control group ($P<0.05$), whereas the survival rate of patients with normal CEA and CA125 had no significant difference ($P>0.05$); see Figure 1.

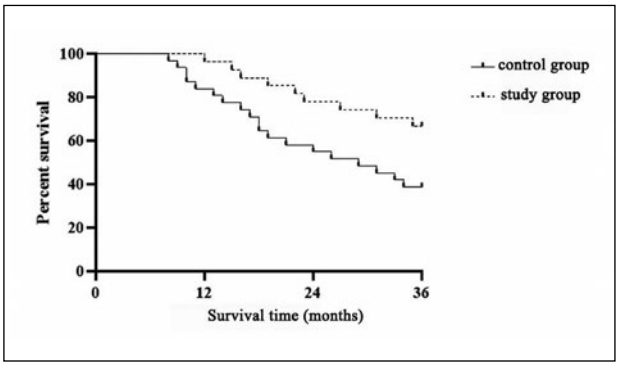

Figure 1: Change of prognosis survival rate in patients with CEA or/and CA125 abnormalities.

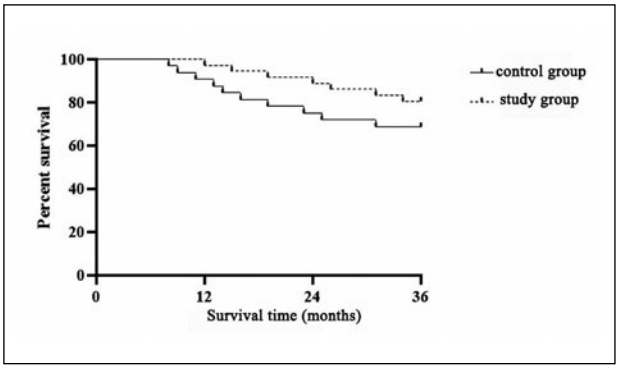

Figure 2: Change of prognosis survival rate in patients with normal CEA and CA125.

Changes of the overall prognosis survival rate in the study group and the control group

According to the Kaplan Meier survival curve, the survival rate in the study group was significantly higher than that in the control group (P<0.05); see Figure 3.

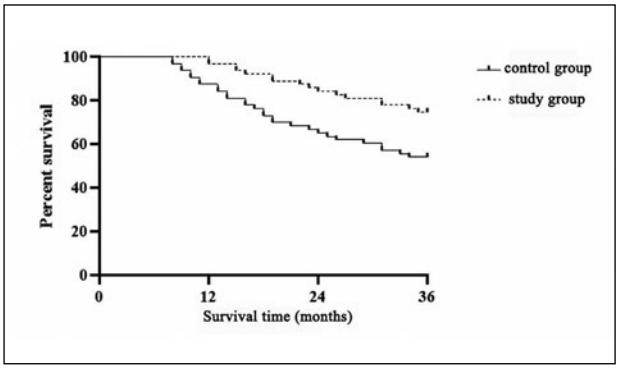

Figure 3: Changes of prognosis survival rate of patients in the study group and control group.

Comparison of side effects between the study group and the control group

Compared with the control group, the incidence of nausea, vomiting, stomatitis, appetite decline, leukopenia and thrombocytopenia in the study group were decreased, but there was no significant difference between the two groups (P>0.05); the incidence of liver and kidney dysfunction and diarrhoea in the study group was significantly lower than that in the control group (P<0.05). See Table 3.

group	Study group (n=63)	Control group (n=63)	χ^2	*P*
Diarrhoea, nausea and vomiting	9 (14.29)	14 (22.22)	1.329	0.249
Abnormal function of liver and kidney	1 (1.59)	8 (12.69)	5.863	0.015
Stomatitis	2 (3.17)	7 (11.11)	2.992	0.084
Decreased appetite	3 (4.76)	9 (14.29)	3.316	0.069
Leukopenia	9 (14.29)	15 (23.81)	1.853	0.173
Thrombocytopenia	1 (1.59)	4 (6.35)	1.874	0.171
Diarrhoea	3 (4.76)	11 (17.46)	5.143	0.023

Table 3: Comparison of toxic and side effects in the study group and control group cases (%).

Discussion

Gastric cancer is one of the most common malignant tumours in the digestive system, and its mortality rate is second only to lung cancer. The early diagnosis rate of gastric cancer is low, and the 5-year survival rate is not optimistic. It is approximately 30% in urban areas but only 20% in rural areas, which has a serious impact on patients and families[5]. At present, the main method for the treatment of gastric cancer is surgical treatment, but with the continuous development of medical science and technology, and the continuous optimisation and improvement of surgical treatment methods, the survival rate of patients has improved to a certain extent. However, the 5-year survival rate of patients is still unsatisfactory, especially for patients in the progress period or accompanied by lymph node metastasis[6]. Some studies have found that local recurrence is the main reason for the failure of surgical treatment, up to 85% in all cases, and local recurrence is directly related to the depth of primary tumour infiltrating the gastric wall and regional lymph node invasion. Therefore, patients require comprehensive auxiliary treatment in addition to surgical treatment so that they can obtain longer-term survival[7-8].

In recent years, adjuvant therapy and new adjuvant therapy have been implemented in the treatment of gastric cancer. It has been confirmed that the survival rate of adjuvant therapy is significantly higher than that of simple surgery. At the same time, postoperative adjuvant therapy can significantly improve the clinical efficacy of patients and reduce the recurrence rate[9]. The purpose of this study was to explore the changes in prognosis survival rate, toxicity and side effects in patients with stage II- III gastric cancer.

In recent years, tumour markers have been widely used in clinical trials, and the baseline level of tumour markers is considered to be an important factor for prognosis[10]. Some studies have shown that CEA and CA125 are widely used to judge the prognosis and recurrence risk of gastric cancer, and the abnormal indicators may be closely related to the extent of tumour invasion of the gastric wall and the degree of infiltration of histological lymph nodes[11]. CEA is a broad-spectrum serum marker which belongs to a non-organ specific tumour related antigen. It was originally extracted from the colon gland and foetal intestine and expressed in colorectal cancer, pancreatic cancer, non-small cell lung cancer, etc. It is one of the internationally recognised tumour markers and the most widely used marker in gastrointestinal cancer[12]. Some studies have suggested that CEA is regulated by genes related to embryonic cells. When some genes of malignant tumour cells are damaged, the serum CEA level of patients increases significantly. However, high level CEA may damage the integrity of epithelial tissue, reduce the adhesion between cells, and promote tumour in-

vasion and metastasis[13]. CA125 is a glycoprotein related tumour antigen, mainly distributed on the surface of mesothelial tissue cells such as pleura, pericardium and peritoneum. It has been found that the level of CA125 in gastrointestinal cancer, chronic hepatitis and other diseases has increased to varying degrees, and it is a sensitive index to detect the degree of peritoneal metastasis of gastric cancer[14]. Tas et al.[15] discovered that the decrease of CA125 level after chemotherapy was significantly related to the decrease of ascites and the prolongation of the overall survival rate.

The results of this study showed that the recurrence rate and distant metastasis rate in the study group were significantly lower than those in the control group, and the overall survival rate was significantly higher than that in the control group ($P<0.05$). In addition, the prognosis survival rate in the study group was significantly higher than that in the control group ($P<0.05$). There was no significant difference in nausea, vomiting, leucopoenia and other side effects between the two groups ($P>0.05$); the incidence of liver and kidney dysfunction and diarrhoea in the study group was significantly lower than that of the control group ($P<0.05$).

In conclusion, the survival rate of patients with stage II- III gastric cancer after sequential radiotherapy and chemotherapy is significantly higher than after chemotherapy alone, and the safety of sequential radiotherapy and chemotherapy is higher than the toxicity and side effects of radiotherapy and chemotherapy.

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