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WJGO mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal oncology and covering a wide range of topics including liver cell adenoma, gastric neoplasms, appendiceal neoplasms, biliary tract neoplasms, hepatocellular carcinoma, pancreatic carcinoma, cecal neoplasms, colonic neoplasms, colorectal neoplasms, duodenal neoplasms, esophageal neoplasms, gallbladder neoplasms, *etc*.

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ORIGINAL ARTICLE

Retrospective Study

Short-term efficacy and influencing factors of conventional chemotherapy combined with irinotecan in patients with advanced gastric cancer

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Abstract

BACKGROUND

Gastric cancer is one of the most common cancers worldwide, with a 5-year survival rate of only 20%. The age of onset of gastric cancer is in line with the general rule of cancer. Most of them occur after middle age, mostly between 40 and 60 years old, with an average age of about 50 years old, and only 5% of patients are under 30 years old. The incidence of male is higher than that of female.

AIM

To investigate the short-term efficacy and influencing factors of chemotherapy combined with irinotecan in patients with advanced gastric cancer.

METHODS

Eighty patients with advanced gastric cancer who were treated in our hospital from January 2019 to January 2022 were selected. The patients were divided into an observation group (n = 40) and control group (n = 40) by the envelope method. The control group was given preoperative routine chemotherapy. The observation group was treated with irinotecan in addition to the chemotherapy given to the control group. The short-term efficacy of treatment in the two groups, as well as tumor marker levels and quality of life before and after treatment were evaluated.

RESULTS

The short-term treatment effect in the observation group was better than that in the control group (P < 0.05), and the total effective rate was 57.50%. The age and proportion of tumor node metastasis (TNM) stage IV patients with ineffective chemotherapy in the observation group were (65.12 ± 5.71) years and 52.94%, respectively, which were notably higher than those of patients with effective chemotherapy (P < 0.05), while the Karnofsky Performance Scale score was (67.70

± 3.83) points, which was apparently lower than that of patients with effective chemotherapy (P < 0.05). After 3 mo of treatment, the SF-36 scale scores of physiological function, energy, emotional function, and mental health in the observation group were 65.12 ± 8.14, 54.76 ± 6.70, 47.58 ± 7.22, and 66.16 ± 8.11 points, respectively, which were considerably higher than those in the control group (P < 0.05). The incidence rates of grade III-IV diarrhea and grade III-IV thrombocytopenia in the observation group were 32.50% and 25.00%, respectively, which were markedly higher than those in the control group (P < 0.05).

CONCLUSION

Chemotherapy combined with irinotecan in patients with advanced gastric cancer has a good short-term efficacy and can significantly reduce serum tumor markers and improve the quality of life of patients. The efficacy may be affected by the age and TNM stage of the patients, and its long-term efficacy needs further study.

Key Words: Advanced gastric cancer; Conventional chemotherapy; Irinotecan; Efficacy; Quality of life

Core Tip: Gastric cancer is a malignant tumor of gastric mucosal epithelial cells with early symptoms not obvious, and most patients are advanced at the stage of diagnosis. Surgery, radiotherapy, and chemotherapy are often used in clinical treatment. Although chemotherapy is one of the main treatment options, there is no unified or standardized treatment method; therefore, it is particularly important to determine the effective treatment options for patients with advanced gastric cancer. This study explores the short-term efficacy and influencing factors of irinotecan combined with oxaliplatin and fluorouracil in patients with advanced gastric cancer.

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INTRODUCTION

Gastric cancer is a malignant tumor of the gastric mucosal epithelium. Due to the insidious onset of gastric cancer, the early symptoms are not obvious. The main manifestations are abdominal pain and weight loss, and most patients are already in the advanced stage at the time of diagnosis. At that stage, cancer tissue can infiltrate into the submucosa or muscular layer and even pass through the muscular layer to the serosa. Surgery, radiotherapy, and chemotherapy are often used for clinical treatment[1,2]. Although chemotherapy is one of the main treatment options, there is no unified or standardized treatment; therefore, the identification of effective treatment options for patients with advanced gastric cancer is particularly important[3,4]. The conventional chemotherapy regimen consists of oxaliplatin combined with fluorouracil, where oxaliplatin is an anticancer drug with cytotoxic effects. Fluorouracil is a component of ribonucleic acid, which can play an anti-metabolite role[5,6]. However, studies have shown that treatment with only oxaliplatin combined with fluorouracil is not very effective in advanced gastric cancer[7]. Irinotecan is a semi-synthetic derivative of camptothecin and an S-phase cell cycle-specific antitumor drug that inhibits cancer cell proliferation[8]. Therefore, this study investigated the short-term efficacy and influencing factors of irinotecan combined with the conventional chemotherapy regimen of oxaliplatin and fluorouracil in advanced gastric cancer patients.

MATERIALS AND METHODS

General information

Eighty patients with advanced gastric cancer treated in our hospital from January 2019 to January 2022 were selected. Inclusion criteria[9]: (1) Diagnosed as gastric cancer by histopathology; (2) tumor node metastasis (TNM) stage ≥ IIIb; (3) received preoperative adjuvant chemotherapy; (4) lesions with objective measurements; (5) no anti-tumor treatment given before admission; and (6) patients and their families provided informed consent. Exclusion criteria: (1) Coexisting liver and kidney dysfunction,

hematopoietic system diseases, autoimmune diseases, and other serious diseases; (2) patients getting retreatment; (3) history of mental illness; (4) poor compliance, cannot cooperate with follow-up treatment; and (5) Karnofsky Performance Scale (KPS) < 60 points. The patients were divided into the observation group (n = 40) and control group (n = 40) by the envelope method. The clinical data of the two groups are compared in Table 1, and were found to be comparable. This study was approved by a hospital ethics committee.

Treatment and follow-up methods

The control group was treated with conventional chemotherapy consisting of oxaliplatin combined with fluorouracil: intravenous infusion of 180 mg/m^2 fluorouracil for injection (Qilu Pharmaceutical Co., Ltd., batch number: Sinopharm H20094528) and intravenous infusion of 70 mg/m^2 oxaliplatin for injection (Jiangsu Hengrui Pharmaceutical Co., Ltd., production batch number: Sinopharm H20000337). The experimental group was given irinotecan in addition to conventional chemotherapy (Shenyang Pharmaceutical Pharmaceutical Co., Ltd., SFDA Approval No. H20090659) on the first day of chemotherapy according to the body surface area at a dose of 180 mg/m^2 intravenously over 90 min, along with careful monitoring for adverse reactions. Patients in both groups were treated for 4 wk as a treatment cycle, and the levels of tumor markers were measured on every Monday. The follow-up deadline was October 2022.

Assessment methods

Fasting fresh blood samples (5 mL) were collected from the patients in the morning and centrifuged at 1000 r/min for 20 min with a centrifugal radius of 10 cm. The levels of tumor markers carbohydrate antigen 199 (CA199), carcinoembryonic antigen (CEA), neuron-specific enolase (NSE), and epidermal growth factor receptor (EGFR) were detected by enzyme-linked immunosorbent assay kit (Suzhou Boyuan Medical Technology Co., Ltd.).

Evaluation criteria

The short-term efficacy was evaluated by the World Health Organization (WHO) solid tumor treatment efficacy standards[10]. Complete remission (CR) was defined as the disappearance of the tumor lesion, which lasted for more than 4 wk, while partial remission (PR) was defined as a reduction in the lesion by more than 30%, which lasted for more than 4 wk. Stable disease (SD) was defined as a reduction of 25% in the lesion or new lesions. CR + PR was considered effective treatment response.

The side effects of chemotherapy were divided into grade 0, grade I, grade II, grade III, and grade IV according to the WHO chemotherapy toxicity grading standards[11], which can also be defined as no adverse reactions, mild adverse reactions, moderate adverse reactions but tolerable, moderate adverse reactions and intolerable, severe adverse reactions, respectively.

The quality of life was evaluated by the SF-36 scale[12]. The scale has eight aspects: physiological function, physiological function, physical pain, general health status, energy, social function, emotional function, and mental health. The higher the score, the better the quality of life of patients.

Statistical analysis

The data were analyzed by SPSS22.0 software. The measurement data included age, body mass index, tumor markers, *etc*. The data were expressed as mean ± SD, and the t test was used to analyze the differences between groups. Count data included sex, TNM stage, short-term efficacy, *etc*. The data were expressed as n (%), and χ^2 test or rank sum test analysis index were used to assess the differences between groups. Survival was analyzed by the Kaplan–Meier method.

RESULTS

Comparison of short-term efficacy between two groups

The short-term efficacy of the observation group was better than that of the control group (P < 0.05). The CR and PR accounted for 5.00% and 52.50% respectively, and the total effective rate was 57.50% (Table 2).

Comparison of clinical data of effective and ineffective patients in observation group

The gender and body mass index of patients with effective and ineffective chemotherapy in the observation group were compared (P > 0.05). The age and TNM stage IV ratio of patients with ineffective chemotherapy in the observation group were apparently higher than those of patients with effective chemotherapy (P < 0.05), while the KPS score was significantly lower than that of patients with effective chemotherapy (P < 0.05, Table 3).

Comparison of tumor markers before and after treatment in two groups

After treatment, CA199, CEA, NSE and EGFR in the observation group and the control group were

Table 1 Comparison of clinical general data between the observation and control groups

Clinical general data	Observation group (n = 40)	Control group (n = 40)	t/χ^2 value	P value
Gender, n (%)			0.050	0.823
Male	22 (55.00)	21 (52.50)		
Female	18 (45.00)	19 (47.50)		
Age (yr)	62.21 ± 7.78	61.10 ± 8.43	0.612	0.542
Body mass index (kg/m^2)	22.40 ± 2.05	22.16 ± 1.95	0.536	0.593
KPS score (points)	72.21 ± 5.54	71.19 ± 5.80	0.804	0.424
TNM stage, n (%)			0.238	0.626
IIIb	27 (67.50)	29 (72.50)		
IV	13 (32.50)	11 (27.50)		

KPS: Karnofsky Performance Scale; TNM: Tumor node metastasis.

Table 2 Comparison of short-term efficacy between two groups, n (%)

Group	Cases	CR	PR	SD	PD	Z value	P value
Observation group	40	2 (5.00)	21 (52.50)	12 (30.00)	5 (12.50)	-2.799	0.005
Control group	40	0 (0.00)	13 (32.50)	12 (30.00)	15 (37.50)		

CR: Complete remission; PR: Partial remission; SD: Stable disease; PD: Progressive disease.

Table 3 Comparison of clinical data of effective and ineffective patients in observation group

Clinical data	Chemotherapy effective (n = 23)	Chemotherapy ineffective (n = 17)	t/χ^2 value	P value
Gender, n (%)			0.051	0.822
Male	13 (56.62)	9 (52.94)		
Female	10 (43.48)	8 (47.06)		
Age (yr)	60.60 ± 5.56	65.12 ± 5.71	-3.587	0.001
Body mass index (kg/m^2)	22.14 ± 2.03	22.75 ± 2.12	-1.314	0.193
KPS score (points)	75.54 ± 4.32	67.70 ± 3.83	8.589	0.000
TNM stages, n (%)			5.631	0.018
IIIb	19 (82.61)	8 (47.06)		
IV	4 (17.39)	9 (52.94)		

KPS: Karnofsky Performance Scale; TNM: Tumor node metastasis.

markedly lower than those before treatment (P < 0.05). CA199, CEA, NSE and EGFR in the observation group were notably lower than those in the control group at 1 wk and 1 mo after treatment (P < 0.05) (Table 4 and Figure 1).

Comparison of SF-36 scale scores before and after treatment in two groups

The SF-36 scale scores of the observation group and the control group before treatment were compared (P > 0.05). The items of SF-36 scale in the observation group and the control group were improved after treatment (P < 0.05). The physiological function, energy, emotional function and mental health of SF-36 in the observation group were significantly higher than those in the control group (P < 0.05) (Table 5 and Figure 2).

Table 4 Comparison of tumor markers before and after treatment in two groups

Index	Observation group (*n* = 40)	Control group (*n* = 40)	*t* value	*P* value
CA199 (mg/L)				
Before treatment	110.43 ± 21.32	108.28 ± 19.82	0.467	0.642
1 wk after treatment	71.22 ± 17.28[a]	88.01 ± 13.34[a]	-4.864	0.000
1 mo after treatment	44.49 ± 15.52[a,d]	69.32 ± 12.10[a,d]	-7.980	0.000
CEA (ng/L)				
Before treatment	46.69 ± 7.80	47.05 ± 8.00	-0.204	0.839
1 wk after treatment	32.21 ± 6.65[a]	40.40 ± 7.71[a]	-5.087	0.000
1 mo after treatment	11.38 ± 3.03[a,d]	28.83 ± 6.62[a,d]	-15.159	0.000
NSE (mg/L)				
Before treatment	22.23 ± 3.54	22.40 ± 3.70	-0.210	0.834
1 wk after treatment	17.39 ± 3.11[a]	19.40 ± 2.83[a]	-3.023	0.003
1 mo after treatment	12.23 ± 2.29[a,d]	17.73 ± 2.69[a,d]	-9.847	0.000
EGFR (mg/L)				
Before treatment	22.43 ± 5.54	22.15 ± 4.48	0.249	0.804
1 wk after treatment	16.67 ± 2.11[a]	19.22 ± 2.17[a]	-5.328	0.000
1 mo after treatment	6.60 ± 1.92[a,d]	11.11 ± 2.01[a,d]	-10.262	0.000

[a]$P < 0.05$ *vs* before treatment.
[d]$P < 0.05$ *vs* 1 wk after treatment.
CA199: Carbohydrate antigen 199; CEA: Carcinoembryonic antigen; NSE: Neuron-specific enolase; EGFR: Epidermal growth factor receptor.

Comparison of progression-free survival time and overall survival time between two groups

The median progression-free survival time of the observation group and the control group was 16 mo (95%CI: 14.79-17.21) and 17 mo (95%CI: 15.26-18.74), respectively, and the difference was not statistically significant ($\chi^2 = 0.115$, $P = 0.734 > 0.05$). The median overall survival of the observation group and the control group was 23 mo (95%CI: 22.05-23.94) and 17 mo (95%CI: 21.08-22.92), respectively, and the difference was not statistically significant ($\chi^2 = 0.643$, $P = 0.423 > 0.05$, Figure 3).

Comparison of adverse event between the two groups

The incidence of grade III-IV diarrhea and grade III-IV thrombocytopenia in the observation group was apparently higher than that in the control group ($P < 0.05$, Table 6).

DISCUSSION

Advanced gastric cancer invades the muscular layer and submucosa of the gastric mucosa due to the enlargement of the cancer lesion. Simple surgery cannot cure it, and postoperative chemotherapy, radiotherapy, targeted therapy, and immunotherapy are required[13]. Conventional chemotherapy comprising oxaliplatin and fluorouracil is generally used. Oxaliplatin and fluorouracil can improve the gastric environment and effectively inhibit the growth and spread of the cancer cells. However, normal cells are also inhibited and hematopoietic function is suppressed. Therefore, this study analyzed the combination of conventional chemotherapy with irinotecan to treat patients with gastric cancer[14].

This study also compared the short-term efficacy of the treatments in the two groups of patients, and the results revealed that the short-term efficacy was better in the observation group than in the control group, indicating that the treatment effect in the observation group was better. In the control group, fluorouracil first forms two intermediate products, deoxyfluorocytidine and deoxyfluorouridine, through the action of carboxylesterase and cytidine deaminase in the liver and tumor tissues, and finally transforms into 5-fluorouracil (5-FU) in the tumor cells through the catalysis of thymidine phosphorylase, which exerts a selective local anti-cancer effect[15]. Oxaliplatin cross-links with DNA to form adducts and increases the anti-tumor activity of 5-FU in advanced gastric cancer. At the same time, irinotecan is a derivative of semi-synthetic camptothecin. By interfering with the helix and non-helix of replication DNA, the synthesis of nucleic acids is inhibited, causing DNA single strand breaks, thereby

Table 5 Comparison of SF-36 scale scores before and after treatment in two groups

Index	Observation group (*n* = 40)	Control group (*n* = 40)	*t* value	*P* value
Physiological function				
Before treatment	52.34 ± 6.89	54.11 ± 7.04	-1.136	0.259
3 mo after treatment	65.12 ± 8.14[a]	60.32 ± 8.04[a]	2.653	0.010
Role-physical				
Before treatment	60.43 ± 7.92	59.90 ± 8.04	0.297	0.767
3 mo after treatment	64.54 ± 8.09[a]	63.93 ± 7.90[a]	0.341	0.734
Bodily pain				
Before treatment	31.88 ± 7.78	32.01 ± 8.09	-0.073	0.942
3 mo after treatment	38.00 ± 8.12[a]	38.70 ± 9.17[a]	-0.361	0.719
General health				
Before treatment	58.56 ± 9.15	57.74 ± 9.03	0.403	0.688
3 mo after treatment	66.43 ± 7.12[a]	65.80 ± 9.22[a]	0.342	0.733
Energy				
Before treatment	40.32 ± 7.22	38.75 ± 8.11	0.914	0.363
3 mo after treatment	54.76 ± 6.70[a]	47.21 ± 7.14[a]	4.877	0.000
Social function				
Before treatment	51.21 ± 6.98	51.33 ± 7.54	-0.074	0.941
3 mo after treatment	61.89 ± 6.45[a]	60.40 ± 7.16[a]	0.978	0.331
Emotional function				
Before treatment	31.65 ± 7.21	31.44 ± 8.01	0.123	0.902
3 mo after treatment	47.58 ± 7.22[a]	39.03 ± 8.12[a]	4.977	0.000
Mental health				
Before treatment	40.34 ± 6.31	39.45 ± 7.08	0.594	0.555
3 mo after treatment	66.16 ± 8.11[a]	50.91 ± 9.03[a]	7.947	0.000

[a]$P < 0.05$ *vs* before treatment.

Table 6 Comparison of adverse event between the two groups, *n* (%)

Group	Number of cases	III-IV grade leukopenia	III-IV grade nausea and vomiting	III-IV grade diarrhea	III-IV grade mouth ulcer	III-IV grade abnormal liver and kidney function	III-IV grade thrombocytopenia
Observation group	40	8 (20.00)	11 (27.50)	13 (32.50)	9 (22.50)	15 (38.50)	10 (25.00)
Control group	40	5 (12.50)	7 (17.50)	4 (10.00)	8 (20.00)	12 (30.00)	3 (7.50)
t/χ^2 value		0.827	1.147	6.050	0.075	0.503	4.501
P value		0.363	0.284	0.014	0.785	0.478	0.034

inhibiting DNA replication and RNA synthesis, which leads to tumor cell atypia and death. Studies have shown that irinotecan monotherapy is effective in up to 18%-23% cancer patients[16]. Therefore, the therapeutic effect of oral irinotecan may be synergistic with fluorouracil and oxaliplatin, which maximizes the anti-cancer effect and controls disease progression, thereby improving the therapeutic effect.

In this study, the clinical data of effective and ineffective patients in the observation group were compared. The results revealed that the age and TNM stage IV ratio of patients with ineffective chemotherapy in the observation group were significantly higher than those of patients with effective

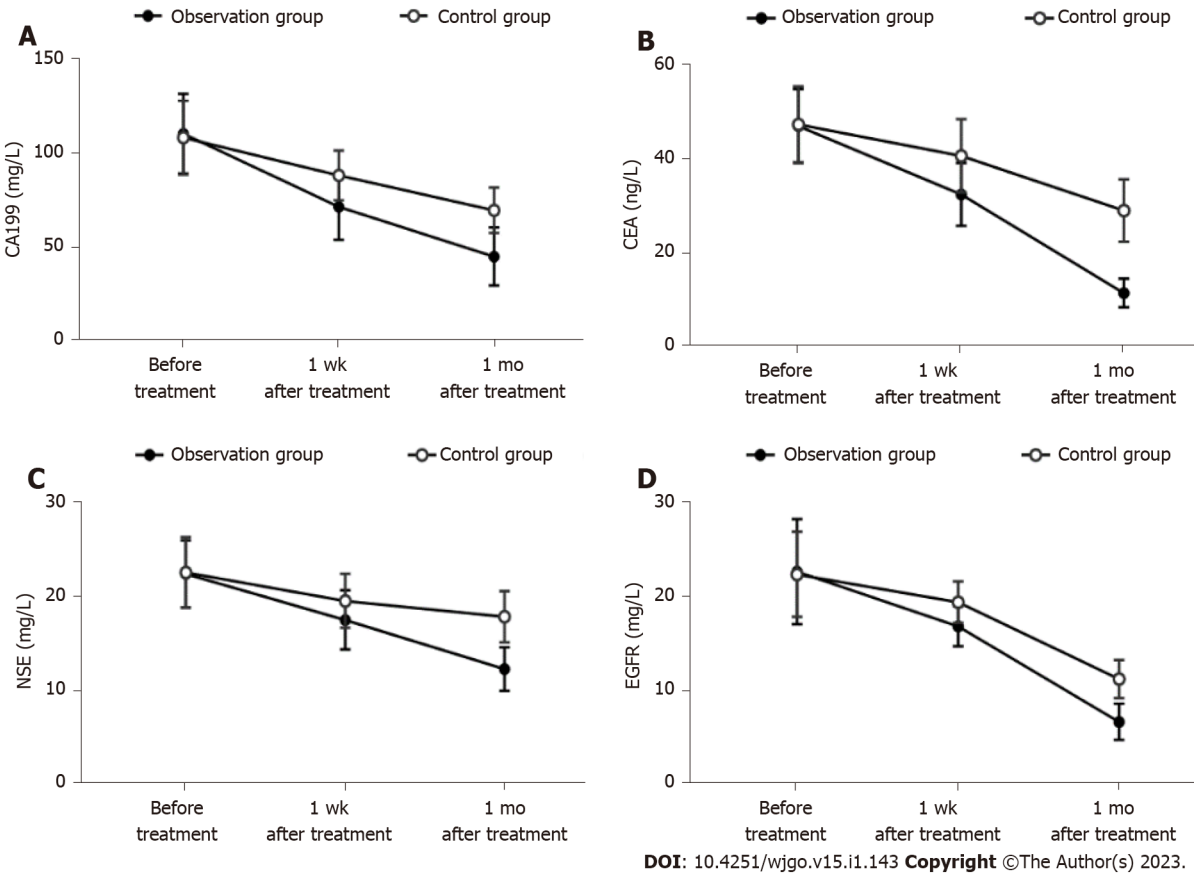

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Figure 1 Trend chart of tumor markers before and after treatment in two groups. A: Carbohydrate antigen 199; B: Carcinoembryonic antigen; C: Neuron-specific enolase; D: Epidermal growth factor receptor. CA199: Carbohydrate antigen 199; CEA: Carcinoembryonic antigen; NSE: Neuron-specific enolase; EGFR: Epidermal growth factor receptor.

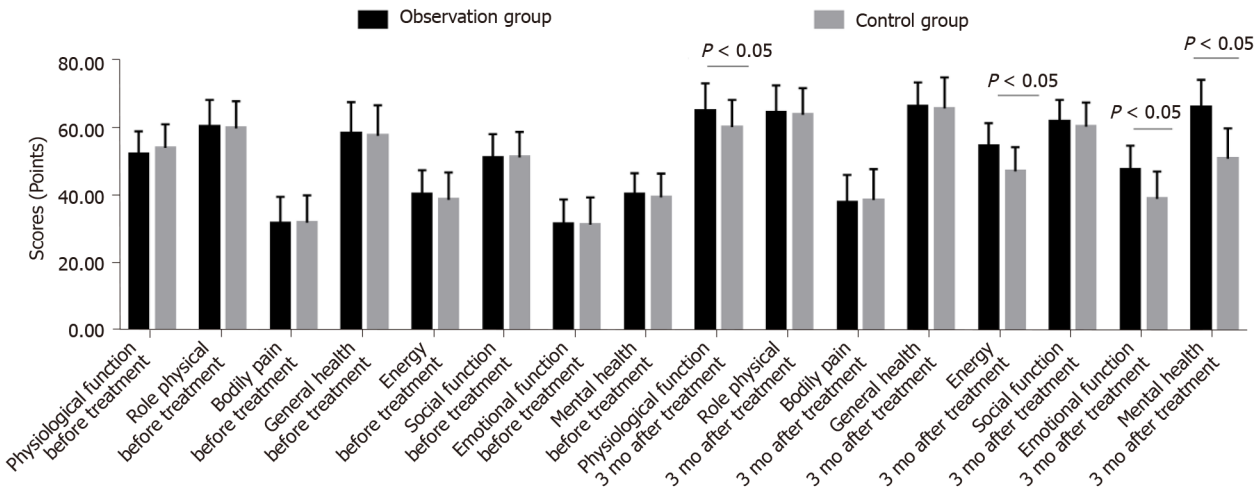

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Figure 2 Bar chart of SF-36 scale score before and after treatment in both groups.

chemotherapy, while the KPS score was evidently lower than that of patients with effective chemotherapy, indicating that the efficacy of treatment in the observation group was affected by the age and TNM stage of the patients. Because most patients were elderly, they had underlying diseases and decreased immune capacity, giving rise to increased severity of the cancer, resulting in reduced therapeutic effect[17]. The TNM stage reflects the severity of malignant tumors, and the higher the stage, the more serious the disease. Therefore, when the patient's cancer is severe, the tumor cells proliferate and differentiate, and the TNM stage increases, resulting in a decrease in the efficacy of chemotherapy. Therefore, the efficacy of treatment in the observation group was affected by the

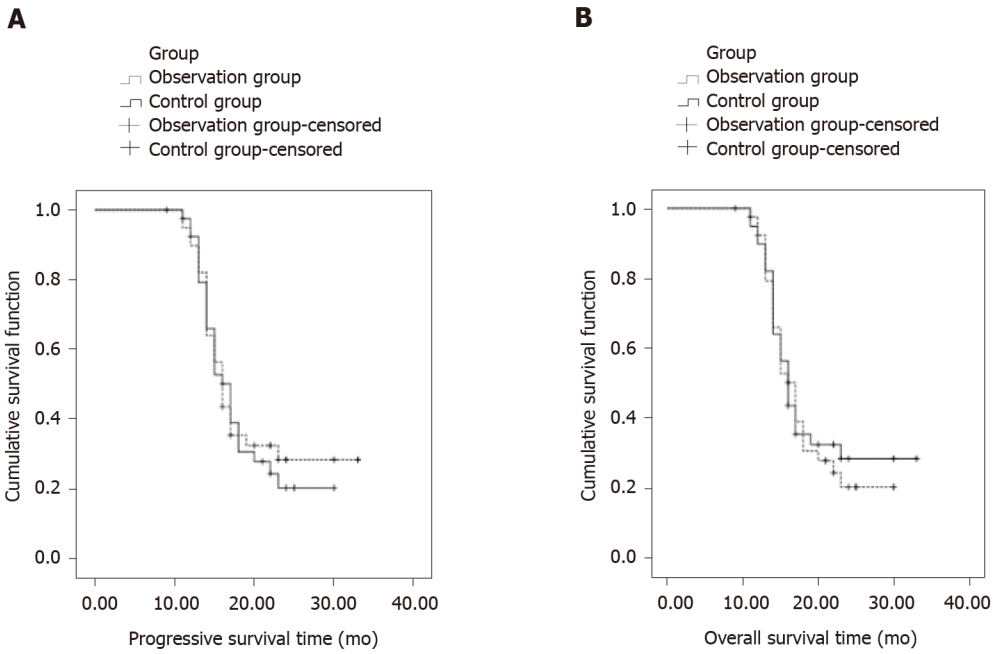

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Figure 3 Progression free survival time and overall survival curve of two groups. A: Progression free survival time; B: Overall survival.

patient's age and TNM stage.

In this study, the serum tumor marker levels in the two groups before and after treatment were compared. The results showed that CA199, CEA, NSE, and EGFR were significantly decreased in the observation group at 1 wk and 1 mo after treatment, indicating that the treatment had a better inhibitory effect on tumor proliferation in the observation group. Among the tumor markers, CA199 is a oligosaccharide tumor-associated antigen and considered a new tumor marker. CEA exists on the surface of cancer cells differentiated from endoderm cells and is a structural protein of the cell membrane[18]. NSE is one of the enolases involved in the glycolysis pathway, which exists in the nerve tissue and neuroendocrine tissue. EGFR plays an important regulatory role in cellular physiological processes[19]. CA199, CEA, NSE, and EGFR levels can reflect tumor growth, which can be used to assess the condition of advanced gastric cancer[20]. When fluorouracil is given to patients with advanced gastric cancer, it accumulates in a large amount near the cancer cells. It has an effect on deoxyribonucleic acid, preventing thymidylate conversion to produce a large number of thymidines, and interferes with the synthesis of deoxyribonucleic acid and ribonucleic acid, while oxaliplatin can potentiate the effect of fluorouracil[21,22]. Combination of irinotecan with conventional chemotherapy can inhibit the proliferation and differentiation of gastric cancer cells, accelerate apoptosis and killing of cancer cells, block the binding and signal transduction between tumor factors and receptors, so as to minimize and reduce the expression of CA199, CEA, NSE, and EGFR[23,24].

In this study, the SF-36 scale scores of the two groups before and after treatment were compared. The results revealed that the SF-36 scale scores for physiological function, energy, emotional function, and mental health in the observation group were markedly higher than those in the control group 3 mo after treatment, indicating that the treatment given to the observation group could improve the SF-36 scale score and improve the quality of life of patients. Therefore, the treatment effect of the observation group was better, and the treatment could inhibit the proliferation of tumor cells and improve the condition of patients in the observation group. Studies have shown that irinotecan can improve immunity[25]. There is evidence that the addition of irinotecan can improve the immune function, promote metabolism, accelerate protein synthesis, regulate gastrointestinal function, and improve the physical condition of the patients[26]. At the same time, patients with gastric cancer may have fear of long-term chemotherapy, and the improvement of the treatment effect in the observation group can enhance the patients' confidence, eliminate fear of gastric cancer, promote their mental health, and thus improve the SF-36 scale score[27].

In this study, the toxic effects of treatment in the two groups were compared. The results showed that the rates of grade III-IV diarrhea and grade III-IV thrombocytopenia in the observation group were significantly higher than those in the control group, illustrating that the observation group experienced more toxic effects. Irinotecan is a DNA topoisomerase I inhibitor. Topoisomerase I-DNA-irinotecan (or SN-38) can form a triple complex, which interacts with each other, causing DNA double-strand breaks, resulting in cytotoxicity. While killing tumor cells, it can also cause damage to normal cells, leading to

complications such as nausea and vomiting, diarrhea, and thrombocytopenia[28,29]. Studies have shown that the side effects of irinotecan in combination with other chemotherapy drugs are more obvious[30]. Therefore, the side effects in the observation group were more than those in the control group.

CONCLUSION

In summary, the standard chemotherapy regimen combined with irinotecan in patients with advanced gastric cancer demonstrated good short-term efficacy, which could notably reduce serum tumor marker levels and improve the quality of life of patients. However, its efficacy may be affected by patient age and TNM stage, and the long-term efficacy needs further investigation. In addition, there are still some shortcomings in this study. Based on the existing research, further in-depth hierarchical analysis should be carried out to make the research results more complete and convincing.

ARTICLE HIGHLIGHTS

Research background

Surgery, radiotherapy, and chemotherapy are often used for the treatment of advanced gastric cancer. Although chemotherapy is one of the main treatment options, there is no unified or standardized treatment; therefore, the identification of effective treatment options for patients with advanced gastric cancer is particularly important.

Research motivation

The conventional chemotherapy regimen for advanced gastric cancer consists of oxaliplatin combined with fluorouracil. However, studies have shown that treatment with only oxaliplatin combined with fluorouracil is not very effective in advanced gastric cancer.

Research objectives

This study is designed to investigate the short-term efficacy and influencing factors of irinotecan combined with the conventional chemotherapy regimen of oxaliplatin and fluorouracil in advanced gastric cancer patients. The results can provide valuable reference for clinical treatment and further study.

Research methods

Eighty patients with advanced gastric cancer were divided into two groups. The control group was given preoperative routine chemotherapy. The observation group was treated with irinotecan in addition to the chemotherapy given to the control group. The short-term efficacy of treatment in the two groups, as well as tumor marker levels and quality of life before and after treatment were evaluated.

Research results

The short-term treatment effect in the observation group was better than that in the control group. The median progression-free survival and overall survival were similar between two groups. The incidence rates of grade III-IV diarrhea and grade III-IV thrombocytopenia in the observation group were markedly higher than those in the control group. The age and proportion of tumor node metastasis (TNM) stage IV patients were notably higher, and the Karnofsky Performance Scale score was apparently lower in patients with ineffective chemotherapy.

Research conclusions

Chemotherapy combined with irinotecan in patients with advanced gastric cancer has a good short-term efficacy and can significantly reduce serum tumor markers and improve the quality of life of patients. The efficacy may be affected by the age and TNM stage of the patients.

Research perspectives

The long-term efficacy of chemotherapy combined with irinotecan need to be further studied.

FOOTNOTES

Author contributions: Wang JP design the experiment; Wang JP, Du JL and Li YY drafted the work; Du JL and Li YY collected the data; Wang JP and Du JL analysed and interpreted data; Wang JP, Du JL and Li YY revised and proofed the manuscript.

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