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Original Article

Observation of quality of life and negative emotions of patients with cervical cancer after neoadjuvant chemotherapy in early psychological nursing

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Abstract: Objective: The goal of this study was to assess the quality of life and negative emotions of patients with cervical cancer after neoadjuvant chemotherapy in early psychological nursing. Methods: A total of 154 patients with cervical cancer who received neoadjuvant chemotherapy in Linyi People's Hospital were included and divided into two groups, with 77 cases in each group. The quality of life, negative emotions, mental health, and sleep quality were compared between the two groups after different nursing methods. Results: There was no significant difference in the general data, quality of life, negative emotions, mental health, and sleep quality scores before nursing intervention (P>0.05). The total effective rate after neoadjuvant adjuvant chemotherapy (NACT) treatment was 71.42% in the observation group and 68.83% in the control group. There was no significant difference in efficacy between the two groups (P>0.05). After the nursing intervention, quality of life scores, sleep quality, mental health, and anxiety and depression of the two groups were significantly improved compared with those before nursing intervention (all P<0.05). After the nursing intervention, the scores of life quality, anxiety and depression, mental health and sleep quality of the observation group were significantly improved and were better than those of the control group (all P<0.05), especially in terms of the scores of emotional function (P<0.001) and somatic pain (P=0.012). Conclusion: Psychological nursing intervention can improve the quality of life, reduce negative emotions such as anxiety and depression, improve mental health, and improve sleep quality of patients with cervical cancer. Thus, psychological nursing intervention is worthy of clinical application in the management of cancer.

Keywords: Psychological nursing, cervical cancer, neoadjuvant chemotherapy, quality of life, negative emotions

Introduction

Cervical cancer is one of the most common gynecological malignancies with an incidence rate that ranks fourth among all female neoplasms in the world [1]. Cervical cancer has a high incidence in low- and middle-income countries. Studies have found that the cervical cancer incidence rate in these countries ranks second in gynecologic cancers with patients getting diagnosed in the late clinical course of the disease [2-4]. Cervical cancer is sensitive to chemotherapy which has long been used as a therapeutic modality [5]. Neoadjuvant chemotherapy (NACT) refers to the chemotherapy initiated before radical correction surgery [6]. Some studies have found that NACT can reduce the tumor, thereby reducing the extent and difficulty of surgery, and postoperative complications [7, 8].

In the treatment of disease, the quality of life of patients is also considered. NACT generally does not increase the side effects of chemotherapy and can reduce the postoperative complications, which greatly improves the quality of life of patients to a certain extent [9]. However, whether it is the disease itself or the complications, the psychological well-being of patients with gynecological malignancies are usually affected which causes anxiety, depression, and other negative emotions. This not only affects the patients and their families but also influences the overall prognoses of the patients [10, 11]. Therefore, early psychological intervention eliminating the patients' negative emotions can

Table 1. Comparisons of general data

Item	Observation group (n=77)	Control group (n=77)	χ^2/H/t	P
Age	49.73 ± 9.12	51.27 ± 8.78	0.795	0.412
Pathological types of cervical cancer			0.356	0.658
Squamous cell carcinoma	69	67		
Adenocarcinoma	8	10		
Pathological grading			0.469	0.595
Grade I	30	28		
Grade II	41	42		
Grade III	6	7		
Clinical staging			0.436	0.803
Stage Ib_2	61	62		
Stage IIa	13	12		
Stage IIb	3	3		
Chemotherapy plans			0.654	0.621
TP	48	50		
TC	20	19		
DP	5	4		
DC	4	4		

Note: TP, Paclitaxel + Cisplatin; TC, Paclitaxel + Carboplatin; DP, Docetaxel + Cisplatin; DC, Docetaxel + Carboplatin.

Table 2. Comparisons of efficacy of patients (n, %)

Efficacy	Observation group	Control group
CR	4 (5.19)	5 (6.49)
PR	51 (66.23)	48 (62.34)
SD	16 (20.78)	19 (24.68)
PD	6 (7.80)	5 (6.49)
Total effective rate	71.42	68.83

Note: CR, complete remission; PR, partial remission; SD, disease stabilization; PD, disease progression.

be utilized to enable better patient cooperation and compliance with the treatment [12].

This study assessed the efficacy of early psychological nursing care in the management of cancer patients after neoadjuvant chemotherapy. Also discussed is the influence of life therapy and other related influencing factors.

Materials and methods

Clinical data

This study was approved by the Ethics Committee of Linyi People's Hospital. A total of 154 patients with cervical cancer who received neoadjuvant chemotherapy from October 2012 to October 2017 in Linyi People's Hospital were included in this study. The patients were divided into the observation group (n=77) and the control group (n=77). All patients were aged 30-68 years with an average age of 50.69 ± 8.69 years. All patients included in this study signed informed consent.

Inclusion criteria: a) Patients diagnosed with primary cervical cancer [13]; b) Patients with normal cardiopulmonary function; c) Patients with no other relevant cancer treatments before this treatment; d) Patients with normal coagulation and bone marrow functions; e) Those with complete clinical data.

Exclusion criteria: a) Patients who received or were receiving other chemotherapy in the moment; b) Patients with severe cardiopulmonary disease; c) Patients with other concomitant primary malignancies; d) Patients with abnormal coagulation or bone marrow function; e) Patients with liver and kidney insufficiency; f) Patients with chemotherapy allergy; g) UncoopErative patients; h) Those with incomplete clinical data.

Pathological grading and clinical staging were based on the FIGO diagnostic criteria. The pathological grades were categorized as Grades I-III and the clinical stages as Stages I-IV [14].

Research method

All patients underwent routine examination before chemotherapy to assess the presence of contraindications of chemotherapy.

Neoadjuvant chemotherapy was provided for 1-2 weeks by "Paclitaxel + Cisplatin or Carboplatin (TP or TC)" or "Docetaxel + Cisplatin or Carboplatin (DP or DC)" [15].

Table 3. Observation on the curative effect of two groups after NACT treatment

Efficacy	Observation group (TP/TC/DP/DC)	Control group (TP/TC/DP/DC)	χ^2	P
CR	2/2/0/0	3/2/0/0	0.473	0.602
PR	33/13/3/2	32/12/2/2		
SD	10/3/1/2	12/3/2/2		
PD	3/2/1/0	3/2/0/0		

Note: NACT, Neoadjuvant chemotherapy; TP, Paclitaxel + Cisplatin; TC, Paclitaxel + Carboplatin; DP, Docetaxel + Cisplatin; DC, Docetaxel + Carboplatin; CR, complete remission; PR, partial remission; SD, disease stabilization; PD, disease progression.

The patients in the control group were given routine nursing care using the following measures: A) Clinical disease monitoring: The changes of the patients' disease conditions were monitored by observing their clinical signs and symptoms every morning, and reporting and dealing with the changes of the disease course in time. B) Improvements of environmental conditions: The patients' environmental conditions were improved by keeping their surroundings clean and tidy, and making them live comfortably while being treated. C) Dietary guidance: Depending on the patient's condition and nutritional status, the patients were informed about the adequate food intake and materials that could be consumed while avoiding spicy, greasy, and indigestible food; D) Medication guidance: The patients were educated about the proper dosage, duration and adverse reactions of the administered drugs [16].

The patients in the observation group were treated with psychological nursing on the basis of routine nursing. The specific methods were as follows: Before initiating NACT, the perspectives and cognition of the patients on their disease were addressed. The patients were educated to have a deeper understanding of the disease which involved the disease occurrence and development, medical treatment effects, prognosis and other aspects, so as to avoid the adverse psychological effects and negative emotions due to the lack of understanding of the disease. At the same time, according to the differences in the patients' personality and age, corresponding psychological evaluation was carried out to create different nursing programs. During and after NACT chemotherapy: A) Pleasurable activities were carried out. Based on the individual preferences of the patients, regular entertainment activities were regularly held, such as yoga, fitness training, and other healthy activities that could divert the patient's attention. B) Psychological resolution and persuasion were done by deeply communicating with the patients, understanding their thoughts and puzzles, and answering their questions in time. The relevant situation of Linyi People's Hospital was also introduced so that the patients could have a better understanding of the hospital's medical treatment procedures and nursing care which might establish the patients' confidence in overcoming the disease. Technical terms were avoided in talking with the patients to facilitate the patient's understanding. Patients were aware of the differences in treatment efficacy due to psychological factors. The patient's psychological status was also assessed during chemotherapy in order to calm the patient's mood with smoothing music and to divert his or her attention from the feeling of pain. This was done once a week for about 15 minutes each time. C) Sharing of experiences among the patients were also conducted. For patients with the same disease, regular meetings were held to enable the patients to share their experiences during the course of treatment. Families were also encouraged to care and support the patients, so that their spirits could be uplifted to a certain extent. This was done once a week for about 30 minutes each time [17].

Observation indicators

Primary observation indicators: (1) For the NACT efficacy evaluation, the therapeutic effects were classified as complete remission (CR), partial remission (PR), disease stabilization (SD), and disease progression (PD). The effective rate (%) was calculated as (complete remission (CR) + partial remission (PR))/total number of cases [13]. (2) To assess the quality of life, the SF-36 life quality table was utilized and the score range was 1-100 in which the score was positively correlated with the quality of life [18]. (3) To evaluate the presence of depression and anxiety, the Self-Rating Depression Scale (SDS) and Self-Rating Anxiety Scale (SAS) were used. The higher the score, the more severe the anxiety and depression [19].

Secondary observation indicators: (1) For mental health status, the scoring was based on the SCL-90 scale, and the scores were negatively correlated with the mental health status [20].

Table 4. Comparison of quality of life scores before and after nursing intervention

Item	Observation group	Control group	t	P	Observation group	Control group	t	P
	Before intervention	Before intervention			After intervention	After intervention		
General health	53.96 ± 9.12	54.09 ± 8.93	0.962	0.369	74.62 ± 12.69[a]	63.21 ± 10.36[b]	3.698	0.025
Mental health	57.61 ± 8.65	57.62 ± 9.51	0.584	0.654	76.36 ± 13.52[a]	66.32 ± 13.20[b]	4.325	0.019
Emotional function	71.65 ± 12.28	70.96 ± 12.48	0.854	0.498	90.16 ± 16.95[a]	76.21 ± 13.64[b]	10.362	<0.001
Social function	68.49 ± 11.69	69.06 ± 11.23	0.796	0.569	80.56 ± 14.69[a]	74.76 ± 12.16[b]	2.946	0.045
Vitality	63.49 ± 11.62	63.21 ± 10.95	0.636	0.519	80.69 ± 14.62[a]	71.28 ± 12.31[b]	3.498	0.027
Somatic pain	59.12 ± 10.03	59.12 ± 9.23	0.862	0.478	71.26 ± 11.29[a]	63.51 ± 10.69[b]	4.264	0.012
Physiological function	61.32 ± 10.26	61.52 ± 9.68	0.698	0.559	71.65 ± 14.16[a]	66.54 ± 10.18[b]	3.026	0.031
Physiological role	53.16 ± 8.69	52.16 ± 8.96	0.583	0.668	65.29 ± 10.36[a]	56.39 ± 8.95[b]	4.125	0.015

Note: Comparisons of the observation group before and after the nursing intervention ([a]P<0.05); comparisons of the control group before and after the nursing intervention ([b]P<0.05).

(2) Sleep quality was evaluated by using the Pittsburgh Sleep Quality Index (PSQI). The score range was 0-21 with a negative and inverse correlation between the scores and sleep quality [21].

Statistical method

Data were analyzed using the SPSS17.0 software. Continuous variables were represented by mean ± standard deviation ($\bar{x}$ ± sd). The inter-group comparisons of continuous variables were performed using the independent sample t-test while the intra-group comparisons were done using the paired t-test as denoted by t. The inter-group comparisons of rank variables were performed using rank-sum test as denoted by H while the intra-group comparisons were done using the paired rank-sum test as denoted by χ^2. P<0.05 was considered statistically significant.

Results

General data

Patients in the observation group were aged 30-67 years with a mean age of 49.73 ± 9.12 years. The pathological types of cervical cancer presented in the group were squamous cell carcinoma (69 cases) and adenocarcinoma (8 cases). Patients in the control group were aged 32-68 years with a mean age of 51.27 ± 8.78 years. The pathological types of cervical cancer presented in the group were also squamous cell carcinoma (67 cases) and adenocarcinoma (10 cases). For pathological grading, there were 30 cases, 41 cases and 6 cases in the observation group with Grade I, II and III, respectively. In the control group, there were 28 cases, 42 cases and 7 cases with Grade I, II and III, respectively. For the clinical staging in the observation group, Stage Ib_2, IIa and IIb had 61 cases, 13 cases and 3 cases, respectively. In the control group, Stage Ib_2, IIa and IIb had 62 cases, 12 cases and 3 cases, respectively. For the chemotherapy plans, the total number of patients in the observation group who underwent the TP, TC, DP, or DC plans were 48, 20, 5 and 4, respectively. The total number of patients in the control group who underwent the TP, TC, DP, or DC plans were 50, 19, 4 and 4, respectively. There was no difference in the general data between the two groups after statistical comparisons (P>0.05) as shown in **Table 1**.

Comparison of the efficacy of patients

After receiving chemotherapy, the CR, PR, SD, and PD in the observation group were 4, 51, 16, and 6, respectively, and the total effective rate was 71.42%. The CR, PR, SD, and PD in the control group were 5, 48, 19, and 5, respectively, and the total effective rate was 68.83% as shown in **Table 2**.

Observation on the curative effect after NACT treatment

There was no significant difference in the effect of NACT between the two groups after NACT treatment (P>0.05) as shown in **Table 3**.

Comparison of quality of life scores before and after nursing intervention

Before the nursing intervention, there was no difference in the quality of life scores between the two groups (P>0.05). After nursing intervention, the quality of life in the two groups were both significantly improved than those before

Table 5. Comparison of SDS scores

Group	Number of cases	Before intervention	After intervention	t	P
Observation group	77	56.31 ± 10.38	42.38 ± 8.62	8.098	0.001
Control group	77	56.69 ± 10.37	49.69 ± 9.87	4.287	0.015
t		0.697	3.365		
P		0.526	0.021		

Note: SDS, Self-Rating Depression Scale.

Table 6. Comparison of SAS scores

Group	Number of cases	Before intervention	After intervention	t	P
Observation group	77	60.48 ± 11.25	43.72 ± 8.12	10.283	<0.001
Control group	77	61.12 ± 11.62	50.21 ± 9.14	7.298	0.009
t		0.598	3.698		
P		0.632	0.016		

Note: SAS, Self-Rating Anxiety Scale.

nursing intervention (P<0.05). However, the quality of life scores of the observation group were significantly better than those of the control group (P<0.05), and were more statistically significant in terms of their emotional function (P<0.001) and somatic pain (P=0.012) as shown in **Table 4**.

Comparison of anxiety and depression scores

Before nursing intervention, there was no significant difference between the two groups in the anxiety and depression scores (SAS and SDS scores) (P>0.05). Both groups were significantly improved after nursing intervention compared with those before the intervention (P<0.05). After the nursing intervention, the anxiety and depression scores in the observation group were better than those in the control group, with statistically significant differences (P<0.05) as shown in **Tables 5**, **6**.

Comparison of mental health scores before and after nursing intervention

Before the nursing intervention, there was no statistically significant difference in the mental health scores between the two groups (P>0.05). After the nursing intervention, the mental health scores of the two groups were both significantly improved than those before the nursing intervention (P<0.05). Particularly, the mental health scores of the observation group were significantly better than those of the control group after the nursing intervention with a significant difference (P<0.05) as shown in **Table 7**.

Comparison of sleep quality scores before and after nursing intervention

Before the nursing intervention, there was no significant difference in the sleep quality scores between the two groups (P>0.05). After the nursing intervention, the sleep quality scores of the two groups were both significantly improved than those before the nursing intervention with statistical differences (P<0.05). After the nursing intervention, the sleep quality scores of the observation group were better than those of the control group, with statistical differences (P<0.05) as shown in **Table 8**.

Discussion

Since cervical cancer is responsive to chemotherapy, chemotherapy has been applied in the treatment of cervical cancer for a long time [5]. NACT refers to the chemotherapy initiated before the radical resection of the tumor [6]. As early as 1999, a cisplatin-based concurrent chemoradiation was recommended in the United States [22]. Although previous studies have shown that NACT fails to increase survival [7, 8]. Some studies have shown that NACT combined with concurrent chemoradiation can significantly improve the disease-free survival of patients [23, 24]. This study found that squamous cell carcinoma was more common in cervical cancer and was more sensitive to chemotherapy. The effective rate was 71.42% in the observation group and 68.83% in the control group, which was consistent with previous study [25]. The disease itself and the side effects after treatment both affected the quality of life and mental health of patients, which could easily contribute to the development of negative emotions like depression and anxiety [10, 11].

Along the course of the treatment of the disease, greater considerations must be given to

Table 7. Comparison of mental health scores before and after nursing intervention

Item	Observation group	Control group	t	P	Observation group	Control group	t	P
	Before intervention	Before intervention			After intervention	After intervention		
Somatization	2.49 ± 0.51	2.53 ± 0.45	0.968	0.378	1.76 ± 0.23[a]	2.13 ± 0.44[b]	3.745	0.027
Psychotic	2.13 ± 0.37	2.13 ± 0.35	0.584	0.654	1.11 ± 0.12[a]	1.92 ± 0.84[b]	4.426	0.021
Paranoid	2.16 ± 0.34	2.14 ± 0.31	0.869	0.512	1.21 ± 0.14[a]	1.93 ± 0.36[b]	5.261	0.002
Fear	2.34 ± 0.57	2.31 ± 0.51	0.802	0.562	1.32 ± 0.27[a]	1.91 ± 0.36[b]	3.125	0.041
Hostility	2.26 ± 0.48	2.24 ± 0.47	0.658	0.502	1.16 ± 0.15[a]	1.93 ± 0.32[b]	3.515	0.030
Anxiety	2.17 ± 0.42	2.16 ± 0.39	0.854	0.514	1.03 ± 0.11[a]	1.75 ± 0.18[b]	4.384	0.019
Depression	2.63 ± 0.61	2.62 ± 0.53	0.703	0.575	1.32 ± 0.25[a]	1.81 ± 0.32[b]	3.154	0.035
Interpersonal sensitivity	2.43 ± 0.47	2.40 ± 0.45	0.603	0.674	1.24 ± 0.11[a]	1.87 ± 0.35[b]	4.024	0.014
Obsessive-compulsive	2.76 ± 0.62	2.71 ± 0.53	0.584	0.641	1.62 ± 0.23[a]	2.14 ± 0.41[b]	3.362	0.024

Note: Comparisons of the observation group before and after the nursing intervention ([a]P<0.05); comparisons of the control group before and after the nursing intervention ([b]P<0.05).

Table 8. Comparison of sleep quality scores before and after nursing intervention

Item	Observation group	Control group	t	P	Observation group	Control group	t	P
	Before intervention	Before intervention			After intervention	After intervention		
Sleep quality	2.11 ± 0.51	2.09 ± 0.49	0.963	0.381	1.30 ± 0.21[a]	1.64 ± 0.27[b]	3.841	0.029
Time for falling asleep	2.02 ± 0.35	2.03 ± 0.42	0.592	0.667	1.32 ± 0.22[a]	1.62 ± 0.29[b]	4.469	0.019
Sleep time	2.27 ± 0.53	2.25 ± 0.52	0.741	0.553	1.35 ± 0.26[a]	1.61 ± 0.28[b]	3.364	0.034
Sleep efficiency	2.21 ± 0.51	2.22 ± 0.52	0.793	0.584	1.52 ± 0.34[a]	1.85 ± 0.42[b]	3.269	0.038
Sleep disorders	2.18 ± 0.48	2.23 ± 0.51	0.649	0.496	1.41 ± 0.28[a]	1.73 ± 0.29[b]	2.015	0.047
Hypnotic	2.17 ± 0.37	2.15 ± 0.38	0.625	0.489	1.46 ± 0.23[a]	1.75 ± 0.18[b]	4.384	0.019
Depression	2.63 ± 0.61	2.62 ± 0.53	0.703	0.575	1.32 ± 0.25[a]	1.83 ± 0.29[b]	3.397	0.032
Daytime dysfunction	2.81 ± 0.59	2.83 ± 0.56	0.536	0.621	1.28 ± 0.26[a]	1.85 ± 0.37[b]	4.156	0.018

Note: Comparisons of the observation group before and after nursing intervention ([a]P<0.05); comparisons of the control group before and after nursing intervention ([b]P<0.05).

the effects of the cancer patients' psychological well-being on the prognosis and their quality of life. Some studies have found that the emotional and quality of life of patients with cancer have been improved when they receive attention and counseling [26]. Patients tend to regard cancer as a source of stress. Thus, active and proper responses with this stress may lead to a better prognosis of the disease [27, 28]. Previous studies on the quality of life of patients with cervical cancer have found that the effect of physical pain is relatively significant. Additionally, in emotional function, patients may tend to have psychological shadow and bad psychological mood [29, 30]. This study also found that the quality of life score of the observation group was significantly better than that of the control group after the nursing intervention and the observation group had better results in emotional function and somatic pain, which were consistent with the mentioned previous research.

If the unfavorable mood and negative emotions of a cancer patient cannot be eliminated in time, it can easily aggravate the disease itself which may lead to anxiety and depression. Studies have found that a positive assessment and readjustment of patients' cognitive emotion can benefit the treatment, thereby improving patients' bad emotions and mental health [31]. This present study found that after nursing intervention, anxiety and depression scores and mental health scores of the two groups were both significantly improved with the observation group having significantly better results than those of the control group. These results were consistent with the above mentioned study. As women are more prone to suffer poor sleep than men and are more sensitive to arousal, psychological anxiety and depression are more likely to lead to the development of sleep disorders in women [32]. In this study, the sleep quality of the patients was poor before psychological nursing intervention, but it was

significantly improved after psychological nursing.

This study did not use multi-center sampling method. The sample size was small and there was only a single source of study participants. For future research, the sample size must be expanded and multi-center clinical research must be adopted.

In conclusion, early psychological nursing intervention can improve the quality of life, mental health, and sleep quality of the patients while reducing anxiety, depression, and other negative emotions. Thus, it is worthy of clinical popularization and application, especially in the management of patients with cancer.

Disclosure of conflict of interest

None.

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