

Original Article

Postoperative nursing for liver cancer patients after treatment of obstructive jaundice

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Received September 22, 2020; Accepted November 11, 2020; Epub February 15, 2021; Published February 28, 2021

Abstract: Aim: This study aimed to explore the effect of active nursing for liver cancer patients complicated with obstructive jaundice after intervention therapy. Methods: A total of 80 liver cancer patients complicated with obstructive jaundice who were treated in our hospital were selected as research subjects, and divided into a study group and a control group according to the different intervention nursing methods (40 patients in each group). The control group patients were given routine nursing intervention, while the study group patients were given active additional nursing measures in addition to the routine nursing given to the control group. In the end, this research compared the postoperative recovery, liver function, quality of life, immune index and the complication rate of these two groups. Results: After operation, the study group patients had less time before they were able to get out of bed, shorter extubation period, and quicker discharge than study group patients ($P < 0.05$); additionally, on the 3rd day and 7th day after intervention, the levels of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) in the study group were significantly lower than that in the control group ($P < 0.05$). In both groups, pain and quality of life had a good trend after operation, yet the improvement in study group was more obvious than that in control group ($P < 0.05$); in immune index comparison, the CD4+ and CD8+ levels in study group also showed greater improvement than that in control group ($P < 0.05$), and the incidence of postoperative complications in study group was apparently lower than that in control group ($P < 0.05$). Conclusion: Active postoperative nursing care is conducive to accelerating the recovery of patients, improving postoperative immunity and liver function, and reducing the incidence of various complications in liver cancer patients complicated with obstructive jaundice, and hence is recommended for clinical application.

Keywords: Liver cancer, obstructive jaundice, intervention therapy, postoperative nursing

Introduction

Liver cancer, also known as hepatic malignant carcinoma, can be divided into primary hepatic malignant tumors and secondary hepatic malignant tumors according to its pathogenesis. As a highly prevalent malignant tumor type currently found in China, primary hepatic cancer often originates from the liver epithelium or mesenchymal tissue. Whereas secondary hepatic tumor mainly refers to a malignant tumor where other parts of the body metastasized and invaded the liver, generally from the stomach, biliary tract, colorectal, ovary and other locations [1-3]. Data shows that liver cancer presently remains highly prevalent worldwide, with an annual high increase of 600,000 cases. China sees a high incidence of liver can-

cer, accounting for about 55% of the total cases in the world [4, 5].

As one of frequent clinical complications in late liver cancer patients, obstructive jaundice mostly results from bile duct obstruction due to infiltration and compression of the tumor lesions. Common clinical symptoms of obstructive jaundice patients include dark yellow skin, fatty diarrhea, hemorrhagic tendency, osteoporosis, and so on. The patient who has obstructive jaundice caused by liver cancer may develop Courviosier, and without timely intervention, the patient may risk death due to liver failure [6, 7]. Therefore, intervention therapy is deemed as one of the commonly used surgical approaches to improve clinical symptoms of liver cancer patients complicated with obstructive jaundice.

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According to clinical practice, intervention therapy proves to be an effective means for patients who cannot get surgical extirpation and so they adopt palliative treatment for bile duct obstruction, because it can significantly improve their liver function and relieve their pruritus [8]. Studies show that intervention therapy for liver cancer patients complicated with obstructive jaundice can remarkably improve the quality of their life, and practices prove that the operation can significantly prolong the survival time of patients with a sound clinical basis [9]. This research aims to explore the feasibility of active nursing intervention for liver cancer patients complicated with obstructive jaundice, so as to provide theoretical support for improving the prognosis of such patients.

Materials and methods

General information

A total of 80 liver cancer patients complicated with obstructive jaundice who were treated in our hospital from January 2019 to December 2019 were chosen as research subjects; according to the different nursing interventions, they were divided into the study group and control group (40 patients in each group).

Selection criteria: (1) Liver cancer patients with obstructive jaundice diagnosed by pathological detection and imaging examination [10]; (2) Complete medical records; (3) Clear consciousness and ability to cooperate with the investigation; (4) The research was approved by the Ethics Committee of Huzhou Central Hospital; (5) Patients and their families have a clear understanding of the investigation process, methods and principles, and signed an consent form.

Exclusion criteria: (1) patients with mental illness; (2) patients with systemic infection; (3) patients with an estimated survival of less than or equal to 3 months; (4) patients complicated with other malignant tumors; (5) patients allergic to drugs used in this research; (6) patients with severe liver failure; (7) patients complicated with hepatic encephalopathy.

Intervention method

Normal percutaneous transhepatic cholangiography was performed in both groups to find the

location, degree and scope of bile duct obstruction. A guide wire was used to draw off the bile through a narrow section. Then the control group patients receive normal after-intervention nursing care, including bed rest, physical sign monitoring, drainage nursing, wound disinfection, etc. On these bases, the study group patients also received the normal care and were also given extra active nursing interventions, specifically as follows:

Active condition monitoring, advising the patients to stay in bed for 6 hours after operation was recommended, and meanwhile a continuous ECG monitoring was done to closely observe the indexes of blood pressure, heart rate and respiration of the patients. An increase of detection frequency was needed for patients with large hemorrhagic volumes; a careful extermination was given to patients who were admitted to our hospital for hepatic encephalopathy, and 24-hour inflow and outflow of the patients was recorded. In case of consciousness disturbance, ascites, etc., patients were sent for emergency treatment immediately.

Dietary intervention was given to the patients according to different intervention methods. For the patients who had percutaneous extrahepatic biliary drainage, a moderate diet (high calorie, high protein and rich vitamins) was recommended after operation; whereas the patients who underwent percutaneous transhepatic biliary drainage were required to fast for 6 hours after operation, until all the lab tests became normal.

Pain nursing: due to stent implantation, diffuse biliary peritonitis, pancreatitis, increased tension of liver capsule, etc., patients often suffered such discomfort as abdominal dull pain, distending pain, colic, etc., and nurses increased inspection, recorded the type, location and severity of pain once every 0.5-1 hour, and patiently appeased patients. For patients with severe pain, analgesics can be used after excluding pancreatitis (complications from analgesics are dealt with when necessary); for patients with unrelieved pain, we applied an X-ray check.

Bile drainage nursing: each patient's drainage bag was properly fixed after operation, and the patient's family was instructed to take care of

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the drainage bag. The drainage bag was kept lower than the puncture incision when patients get out of bed. Meanwhile, nurses actively observed the amount, color, nature and transparency of drainage fluid, and recorded the bile drainage volume every 24-hour. Once there was a sudden fall in drainage volume, nurses found the reason in real time.

Skin care: liver cancer patients complicated with obstructive jaundice often suffer from itching all over the body caused by irritation of bile salt deposition. Nurses trim their nails, apply nourishing cream on the skin properly, or give antipruritic drugs in prevention of possible infection, to treat redness and exudation brought on by scratches.

Observation index and evaluation standards

Postoperative recovery of clinical indexes: The time of getting out of bed, extubation, itching relief and discharge after operation of the two groups were recorded and compared.

Improvement of liver function after operation: The two groups of patients were given liver function test before operation, on the 3rd, 5th and 7th day after operation. Fasting venous blood samples were collected from the two groups of patients in the morning. After resting, an automatic biochemical analyzer was used to test ALT and AST. Each indicator was continuously tested three times, and the average value was taken as the final result. Comparisons between and within these two groups were made.

Postoperative pain and quality of life: The visual analogue scale (VAS) was used to dynamically evaluate the severity of pain in patients in both groups on the 3rd, 5th and 7th day after operation. By use of a 0-10 cm ruler, where 0 means no pain and 10 means sharp pain, VAS serves as an evaluative measure for the subjects to choose a pain degree according to their own situation. At the same time, QLQ-C30 scale was used to evaluate life quality of patients, which was developed by the European Organization for Research and Treatment of Cancer (EORTC), mainly for clinical research in cancer patients. The scale consists of 5 functional sub-scales, 3 symptom sub-scales, 1 overall health sub-scale and 6 overall

specific items. The higher the score is, the better the life quality a subject has [11].

Change of postoperative immune indexes: Fasting blood samples of the two group patients were collected before operation, and on the 3rd, 5th and 7th day after operation. Then an automatic biochemical analyzer was used to measure immune indexes CD3+ and CD4+. CD3+ and CD4+ kits were purchased from Shanghai Zhenke Biological Technology Co., Ltd., and the operation was carried out in strict accordance with the kit instructions. The difference was compared between the two groups.

Incidence of postoperative complications: Recordings were made of the incidences of postoperative fever, gastrointestinal reaction, wound bleeding, liver pain and other symptoms in these two groups, and comparison were made of the differences between them.

Statistical method

We entered the collected data into SPSS 20.0 software for statistical analysis. The quantitative data were represented in the form of ($\bar{x} \pm sd$), and the comparison between these two groups was made by Student's test. The quantitative information was represented in the form of [n (%)], and the comparison between these two groups was made by Chi-square test. For the analysis of continuous variables, student's t test was adopted. A $P < 0.05$ was statistically significant [12].

Results

Comparison of general clinical indexes between these two groups

By comparison, there were no statistically significant differences in general clinical indicators including gender, average age, average weight, education background, family income, marital status and underlying disease between these two groups ($P > 0.05$), so the groups were comparable (**Table 1**).

Postoperative recovery of clinical indexes of these two groups

Through the recorded evaluation, it was found that study group patients had less time until

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Table 1. Comparison of general clinical indexes between the two groups ($\bar{x} \pm s$)/[n (%)]

General clinical data		Study group (n=40)	Control group (n=40)	t/X ²	P
Gender	Male	27	28	0.058	0.809
	Female	13	12		
Average age (years)		51.29±3.22	51.17±3.41	0.162	0.872
Average weight (kg)		60.59±3.44	61.08±3.12	0.667	0.212
Education	Illiteracy	4	3	0.122	0.890
	Primary school	10	11		
	Junior high school	20	21		
	High school and above	6	5		
Marital status	Married	32	33	0.082	0.775
	Not married	8	7		
Family income	<1000	5	4	0.182	0.568
	1000-3000	14	13		
	Over 3000	11	13		

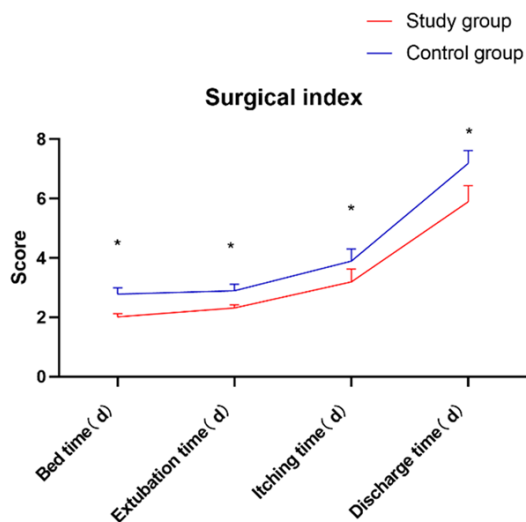


Figure 1. Comparison of general operation indexes between the two groups. Results show that the study group of patients had a shorter time before they could get out of bed, until extubation and with itching relief, and shorter time to discharge than control group patients ($P<0.05$). * indicates that for the same index the difference between these two groups is statistically significant.

they could get out of bed, until were extubation and had itching relief, and shorter time to discharge than the control group patients. The differences between these two groups were statistically significant ($P<0.05$) (**Figure 1**).

Improvement of liver function after operation in both groups

By comparison, before operation there were no apparent difference in ALT and AST levels

between these two groups ($P>0.05$). Whereas after operation the ALT and AST levels of both groups had a gradual downward trend on the 3rd, 5th and 7th day. At any time point, the ALT and AST levels of the study group were lower than that of the control group ($P<0.05$) (**Figure 2**).

Postoperative pain and life quality of the two groups of patients

By evaluation, it is found that on the 3rd, 5th and 7th day after operation, the VAS scores of the study group patients were significantly lower than that of the control group patients ($P<0.05$), and the QLQ-C30 scores of the study group of patients were significantly higher than that of the control group patients ($P<0.05$) (**Figure 3**).

Change of postoperative immune indexes in both groups

Lab tests showed that the levels of CD3+ and CD4+ in both groups increased first and then decreased. On the 5th and 7th day after operation, the levels of CD3+ and CD4+ in the study group were obviously higher than that in the control group, and the difference between these two groups was statistically significant ($P<0.05$) (**Figure 4**).

Incidence of postoperative complications in both groups

After operation the study group had a total complication rate of 5.00%, specifically 1 case

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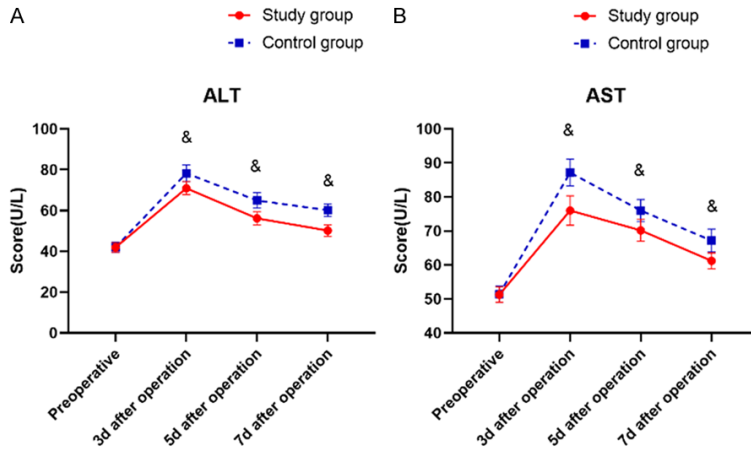


Figure 2. Comparison of liver function indexes between these two groups. Results show no obvious difference in ALT (A) and AST (B) levels between these two groups before operation ($P > 0.05$); the ALT and AST levels in the study group were apparently lower than that in control group on the 3rd, 5th and 7th day after operation ($P < 0.05$), which is statistically significant. & means that the difference for the same index and same time between these two groups was statistically significant.

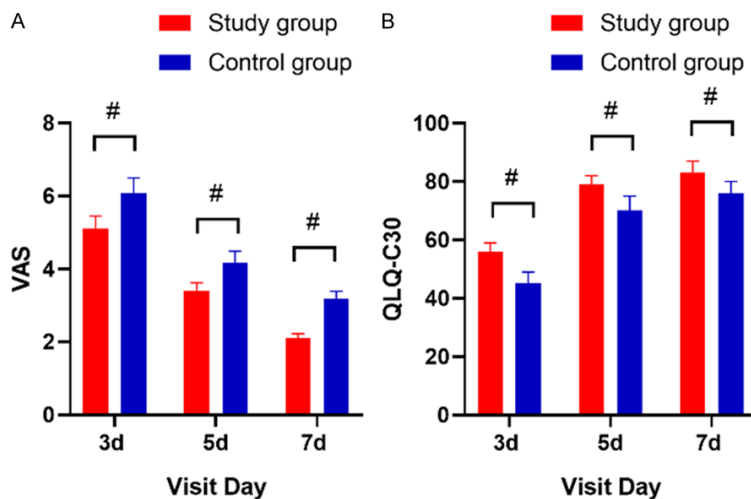


Figure 3. The change evaluation of postoperative pain and quality of life scores in these two groups. Results show that on the 3rd, 5th and 7th day after operation, the VAS scores of the study group of patients were remarkably lower than that of the control group patients ($P < 0.05$) (A). The QLQ-C30 scale scores of the study group patients were greatly higher than that of control group patients on the 3rd, 5th and 7th day after operation ($P < 0.05$) (B). # means that the difference for the same index and same time between these two groups was statistically significant.

of fever and 1 case of liver pain, whereas the control group has a total incidence rate of 14.50%, specifically 3 cases of fever, 2 cases of gastrointestinal reaction, 1 case of wound bleeding and 3 cases of liver pain. The difference between these two groups was significant ($P < 0.05$) (Table 2).

Discussion

Clinical practice has shown that advanced liver cancer patients are very likely to develop obstructive jaundice. The clinical manifestations mainly involve yellow skin and sclera, itching all over the body, and a color change of urine & stool. Such patients will have secondary infections or liver failure due to decompensation, leading to an increase of death rate. Clinically, it is recommended to carry out prompt treatment for such patients to relieve biliary obstruction [13-16]. As a sort of palliative treatment means to cure obstructive jaundice, intervention therapy features a simple operation, less trauma, less complications and high success rate, mainly including percutaneous transhepatic biliary drainage and biliary metal stent implantation [17, 18]. Clinical studies show that this operation can significantly relieve jaundice symptoms of liver cancer patients, and help improve the quality of life of patients. Other studies also indicate that intervention therapy can remarkably prolong the survival time of liver cancer patients, and improve the progression-free survival time of patients together with treatment of primary diseases [19, 20].

Good nursing work serves are an integral part of operations, and active postoperative nursing not only helps speed up postoperative rehabilitation of patients, but also plays an important role in reducing the incidence of various complications [21, 22]. In the division of the two groups, this research analyzes the feasibility of active postoperative care for liver cancer patients complicated with obstructive jaundice after

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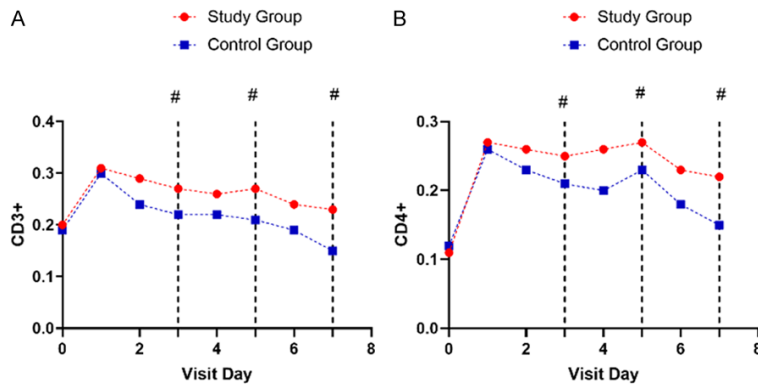


Figure 4. The comparison analysis of immune index changes between these two groups. Results show that CD3+ and CD4+ of both groups increased significantly after operation, but appear to have a downward trend. Besides, the levels of CD3+ (A) and CD4+ (B) in study group were all higher than that in the control group on the 3rd, 5th and 7th day after operation ($P < 0.05$). # means that the difference for the same index and same time between these two groups is statistically significant.

intervention therapy. The result shows that general operation indexes of the patients in the study group receiving active nursing care after operation, including the time until they got out of bed, the time until extubation, itch relief and the time of discharge, are evidently earlier than that in the control group. The striking difference between these two groups suggests that active nursing care can accelerate postoperative recovery of patients. A retrospective analysis of 100 liver cancer patients complicated with obstructive jaundice indicated that evidence-based nursing can help improve the cognition of disease, accelerate the postoperative prognosis, and effectively improve liver function, and the data showed that after intervention, the postoperative hospitalization decreased from (8.19 ± 1.22) d to (5.19 ± 0.34) d, and hospitalization expenses reduced from (3.33 ± 0.21) ten thousand yuan to (2.10 ± 0.32) ten thousand yuan [23]. In this view, the authors of this study, assessed active nursing in comparison with traditional passive nursing mode, where active surgical nursing adheres to patient-centered concepts, helps conduct the nursing work in an all-round way and thus accelerates the postoperative rehabilitation of patients.

This paper also analyzed the changes of liver function and immune indexes of these two groups. It is found that the levels of ALT and AST in the study group were apparently lower than that in control group, while CD3+ and

CD4+ were significantly higher than that in control group, indicating that the liver function and immunity in the study group were better and patients recovered better after operation. Studies on patients with liver cancer complicated with obstructive jaundice showed that such patients would develop liver failure in the late stage and eventually die, and the survival time of patients would be significantly prolonged if their liver function could be improved [24, 25]. In this study, the fact that postoperative liver function of the study group was superior to that of

control group suggests that active nursing intervention is truly beneficial to improve liver function of patients. Further comparison of immune indexes suggests that this process is probably because of the improvement of the patient's immunity by active nursing. Besides, CD3+ and CD4+ fall into the category of T lymphocytes as common clinical indexes that reflect individual immunity. In this paper, the fact that the postoperative immune indexes of the study group were better than that of the control group proves that active nursing enables improvement of a patient's immunity and accelerate his postoperative outcome [26]. In terms of the comparison of postoperative pain severity, quality of life scores and complications between these two groups, the authors hold that its mechanism may be associated with postoperative pain care and preventive intervention. Pain care, on the one hand, can help patients understand pain itself and actively adjust their mental state together with nurses. On the other hand, it also arouses the patients' subjective initiative, enabling them actively participate in the nursing process, and so makes it possible for biological indicators to be improved even more significantly after operation.

The innovation of this study lies in the utilization of postoperative nursing measures for liver cancer patients complicated with obstructive jaundice, and a detailed demonstration of the active nursing effect from these aspects as

Table 2. Comparison of postoperative complications between these two groups [n (%)]

Group	Number of cases	Fever	Gastrointestinal reaction	Wound bleeding	Liver pain	Total incidence rate
Study group	40	1 (2.50)	0 (0.00)	0 (0.00)	1 (2.50)	2 (5.00)
Control group	40	3 (7.50)	2 (5.00)	1 (2.50)	3 (7.50)	9 (14.50)
X ²	-	-	-	-	-	5.165
P	-	-	-	-	-	0.023

immune function, liver function, pain degree and quality of life, etc., which provide a good theoretical reference for postoperative intervention of such patients in clinic. The limitation of this study is that the influence of patients' basic diseases on the intervention results has not been excluded, which may lead to the errors in the results to a certain extent. This will be corrected and improved in the next research steps.

Disclosure of conflict of interest

None.

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