



Effect of early nutrition support on postoperative rehabilitation in patients with oral cancer

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ARTICLE INFO

Article history:

Received

Received in revised form

Accepted

Available online

Keywords:

Early

Nutrition support

Oral cancer

Nutrition status

ABSTRACT

Objective: To explore the effect of early nutrition support on the postoperative nutrition metabolism and rehabilitation in patients with oral cancer. **Methods:** A total of 80 patients with oral cancer who were admitted in our hospital from January, 2013 to January, 2015 were included in the study, and divided into the observation group (early nutrition support) and control group (routine treatments) with 40 cases in each group. The postoperative basic nutrition requirement amount in the observation group was calculated according to Harris-Nenedict formula. The appropriate pharmaceuticals and nutritional pathway were selected. The patients in the control group were given routine diets after operation. The levels of ALB, PAB, TRF, TCL, IgM, IgG, and IgA before and after operation in the two groups were compared. The body mass and wound healing in the two groups were recorded and compared. **Results:** The body mass and serum TRF level after operation in the observation group were slightly reduced, but were not significantly different from those before operation ($P>0.05$). The serum ALB, PAB, and TLC levels after operation in the observation group were significantly reduced when compared with before operation ($P<0.05$). The body mass, and serum ALB, PAB, TRF, and TLC levels after operation in the control group were significantly reduced when compared with before operation ($P<0.05$). The difference of peripheral blood IgM, IgG, and IgA levels before operation between the two groups was not statistically significant ($P>0.05$), but the above indicators were significantly elevated after operation ($P<0.05$). The peripheral blood IgM, IgG, and IgA levels 1 week after operation in the observation group were significantly higher than those in the control group ($P<0.05$). The stage I healing rate of the surgical wound in the observation group was significantly higher than that in the control group ($P<0.05$). **Conclusions:** The early nutrition support can effectively enhance the postoperative nutrition status and immunological function in patients with oral cancer, and is beneficial for the postoperative rehabilitation.

1. Introduction

Oral cancer is easy to be ignored by the patients, and belongs to the middle and advanced stage when paying a visit to the clinic; therefore, the surgical treatment is preferred[1]. However, due to large trauma, operation can cause difficulty in feeding; moreover,

malnutrition is accompanied in malignant tumor patients, with additional nutrition intake disturbance, which can not satisfy the nutrition requirements in a stress state and severely affect the postoperative rehabilitation and prognosis[2-4]; therefore, improving the postoperative nutrition state in patients with oral cancer is of great significance in enhancing the rehabilitation and immunological function. The study is aimed to explore the effect of early nutrition support on the postoperative nutrition metabolism and rehabilitation in patients with oral cancer.

2. Materials and methods

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Foundation project: The study was supported by the Scientific and Research Project of Nanchong City with the number of SC20160123-5.

2.1. Clinical materials

A total of 80 patients with oral cancer who were admitted in our hospital from January, 2013 to January, 2015 were included in the study, among which 44 were male, and 36 were female; aged from 35 to 71 years old, with an average age of (55.1±10.2) years old. All the patients were confirmed by the histopathological examinations before operation, among which 22 had throat cancer, 41 had tongue cancer, and 17 had buccal mucosa cancer. The patients in the study were performed with radical resection in combined with extended resection, and partial patients were performed with skin flap repair. Inclusion criteria were as follows: (1) those who had not taken radiotherapy and chemotherapy before operation; (2) those who were willing to take part in the study after operation; (3) those who had signed the informed consents.

2.2. Methods

According to the different nutrition support schemes, the patients were divided into the observation group (early nutrition support) and control group (routine treatments) with 40 cases in each group. The patients in the two groups were given normal diets before operation, and given routine anti-infection, blood stopping, and stomach protecting after operation. The patients in the observation group were given early nutrition supports 1 d after operation. The basic nutrition requirement amount was calculated according to Harris-Nenedict formula. The glucose and fat amount was calculated according to the fat and glucose energy supply. The nitrogen intaking amount was calculated according to the non-protein calory: nitrogen calory (150:1). The appropriate nutrition supplements, microelements, and electrolyte were selected according to the calculation results. The patients in the control group were given routine diets after operation.

2.3. Observation indicators

The levels of ALB, PAB, TRF, TCL, IgM, IgG, and IgA before operation and 1 week after operation in the two groups were

compared. The body mass and wound healing in the two groups were recorded and compared.

2.4. Statistical analysis

SPSS 13.0 software was used for the statistical analysis. The measurement data were expressed as mean±SD, and Shapiro-Wilk test was used. Chi-squared test was used for the enumeration data. $P<0.05$ was regarded as statistically significant difference.

3. Results

3.1. Difference of nutrition metabolism indicators before and after operation between two groups

The body mass and serum TRF level after operation in the observation group were slightly reduced, but were not significantly different from those before operation ($P>0.05$). The serum ALB, PAB, and TLC levels after operation in the observation group were significantly reduced when compared with before operation ($P<0.05$). The body mass, and serum ALB, PAB, TRF, and TLC levels after operation in the control group were significantly reduced when compared with before operation ($P<0.05$) (Table 1).

3.2. Difference of peripheral blood immunoglobulin indicators before and after operation between two groups

The difference of peripheral blood IgM, IgG, and IgA levels before operation between the two groups was not statistically significant ($P>0.05$), but the above indicators were significantly elevated after operation ($P<0.05$). The peripheral blood IgM, IgG, and IgA levels 1 week after operation in the observation group were significantly higher than those in the control group ($P<0.05$) (Table 2).

3.3. Difference of surgical wound healing between two groups

The stage I healing rate of the surgical wound in the observation

Table 1

Difference of nutrition metabolism indicators before and after operation between two groups (g/L).

Groups	n		PAB	ALB	TRF	TLC (×10 ⁹ /L)	Body mass (kg)
Observation group	40	Before operation	0.26±0.05	38.52±4.14	2.19±0.57	1.71±0.57	62.62±9.73
		1 week after operation	0.24±0.06*	36.33±4.15*	2.15±0.42#	1.39±0.54*#	58.05±11.14#
Control group	40	Before operation	0.25±0.05	37.31±2.65	2.27±0.40	1.52±0.55	56.33±7.98
		1 week after operation	0.20±0.07*	35.02±4.18*	2.08±0.39*	1.08±0.48*	52.26±6.40*

* $P<0.05$, when compared with before operation; # $P<0.05$, when compared with the control group.

Table 2

Difference of peripheral blood immunoglobulin indicators before and after operation between two groups (g/L).

Groups	n		IgM	IgG	IgA
Observation group	40	Before operation	1.59±0.33	12.33±2.12	2.19±0.13
		1 week after operation	1.86±0.42*#	13.39±2.09*#	2.38±0.32*#
Control group	40	Before operation	1.51±0.48	11.41±2.13	2.08±0.14
		1 week after operation	1.58±0.51*	12.46±2.21	2.19±0.23

* $P<0.05$, when compared with before operation; # $P<0.05$, when compared with the control group.

group was significantly higher than that in the control group ($P<0.05$) (Table 3).

Table 3

Difference of surgical wound healing between two groups.

Groups	n	Stage I	Stage II
Observation group	40	36 (90.0) [#]	4 (10.0)
Control group	40	22 (55.0)	18 (45.0)

[#] $P<0.05$, when compared with the control group.

4. Discussion

Due to the lesion sites mostly in the oral cavity, oral cancer is easy to be ignored by the patients, and has already developed into the advanced stage when paying a visit to the clinic; therefore, the surgical treatment is required. The seized nutrition ingredients by the tumors, anorexia caused by lesions, and increased energy consumption and requirements after operation can further aggravate the nutrition intaking insufficiency, which can affect the postoperative rehabilitation[6].

The nutrition support is a treatment means through in vivo or in vitro administration of special nutrition supplements for those who can not feed or intake energy after operation to maintain the metabolism, and growth requirements, and can provide adequate nutritional substances and energy to promote the functional recovery and tissue repair[7-10]. The goal of nutrition support is to prevent or correct the malnutrition occurred during the treatment process[11]. The patients with oral cancer are in a stress state after operation, which can increase the energy consumption; moreover, due to the special location sites, the patients are unable to take food directly, resulting in malnutrition, which can affect the postoperative rehabilitation[12-16]. The results in the study showed that the body mass and serum TRF level after operation in the observation group were slightly reduced, but were not significantly different from those before operation ($P>0.05$); the serum ALB, PAB, and TLC levels after operation in the observation group were significantly reduced when compared with before operation ($P<0.05$); the body mass, and serum ALB, PAB, TRF, and TLC levels after operation in the control group were significantly reduced when compared with before operation ($P<0.05$); the difference of peripheral blood IgM, IgG, and IgA levels before operation between the two groups was not statistically significant ($P>0.05$), but the above indicators were significantly elevated after operation ($P<0.05$); the peripheral blood IgM, IgG, and IgA levels 1 week after operation in the observation group were significantly higher than those in the control group ($P<0.05$), indicating that administration of early nutrition support for patients with oral cancer can effectively enhance the nutrition status and immunological function, and contribute to the postoperative rehabilitation. The results in the study showed that the stage I healing rate of the surgical wound in the observation group was significantly higher than that in the control group ($P<0.05$), whose reason is closely associated with the improvement of postoperative nutrition status and immunological function.

In conclusion, the early nutrition support can effectively enhance the postoperative nutrition status and immunological function in

patients with oral cancer, and is beneficial for the postoperative rehabilitation.

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