Efficacy of Comprehensive Rehabilitation on Quality of Life in Elderly Head and Neck Cancer Patients after Radiotherapy

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Key words: Head and neck neoplasm; Aged; Rehabilitation; Quality of life.

Abstract. Objective: To evaluate the effects of comprehensive rehabilitation on quality of life in elderly head and neck cancer patients after radiotherapy.

Methods: Sixty-four subjects were randomly assigned to the rehabilitation group (RG) and control group (CG). Both groups were given routine healthy counseling, but RG was additionally provided with comprehensive rehabilitation. The depressive status, nutritional status and quality of life were assessed at the end of and three months after RT.

Results: After comprehensive rehabilitation for three months, the patients in RG exhibited lower GDS, MNA-SF and higher QLQ-c30 score compared with those before rehabilitation and those in CG (P<0.05). The score of MNA-SF in CG at three months after RT was significantly better than those at the end of RT (P<0.05).

Conclusion: The comprehensive rehabilitation can improve the depressive status, nutritional status and quality of life in older patients with head and neck cancer after radiotherapy.

Introduction

In 2013, there were estimated 2171.0 thousand new cancer cases in older people in China, accounting for 58.96%, and 1600.5 thousand deaths, accounting for 67.70%. Head and neck cancer occupied an important part of them [1].

Head and neck cancers and those treatments can severely impact the ability to appearance, eat, emotion, and lead to deterioration of quality of life (QOL). Depression, cancer fatigue, dysphagia, and malnutrition are very common in older patients with head and neck cancer after radiotherapy [2]. The patients presented with high baseline depression levels compared to patients with other cancers. The prevalence of malnutrition in older patients with head and neck cancer after radiotherapy is estimated to be between 50 to 80% [3,4].

Previous studies focused on the local control rate and survival rate of surgery, radiotherapy, chemotherapy and other treatments [5]. There are few studies and reports on rehabilitation after treatment. This article is designed to assess the feasibility and efficacy of comprehensive
rehabilitation including psychological counseling, physical exercise, swallowing training and nutrition intervention on the quality of life in older head and neck cancer patients after radiotherapy, to propose a approach adapted to routine clinical practice.

**Materials**

**Sample**

The inclusion criteria of participants were as follows: (1) at least 60 years of age and with a pathology-confirmed diagnosis of malignant cancer; (2) ECOG score less than 2 points; (3) received radical radiotherapy; (4) without cognitive impairment; and (5) understood correctly and answered the questionnaire. Patients were excluded: (1) diagnosis of a major medical disease, such as uncontrolled centrum cerebrovascular diseases, severe respiratory disease, acute infection; (2) the expected survival is less than 6 months; (3) having mental illness or psychosis. Between June 2016 and September 2017, 64 participants were selected for the present study, and were divided into rehabilitation group (RG) and control group (CG) by random number method, with 32 cases in each group. There was no significant difference on gender, age, stage, education years, family income, radiation dose and other general information between the groups ($P>0.05$) (Table 1). This study was approved by the Ethical Committee of the China-Japan Union Hospital of Jilin University and informed-consent forms were obtained from the participants and their family.

Table 1. Characteristics of the study participants.

<table>
<thead>
<tr>
<th></th>
<th>RG($n=32$)</th>
<th>CG($n=32$)</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male/female, n/n )</td>
<td>20/12</td>
<td>18/14</td>
<td>ns</td>
</tr>
<tr>
<td>Age (year, x±s )</td>
<td>71.23±6.13</td>
<td>72.35±7.24</td>
<td>ns</td>
</tr>
<tr>
<td>Marriage (married/widowed,n/n )</td>
<td>24/8</td>
<td>25/7</td>
<td>ns</td>
</tr>
<tr>
<td>Education (below Junior high school / Junior high school and above, n/n )</td>
<td>20/12</td>
<td>22/10</td>
<td>ns</td>
</tr>
<tr>
<td>Annual income of the family (below ¥ 100 thousand/above ¥ 100 thousand,n/n )</td>
<td>24/8</td>
<td>22/10</td>
<td>ns</td>
</tr>
<tr>
<td>Tumor type (laryngeal cancer/oropharyngeal cancer/nasopharyngeal carcinoma/oral cancer/hypopharyngeal carcinoma/other, n/n/n/n/n )</td>
<td>6/6/6/5/4/5</td>
<td>7/5/7/6/3/4</td>
<td>ns</td>
</tr>
<tr>
<td>Tumor staging (I/II/III/IV, n/n/n/n )</td>
<td>4/7/15/6</td>
<td>3/6/16/7</td>
<td>ns</td>
</tr>
</tbody>
</table>

Abbreviations: RG, rehabilitation group; CG, control group; ns, not significant.

**Intervention**

Patients in two groups were given routine healthy counseling. A rehabilitation treatment group composed of doctors, nurses, rehabilitative therapists and dietitians was established. The rehabilitation group received comprehensive rehabilitation including psychological counseling, physical exercise, swallowing training and nutrition intervention.

**Psychological counseling.** After radiotherapy, the doctors received psychological training took effective communication with patients, listened to the difficulties and demands of patients, explained the side effects after radiotherapy and rehabilitation knowledge, and helped them to establish the confidence to overcome the disease, 30 minutes every time, 1 time a week.
Physical exercise. The rehabilitation therapists helped patients with physical strength and endurance exercise according to their own physical condition, 60 minutes every time, 2 times a week, and encourage patients to accomplish the moderate intensity exercise (such as brisk walking outdoors) companied with relatives 30 minutes everyday.

Swallowing training and nutrition intervention. The nurses gave patients the training of strength and coordination of swallowing related structure, 60 minutes every time, 2 times a week. Nutritionists gave nutrition education to patients and their families, helped patients to establish individualized diet plan according to their daily food intake, 30 minutes every time, 1 time a week, continuous treatment for 6 months. Mini Nutritional Assessment Short-Form (MNA-SF) was used weekly to assess the nutritional status of the patients. The total feeding capacity was 6-7kJ·kg⁻¹·D⁻¹, total protein 1.2-1.5g·kg⁻¹·D⁻¹. When the oral intake of patients can not reached to the standard, oral nutrition supplementation was given to get the target.

Measures

At end of and three months after radiotherapy, patients’ depression levels, nutritional status and quality of life were assessed.

Geriatric Depression Scale (GDS). The GDS which answers are “yes” or “no” is easy to understand for the old people, and is one of the most widely used instruments for measuring the severity of depression of old people. The GDS contains 30 questions, each answer being scored on a value of 0 or 1-10 points can be seen as a normal range, 11-20 mild depression and 21-30 as moderate to severe depression. Higher total scores indicate more severe depressive symptoms [6].

Mini Nutritional Assessment (MNA-SF). Mini nutritional assessment Short-Form is special for the assessment of nutritional status of the older, can find malnutrition risk earlier. The operation is simple, no trauma, shorter time, and has good prediction sensitivity and specificity values of 12-14 normal nutrition, 8-11 points as malnutrition risk, 0-7 points as malnutrition [7].

Quality of Life Questionnaire-Core 30 scale (EORTC QLQ-C30). European organization for the research and treatment of cancer quality of life questionnaire-core30 is the most validated questionnaire of life tool on oncology and is commonly used worldwide It consists of three sections such as general health status scale (GHS), functional scale (FS) and symptom scale (SS) and has 30 questions in total. Higher total scores indicate better quality of life [8].

Statistical Analysis

The statistical data was analyzed with SPSS 18. Comparing mean and standard deviations of demographical data and questionnaire scores between the two groups with the Wilcoxon rank sum test, P values less than 0.05 were considered statistically significant.

Result

All the patients completed the study, the rate of completion and the recovery of questionnaire was 100%.

Statistical analysis of GDS, MNA-SF and QLQ-c 30 scores of patients in the 2 groups at the end of and three months after radiotherapy

There was no significant difference in GDS, MNA-SF and QLQ-c 30 scores at the end of radiotherapy between groups. GDS, MNA-SF and QLQ-c 30 scores at three months after radiotherapy in RG were significantly greater than data collected instantly at the end of
radiotherapy (P<.05). MNA-SF scores at three months after radiotherapy in CG were significantly greater than data collected instantly at the end of radiotherapy (P<.05) (Table 2).

Comparison of the efficacy of patients between the 2 groups at three months after radiotherapy

GDS, MNA-SF and QLQ-c 30 scores at three months after radiotherapy in RG were significantly greater than those collected in CG (P<.05) (Table 2).

Table 2. Depress, nutrition, quality of life in two groups.

<table>
<thead>
<tr>
<th></th>
<th>RG (n=32)</th>
<th>CG (n=32)</th>
</tr>
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<tbody>
<tr>
<td>GDS at the end of RT</td>
<td>12.26±2.43</td>
<td>12.67±2.44</td>
</tr>
<tr>
<td>3 month after RT</td>
<td>7.45±1.85</td>
<td>10.30±1.84</td>
</tr>
<tr>
<td>MNA-SF at the end of RT</td>
<td>8.46±4.21</td>
<td>8.34±4.15</td>
</tr>
<tr>
<td>3 month after RT</td>
<td>10.95±3.33</td>
<td>9.56±4.31</td>
</tr>
<tr>
<td>QLQ-c 30 at the end of RT</td>
<td>46.87±7.98</td>
<td>46.63±7.56</td>
</tr>
<tr>
<td>3 month after RT</td>
<td>57.94±9.67</td>
<td>49.83±10.11</td>
</tr>
</tbody>
</table>

Abbreviations: RG, rehabilitation group; CG, control group ;RT: radiotherapy; GDS: geriatric depression scale; MNA-SF: mini nutritional assessment short-Form; QLQ-c 30: quality of life questionnaire-core 30.

Discussion

With the aging of China’s population, the incidence of cancer is increasing. The positive influence of rehabilitation therapy has aroused people’s attention increasingly. Because of the influence of tumor location and treatment, older patients with head and neck cancer are more likely to suffer from disorders of speaking and eating, face up to depression, malnutrition and decline on quality of life [9]. The rehabilitation is especially important for these patients.

Due to the decline of cognition and the influence of cerebrovascular diseases, the older often accompany with mental health problems, and get negative emotions such as depression [10]. Older patients with cancer are more likely to have mental disorders due to the worry about treatment cost and effect. Psychological status is closely related to quality of life, depression can reduce social activities and quality of life [11]. In this study, psychological counseling was a important part in the comprehensive rehabilitation therapy, and made the depression score of the patients reduced significantly.

It is very common for older patients with head and neck cancer after radiotherapy to have swallowing dysfunction [12]. Dysphagia can lead to the decline of food intake and deterioration of nutritional status. Malnutrition prolongs the hospital stay in hospitalized older patients, increases infection complications and the risk of death. Kraaijenga have found that swallowing training for patients with head and neck tumors can improve the ability to swallow muscles and the function of swallowing [13]. The nutritional intervention can increase food intake, improve quality of life, and have the positive effect on therapeutic effect [14]. In this study, swallowing function training is an important part of rehabilitation therapy. The
nutritional status in control group was also improved as the side effects of treatment decreased, but active swallowing training and nutritional intervention, and timely nutritional supplement to patients with nutritional risk can better improve the nutritional status of patients.

Quality of life is a concept involving many aspects such as physiology, psychology and society. It can comprehensively measure people’s life status and has become a new important index for evaluating the curative effect of malignant tumors [15]. More patients live longer with the development of treatment, and pursue to improve the quality of life. But a variety of factors such as physical, mental, social, health and environment will affect the subjective feelings and the quality of life in older patients with cancer [16]. This situation requires us to establish a group including all types of personnel such as doctors, nurses, rehabilitative therapists and dietitians who develop the comprehensive rehabilitation. According to many factors that affect the quality of life, this study adopted comprehensive rehabilitation therapy including psychological counseling, physical exercise, swallowing training and nutritional intervention. All kinds of methods complement each other and promote each other, which improves the quality of life of patients.

In conclusion, comprehensive rehabilitation therapy can relieve depression; improve nutritional status and quality of life in older patients with head and neck cancer after radiotherapy.

References


