

Study of immune function and psychological intervention on patients with malignant tumor after radiotherapy.

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Abstract

Objective: To analyze the changes of immune function in patients with malignant tumor radiotherapy and healthy subjects before and after psychological intervention, so as to guide the clinical treatment of patients with cancer.

Methods: The psychological status, immune function and psychological intervention of the subjects were analyzed before and after the psychological test.

Results: In the malignant tumor group, the SCL-90 total score, total score, number of positive items, positive symptom scores and the factor scores were higher than those in healthy control group, mainly including somatization, depression, anxiety and psychosis, CD3+, CD4+, CD4+/CDS+ and NK cell levels were lower than the control group.

Conclusion: When patients with malignant tumors were compared with the healthy control group, the SCL-90 total score, positive and negative symptom scores indicated that the former had many psychological problems. And the immune function of patients with malignant tumors like CD3+, CD4+ level, were significantly lower than the healthy control group. Therefore, it is very important to test the immune function, and making a good monitor and personalized nursing in the late stage of radiotherapy for the immune function of the targeted health patients.

Keywords: Cancer radiotherapy, Mental health, Psychological intervention, Immune function, Nursing.

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Introduction

Malignant tumor is a serious disease that endangers human health, and presents a trend of increasing year by year [1]. Malignant tumor has become China's city residents "the first killer", the main reason of death in rural residents has risen to second, which is the fastest rising followed by lung cancer, colorectal cancer, breast cancer and prostate cancer [2-5]. Now, in patients with malignant tumor has become a special and important group in the society, about 70% of the patients with malignant tumors need radiotherapy in the treatment process (radiotherapy) and radiotherapy effect and status in the treatment of cancer has become increasingly prominent. Being diagnosed with malignant tumor is a serious stress event, to the patients themselves and their families are a great psychological impact, will cause a series of adverse psychological reactions, such as anxiety, depression, fear, etc [1,6].

Although cancer patients after surgical treatment, temporarily stable condition, but a series of residual effects arising therefrom, will cause the malignant tumor patients with chronic stress, the effects on the neuroendocrine immune system function, bring a negative effect to the quality of life of patients with malignant tumor and survival. For example, in patients with malignant tumor undergoing radiotherapy on the

one hand, the patient and family to radiotherapy is poorly understood and there are many ambiguous or even wrong ideas, with fear of disease and cognitive knowledge of radiotherapy is not complete or partial understanding will further increase the psychological burden of patients, and inhibit and damage the immune system function, can aggravate the condition worse, with side effects, have a negative impact on the development and prognosis of the disease; on the other hand, the radiation itself also affect the immune function of the patients, the patient's immune function is suppressed further or damage, directly affect the rehabilitation of patients and quality of life.

The psychological and social factors on the direct impact on the quality of life and the prognosis of cancer patients, the correct Countermeasures of nursing and psychological intervention can effectively improve the psychological status of cancer patients, the psychological nursing intervention in patients with malignant tumors has attracted more and more attention [7]. But up to now the number of evaluation on the psychological status of the malignant tumor patients before and after radiotherapy by using psychological tests of scientific system, the system is very small, reported more lack of psychological behavior evaluation and effect of psychological

intervention on psychological status of patients with malignant tumor radiotherapy.

Material and Methods

Selected 60 cases of malignant tumors, from May 2014-2015 year in June received radiotherapy in Cancer Hospital of Hunan province outpatient or hospitalization, according to clinical manifestations, pathology, imaging examination and histopathological examination confirmed the diagnosis of malignant tumor. Patients in the age gap are relatively large, mainly in the range of 45-65 years old, average age (52.15 ± 12.13) years old. There were 38 male and 22 female patients, including 15 cases of lung cancer, 10 cases of oesophageal carcinoma, 5 cases of rectal cancer, 3 cases of nasopharyngeal carcinoma, 5 cases of breast cancer, cervical cancer, laryngeal cancer, skin cancer, gastric carcinoma, tonsillar cancer, oral cancer, tongue cancer and mediastinal carcinoma 2 cases, cervical cancer, cervical lymph node meningeal metastasis, cancer, renal cell carcinoma, bladder carcinoma, thymic carcinoma in 1 cases. All of the patients were informed of the notification of the disease, and then in the case of knowing the purpose of this experiment, the first hospital to receive treatment. The experiment and research in the consent of their families and relatives and friends, to ensure the authenticity of the experiment.

At present, there are many methods such as general information survey questionnaire, psychological behavior rating scale test, psychological intervention method, immune function test and data collation and statistical processing. Taking into account the advantages and disadvantages of these

methods, in the experimental process, make full use of the advantages of these methods, combined with each other, as far as possible to make the experimental results more in line with the objective facts. Self rating Anxiety Scale (SAS) [8] was used to evaluate the patients' subjective feelings, the degree of anxiety. The scale consisted of 20 items, 15 for the positive score (rated 1, 2, 3, 4, 5, 4, 3, 2, 1, respectively). 1 points on behalf of no or very little time, 2 hours on behalf of a small part of the time, 3 points representing a considerable time, 4 points on behalf of the vast majority or all of the time. Self rating Depression Scale (SDS) [9] compiled by Zung in 1965, is divided into 4 levels: no or very little time, a little time, a considerable amount of time, most or all of the time. If the positive score, followed by 1, 2, 3, 4 points. Reverse score was rated 4, 3, 2, 1 points. The higher the score, the more obvious the tendency of depression was.

Results

Study on the mental health and emotion of patients with malignant tumor radiotherapy

Psychological status, coping style, personality characteristics and correlation of malignant tumor could be seen from Table 1, malignant tumor group SCL-90 total score, total score, number of positive items, positive symptom scores and the factor scores were higher than those in healthy control group, mainly in somatization, depression, anxiety and psychosis, show the psychological problems of patients with malignant tumor have more.

Table 1. SCL-90 test of malignant tumor patients (score).

| Total Score | Total Average score | Positive symptom(Average) | Somatic | Obsession | Personal relationship |
|-------------|---------------------|---------------------------|---------|-----------|-----------------------|
| 158.21 | 1.73 | 35.68 | 1.68 | 1.72 | 1.65 |
| Depression | Anxiety | Antagonize | Terror | Paranoid | Mental illness |
| 1.82 | 1.76 | 1.59 | 1.52 | 1.37 | 1.74 |

Changes of immune function in patients with radiotherapy

From Table 2, CD3+, CD4+, CD4+/CDS+ in patients with malignant tumor, NK was significantly lower than that of normal healthy people, including CD3+, CD4+, CD4+/CDS+ two groups was statistically significant (p<0.01), and CDS in patients with malignant tumors was ten higher than that of healthy people, but the two groups, no statistical significance (p>0.05).

Table 2. Analysis of immune function in patients with malignant tumor.

| Value | CD3+ | CD4+ | CD8+ | CD4+/CD8+ | NK |
|----------------|-------|-------|-------|-----------|-------|
| Mesured Valued | 55.32 | 23.26 | 29.61 | 1.25 | 17.33 |

| | | | | | |
|--------------|-------|-------|-------|------|-------|
| Normal value | 63.51 | 36.28 | 25.37 | 1.52 | 19.12 |
|--------------|-------|-------|-------|------|-------|

Psychological intervention for cancer patients with radiotherapy

Before and after the intervention, 60 cases of patients with SAS, SDS scores were compared (Table 3). Table 3 shows that the comprehensive nursing intervention, 60 patients with anxiety and depression scores were significantly lower than before the intervention, the difference was statistically significant, P<0.05. And according to the practice of psychological intervention that richer economic poor psychological, psychological intervention early is more obvious; rural residents and migrant workers to urban residents, better psychological intervention effect; the difficulty of high school and above diploma to implement psychological

intervention more, but in the latter half of the effect will be better.

Table 3. Comparison of SAS and SDS of 60 patients before and after psychological intervention ($x \pm s$).

| Time | N | SAS | SDS |
|---------------------|----|--------------|--------------|
| Before intervention | 60 | 37.22 ± 6.52 | 39.21 ± 6.44 |
| After intervention | 60 | 24.39 ± 4.73 | 25.64 ± 4.83 |
| T value | - | 16.72 | 15.33 |
| P value | - | <0.01 | <0.01 |

Discussion

According to the relevant literature at home and abroad, and related research, the impact of psychological problems on people's illness is very large, when people have a lot of psychological pressure, the incidence will be higher than ordinary people. For cancer patients, their psychological problems have been a hot topic of experts, the impact of psychological problems of patients and factors have much attention [10]. In people's life, happy and sad, sad and a series of emotional expression, it is possible to affect people's physical health. So doctors and family members also play a very important role in the patient's illness [11]. First of all, the family in patients with treatment or when they learned that the patient's illness, should be encouraged to patients and insisted that the patient together, to encourage patients to live a miracle is possible [12,13]. And actively accompany the patient to do some positive psychological guidance and exercise, so that their physical and mental health to ensure active and positive.

Most of the patients with malignant tumor had negative emotional problems such as anxiety and depression [14]. Psychological factors played an important role in the evolution of the occurrence, prognosis and prognosis of patients with malignant tumor [15]. Some scholars believe that systematic psychological intervention can improve the patients' negative psychological and improve their quality of life and clinical efficacy by correcting the wrong cognition of the patients, and to improve the patients' quality of life. Studies have shown that changes in mood and behavior itself can also affect the changes of brain gut axis caused by brain gut peptides of different reactions, and then change the stomach, so that patients have abdominal distension, belching, nausea and other symptoms [16]. And insomnia caused by emotions, loss of appetite and mental stress can also lead to decreased immunity, resulting in deterioration of the condition. The importance of psychological intervention can also be seen from the experimental results. Before and after the intervention, the anxiety and depression of the patients were significantly decreased. Treatment effects will be better and better. The study showed that the nursing care of patients with malignant tumor should be added with the necessary psychological intervention on the basis of routine nursing.

Because the patient's psychological problems and habits of life will have a great impact on their conditions, in normal circumstances, we should encourage patients to actively face the problem of social. In our daily life, we should also ensure that our normal physical and mental health, positive and healthy in the face of life. Through the study of people's psychological problems, to reduce the incidence of people and promote the harmonious development of society. In order to ensure the normal immune system, usually exercise and a regular life habit, is the first step to prevent cancer, in daily life, maintain a positive mind, maintain a good attitude, so that it is conducive to the prevention of tumor formation, smile, live a little more happiness, less physical ailments point. Psychological intervention is a more effective way, first of all doctors should be in patients to establish a good nurse patient relationship, so that patients with bad mood to be released, to encourage patients to say the feelings of the heart. Secondly, we should correctly treat adverse reactions of radiotherapy, telling patients that these reactions are normal, is due to radiation reaction caused by fatigue and hair loss and other issues. Finally, as the patient's most trusted relatives and friends, should actively encourage patients positive and progressive, so as to maintain the good condition of the disease. Changes in psychological status of cancer patients and their psychological malignant complex, any small factors are likely to affect their mood, negative emotions will be conducive to the proliferation of tumor cells, so keep a good mood is very important for patients with malignant tumor. This requires family and friends and doctors and patients to work together, so that the patients would be treated and felt better.

References

1. Ebata T, Okuma Y, Nakahara Y. Retrospective analysis of unknown primary cancers with malignant pleural effusion at initial diagnosis. *Thoracic Cancer* 2016; 7: 39-43.
2. Gray R, Fitch M, Davis C. Breast cancer and prostate cancer self-help groups: Reflections on differences. *Psycho Oncol* 2016; 195: 137-142.
3. Cho S. Lifestyle Changes May Not Maintain After Prostate Cancer Diagnosis. 2016.
4. Jacobs ET, Kohler LN, Kunihiro AG, Jurutka PW. Vitamin D and Colorectal, Breast, and Prostate Cancers: A Review of the Epidemiological Evidence. *J Cancer* 2016; 7: 232-240.
5. Isaacs WB. What Do Myeloma, Breast Cancer, and Prostate Cancer Have in Common? *Eur Urol* 2016.
6. Gopie JP, Vasen H, Tibben A. Surveillance for hereditary cancer: Does the benefit outweigh the psychological burden. A systemic review. *Critical Rev Oncol/Hematol* 2012; 83: 329-340.
7. Obieglo M, Uchmanowicz I, Wlekklik M, Jankowska-Polariska B, Kusmierz M. The effect of acceptance of illness on the quality of life in patients with chronic heart failure. *Eur J Cardiovasc Nurs* 2016; 15: 241-247.
8. Li H, Jin D, Qiao F, Chen J, Gong J. Relationship between the Self-Rating Anxiety Scale score and the success rate of

- 64-slice computed tomography coronary angiography. *Int J Psychiatry Med* 2016; 51: 47-55.
9. Inoue N, Fukuyama K, Hirayama S. Cardiovascular risk assessment using LOX-index and Self-Rating Depression Scale. *Ijc Metabolic Endocrine* 2016; 12: 3-7.
 10. Edwards B, Clarke V. The psychological impact of a cancer diagnosis on families: the influence of family functioning and patients' illness characteristics on depression and anxiety. *Psychooncology* 2004; 13: 562-576.
 11. Onofri Júnior VA, Martins VS, Marin MJS. Elderly health care in the Family Health Strategy and the prevalence of common mental disorders. *Rev bras geriatr gerontol* 2016; 19: 21-33.
 12. Chung ML, Lennie TA, Muddmartin G. Adherence to a low-sodium diet in patients with heart failure is best when family members also follow the diet: a multicenter observational study. *J Cardiovascular Nurs* 2015; 30: 44-50.
 13. Priebe S, Kelley L, Omer S. The Effectiveness of a Patient-Centred Assessment with a Solution-Focused Approach (DIALOG+) for Patients with Psychosis: A Pragmatic Cluster-Randomised Controlled Trial in Community Care. *Psychother Psychosomatics* 2015; 84: 304-313.
 14. Dziubek W, Kowalska J, Kusztal M. The Level of Anxiety and Depression in Dialysis Patients Undertaking Regular Physical Exercise Training - a Preliminary Study. *Kidney Blood Pressure Res* 2016; 41: 86-98.
 15. Yamagata M, Mori M, Mimori K, Mafune KI, Tanaka Y. Expression of pyrimidine nucleoside phosphorylase mRNA plays an important role in the prognosis of patients with oesophageal cancer. *Br J Cancer* 1999; 79: 565-569.
 16. Bannai M, Torii K. Digestive physiology of the pig symposium: detection of dietary glutamate via gut-brain axis. *J Anim Sci* 2013; 91: 1974-1981.

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