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Observation of the Effectiveness of Acupuncture in Treating Postoperative Swallowing Disorders in Patients with Brain Tumors

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Abstract: Objective: To observe the efficacy of acupuncture in treating postoperative swallowing disorders in patients with brain tumors. **Methods:** A total of 74 patients with postoperative swallowing disorders due to brain tumors admitted to our hospital from January 2022 to February 2023 were selected as the research objects. Among them, the control group received swallowing function rehabilitation training, while the observation group received acupuncture treatment. The application effects were compared between the two groups. **Results:** After treatment, the standard swallowing function and specific quality of life related to swallowing disorders in the observation group were significantly lower than those in the control group, with a marked difference. The effective rate of treatment was 24.32% in the control group and 5.41% in the observation group ($P < 0.05$). **Conclusion:** Acupuncture treatment has special advantages, which can improve swallowing disorders in patients, enhance their quality of life, and achieve a higher effective rate of treatment. It is safe and has promotional value.

Keywords: Acupuncture treatment; Brain tumors; Swallowing disorders

Brain tumors are diseases that can affect bodily functions, and postoperative swallowing disorders can significantly reduce patients' quality of life. Therefore, it is necessary to actively explore scientific and effective treatment methods[1] . Brain tumors are classified as malignant diseases, which can increase intracranial pressure and cause neurological symptoms. They can occur in any part of the brain tissue and are classified as benign or malignant. Benign tumors grow slowly and generally do not spread to other parts, whereas malignant tumors grow rapidly and can spread to other areas. Patients with brain tumors often experience symptoms such as nausea, vomiting, headaches, and language disorders, which are correlated with the size and location of the tumor. Postoperative swallowing disorders in brain tumor patients refer to swallowing difficulties occurring after surgery. Surgery is an essential method for removing brain tumors, but it can damage the body tissues. Once cerebral edema occurs, it can compress nerves, leading to the loss of cough reflex and severe impairment of swallowing function. Postoperative acquired swallowing dysfunction in brain tumor patients can lead to various complications such as choking and aspiration pneumonia, increasing hospitalization time and costs. Currently, clinical

rehabilitation interventions are mainly applied to patients, among which swallowing function training has shown significant effectiveness[2] . However, there are still limitations. Research has found that acupuncture treatment can be applied to improve swallowing disorders in patients. Acupuncture treatment is a special therapy in traditional Chinese medicine, which balances yin and yang, regulates qi and blood by stimulating acupuncture points, and achieves disease treatment. It occupies an important position in Chinese traditional culture. In the treatment of postoperative swallowing disorders in brain tumor patients, acupuncture can fully demonstrate its effectiveness and value, alleviate clinical symptoms, and accelerate recovery. Therefore, this article analyzes the application of acupuncture treatment in postoperative swallowing disorders in brain tumor patients, aiming to explore its role and value in detail.

1. Data and Methods

1.1 General Information

A total of 74 postoperative brain tumor patients with swallowing disorders were selected from our hospital from January 2022 to February 2023, with 37 patients in each group. Inclusion criteri[3] a: 1. Postoperative clear consciousness and stable vital signs. 2. Absence of surgical contraindications. 3. Complete basic information. 4. Signed informed consent form. Exclusion criteria: 1. Patients with cognitive, mental, or communication disorders.2. Patients with recent history of other surgeries.3. Patients with severe organ dysfunction.4. Patients with visual or auditory impairment affecting normal communication. There was no statistically significant difference in the general data of the patients ($P > 0.05$), as shown in **Table 1**.

Table 1 Comparison of the general data of the two groups[n，$\overline{\chi} + s$]

Group	Example number	Example number		Age	Average Age
		Male	Female		
Reference Group	37	20	17	22~73 years old	（52.69±2.11）
Observation Group	37	21	16	21~70 years old	（53.01±2.12）

1.2 Methods

1.2.1 Control Group

The control group underwent swallowing function rehabilitation training, including exercises for jaw and cheek movements, lip exercises, and active swallowing training.

1.2.2 Observation Group

The observation group received acupuncture treatment. Acupoints selected were LIANQUAN (CV23), FENGCHI (GB20), BAI LAO (EX-HN14), YU YE (EX-HN13), and JIN JIN (EX-HN12). A filiform needle was inserted into the FENGCHI acupoint to a depth of about 1 inch, with the appropriate sensation of soreness and distension in the patient, and the time controlled at 20 minutes, applying even reinforcing and reducing technique[4] , each for 10 minutes. A 3-inch filiform needle was used to insert into LIANQUAN and JIA LIANQUAN acupoints toward the root of the tongue, to a depth of about 1 inch. A 2-inch filiform needle was used to insert into BAI LAO acupoint, applying even reinforcing and reducing technique for 5 times. After needling LIANQUAN, JIA LIANQUAN, and BAI LAO, an electric acupuncture therapy device was used with a duration of 20 minutes. A 1.5-inch filiform needle was inserted into YU YE and JIN JIN acupoints, twisted to obtain qi sensation. The treatment was administered once a day, and the duration of treatment for all patients was four weeks.

1.3 Observation Index

The swallowing function scale was used to assess the swallowing condition of patients. A higher score indicates poorer swallowing function. The swallowing disorder-specific quality of life scale was used to assess the quality of life of patients. A lower score indicates better quality of life. The efficacy evaluation criteria were as follows:

- Markedly effective: disappearance of swallowing function disorder symptoms in patients.
- Effective: significant improvement in swallowing function with the presence of coughing.
- Ineffective: no significant changes or even worsening of clinical symptoms in patients after treatment.

1.4 Statistical Analysis

The data from this study were processed using SPSS 18.0 statistical software.

2. Results

2.1 Comparison of Swallowing Function between the Two Groups

After treatment, the standard swallowing function and swallowing disorder-specific quality of life in the observation group were both lower than those in the control group, with significant differences ($P < 0.05$)[5]. Refer to **Table 2** for details.

Table 2 Comparison of swallowing function between the two groups[n（$\overline{x} \pm s$）]

Group	Example Number	Standard Swallowing Function		Swallowing Disorder-specific Quality of Life	
		Before Treatment	After Treatment	Before Treatment	After Treatment
Ference Group	37	35.66±4.25	24.16±3.60	74.23±9.65	43.26±6.03
Observation Group	37	34.92±4.18	18.41±2.19	72.10±8.64	36.25±5.41
t		0.755	8.300	1.000	5.263
P		0.452	0.000	0.320	0.000

2.2 Comparison of Clinical Efficacy between the Two Groups

The effective treatment rate in the control group was 24.32%, while in the observation group, it was 5.41% ($P < 0.05$). Refer to **Table 3** for details.

Table 3 Comparison of clinical efficacy between the two groups[n(%)]

Group	Example Number	Excellence	Effective	Ineffectiveness	Total Effective Rate
Reference Group	37	12	16	9	24.32
Observation Group	37	20	15	2	5.41
x^2					5.232
P					0.022

3. Discussion

During the treatment of brain tumors, surgery can cause damage to the patient's swallowing muscles and nerves[6] , leading to symptoms such as coughing during eating and drinking. In clinical practice, rehabilitation therapy, medication, and surgical intervention are important treatment modalities for this condition. Pharmacological treatment can effectively alleviate clinical symptoms and improve quality of life for patients, with commonly used medications including neurotrophic drugs and corticosteroids. However, medication during treatment may also lead to side effects, necessitating strict adherence to doctor's instructions during administration. Rehabilitation therapy involves swallowing training, acupuncture, physiotherapy, among others. Swallowing training assists patients in recovering their swallowing function, while physiotherapy plays a crucial role in improving muscle strength and coordination. Acupuncture stimulates specific acupuncture points in patients, thereby regulating the function of the nervous system. For patients with severe swallowing disorders, surgery can achieve desirable outcomes. Procedures such as jejunostomy and gastrostomy assist patients in ingesting nutrients, thereby reducing dehydration and malnutrition. Swallowing disorders are highly prevalent in patients after brain tumor surgery, primarily due to damage to cranial nerves such as the vagus nerve and glossopharyngeal nerve during surgery, leading to abnormal control of muscles in the throat and tongue. To promote the recovery of patients, timely intervention is necessary to restore residual nerve function. Stimulating the central nervous system to establish a motor transmission area and form motor impulses can help establish swallowing reflexes after stimulating the central nervous system.

In the treatment of swallowing disorders after brain tumor surgery, traditional Chinese acupuncture therapy has garnered increasing attention in clinical practice. Modern research in traditional Chinese medicine indicates that acupuncture stimulation can generate infrared radiation within the body, stimulating the production of various endogenous factors. This not only enhances the activity of mitochondrial catalase in the human body but also promotes metabolism. Traditional Chinese medicine holds acupuncture

therapy in high regard due to its significant effects in regulating the meridians, promoting the flow of vital energy, and expelling pathogenic factors. According to traditional Chinese medical theory, the stomach meridian, conception vessel, kidney meridian, spleen meridian, and other important meridians pass through the throat. Acupuncture treatment at specific acupoints during the treatment of swallowing disorders can regulate the balance of yin and yang while clearing the meridians. In this study[7], acupuncture at acupoints such as Lianquan (CV 23) and Fengchi (GB 20) showed significant therapeutic effects. Jinjin (EX-HN 12) and Yuye (EX-HN 13) are extraordinary points outside the regular meridians that play a special role in the treatment of swallowing dysfunction. Moreover, acupuncture therapy offers advantages such as convenient operation and low cost. As a traditional Chinese medical treatment modality, it has gradually gained recognition among both medical professionals and patients. Acupuncture therapy not only promotes subsequent treatment but also enhances overall well-being, providing relief from negative emotions and improving quality of life for patients with swallowing disorders.

For patients with swallowing dysfunction, acupuncture therapy holds special advantages. Firstly, as a traditional medicine with a long history, it emphasizes holistic and balanced approaches to health. Modern research suggests that acupuncture can promote the release of endogenous opioids in the brain, regulating immune and nervous system functions while alleviating pain. Secondly, unlike modern drug therapy that targets single receptors, acupuncture simultaneously affects multiple meridians and acupoints, thereby regulating various physiological processes in the body. This multi-target characteristic enables acupuncture to leverage its advantages in the treatment of multiple diseases. Thirdly, acupuncture is a natural therapy with minimal side effects. Compared to drug therapy, acupuncture is safer and more effective, without causing serious liver damage to patients. Lastly, acupuncture therapy not only improves negative emotions but also enhances quality of life, contributing to the recovery of patients' health.

Analyzing the mechanism of acupuncture treatment reveals that it can stimulate certain areas of the brain, effectively regulating neurotransmitter and hormone secretion. This stimulation plays a crucial role in restoring neurological function in patients, thereby improving swallowing function. Furthermore, acupuncture enhances the immune function of patients, reduces inflammation reactions, and consequently lowers the incidence of postoperative complications. By regulating hormone levels in the body[8], acupuncture ensures the nutritional needs of patients. Additionally, acupuncture has psychological effects; some scholars have noted significant improvements in the psychological state of patients after acupuncture treatment, leading to overall enhanced therapeutic effects. Moreover, acupuncture reduces dependence on medication, thereby avoiding adverse reactions caused by long-term drug use. Brain tumors, being abnormal growths in brain tissue, can lead to neurological dysfunction, increased intracranial pressure, and other complications, necessitating timely surgical intervention. However, surgery may cause trauma to the patient's body, resulting in a high incidence of postoperative complications, with swallowing disorders being the most common. This not only leads to aspiration and malnutrition but also hampers the patient's rehabilitation process, reducing their quality of life. Acupuncture treatment advocates for balancing and regulating bodily functions and is widely applied in the treatment of various diseases, involving aspects such as promoting blood circulation, immune regulation, and nerve modulation. Based on the principles of traditional Chinese medicine, acupuncture mainly achieves therapeutic goals by balancing yin and yang and regulating qi and blood circulation. It is important to note that acupuncture treatment should be performed by qualified professionals to ensure its effectiveness, safety, and reliability. Analyzing the research results, it is evident that after treatment, the standard swallowing function and specific quality of life related to swallowing disorders in the observation group were significantly lower than those in the control group. The effective rate of treatment was 5.41% in the observation group, compared to 24.32% in the control group ($P < 0.05$). This indicates that acupuncture treatment has special advantages, improving swallowing function disorders, enhancing quality of life, and exhibiting a higher treatment effectiveness rate, thereby demonstrating safety and promoting value. In the treatment of postoperative swallowing disorders in

brain tumor patients, acupuncture demonstrates special advantages and mechanisms, characterized by minimal side effects, multi-target effects, and convenience of operation, thereby possessing high clinical application value.

In conclusion, compared to conventional rehabilitation training, acupuncture treatment in traditional Chinese medicine plays an important role in improving both the quality of life and swallowing function of patients. It exhibits high safety and reliability, accelerates the recovery of patients' conditions, and does not cause serious adverse reactions post-treatment, thereby producing significant therapeutic effects.

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