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**Review**

Analysis of Related Causes of Depression in Patients with Dysphagia after Stroke

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Abstract

Depression is the most common psychological disorder after stroke. Post-stroke depression is a complex emotional disorder that contains a variety of mental and physical symptoms. This article begins with aspects of depression in patients with dysphagia after stroke. The four aspects of depression, the pathogenesis, commonly used scales, and nursing interventions in patients with dysphagia after stroke are all discussed thoroughly. References for subsequent research are also provided.

Key words: Stroke, Dysphagia, Depression.

Introduction

Stroke, also known as stroke or cerebrovascular accident, is a group of acute cerebrovascular diseases with sudden onset and common characteristics of focal neurological dysfunction. Characterized by high incidence, high disability rate, high recurrence rate and high mortality, stroke is currently the largest

cause of death in China. With the acceleration of social aging and urbanization, unhealthy lifestyles are prevalent, and cardiovascular disease risk factors are generally exposed, the burden of stroke disease in China shows an explosive growth trend, and shows the rapid growth of low-income groups, significant gender and regional differences, and the trend of younger age (1). According to the

population monitoring data in China (2), cardiovascular and cerebrovascular disease deaths account for more than 40% of the total number of deaths, the annual incidence of stroke is 2.5/100,000, the annual incidence of coronary heart disease events is 50/100,000, and the incidence of stroke is 5 times that of coronary heart disease events (3).

Dysphagia is caused by ischemia and hypoxia in the brain as well as neurological dysfunction. These events lead to the inability of nerve muscles to control swallowing. Dysphagia affects a patient's ability to eat normally. The normal eating of patients. It has been reported that about 28-73% of patients after stroke have dysphagia (4-5). Swallowing disorder involves many nerve and muscle masses. The core of issue which is that the patient cannot safely deliver food or liquid from the mouth to the stomach. This swallowing disorder involves many nerve and muscle masses, including abnormalities in the preparation stage of the mouth, oral stage, pharynx stage, esophageal stage, and other stages, such as abnormal chewing and tongue movement (6). Due to dysphagia, The most common complications of patients include coughing, aspiration, aspiration pneumonia, and even suffocation. At the same time, symptoms such as malnutrition and dehydration due to insufficient food and water intake will eventually lead to as well as depression, anxiety, and other psychological disorders, seriously affecting the physical and mental health of patients.

Post-stroke Depression (PSD) was after Stroke, a spirit contains a variety of symptoms and body symptoms, complex emotional disorder. The main symptoms include persistently low mood, slow thinking, and thought content disorders, sadness, sighs, tears, anxiety, sleep disorder, or suicide, withdrawn and pessimism will reduce (7). Ried reported a 30-60% incidence of PSD (8). PSD has a direct impact on a patient's mental state. Peng Yu et al. showed that when compared to patients without swallowing disorder, dysphagia patients were more likely to have anxiety and depression. The incidence of depression in patients with dysphagia after stroke was up to 70.83% (9).

1. The causes of post-stroke depression after dysphagia

The causes of post-stroke depression after dysphagia may be related to the degree of swallowing dysfunction, the patient's personality traits, the severity of stroke, various life events, psychological and social factors, gender (females are more likely to experience this depressive state), family and social support, etc.

1.1 A study by Ya-bin Jiang et al. showed that depression is closely related to the severity of dysphagia, such as swallowing disorder in patients after stroke, depression and other symptoms associated with nerve function damage degree (10). Nerve function damage degree is also a risk factor for dysphagia after stroke (11). In turn, dysphagia can also affect the recovery of neurological function after stroke (12). Therefore, neurological deficits and swallowing disorders after stroke interact with each other and affect the patient's rehabilitation (13). After stroke, 75% of patients will suffer from impaired nerve function; the more severe the nerve damage, the higher the incidence of dysphagia (11).

1.1.1 Swallowing is one of the most basic functions for survival, and after experiencing dysphagia, patients can interpret this shortcoming as a vitally detrimental issue. This can easily lead to patient anxiety, depression, and other negative emotional reactions. Patients with dysphagia may even develop a fear towards eating, thereby causing further digestive problems. This may lead to nutritional deficits in patients, as the body's reserves are exhausted and its condition deteriorates, which in turn can easily aggravate a patient's neurological rehabilitation as well (12).

1.1.2 Dysphagia can cause a patient to choke and suffocate, which reduces a patient's ability of

self-care in life. The patient requires comprehensive support from the family, healthcare staff, and society, etc. If these support systems function insufficiently and the patient is unable to provide for themselves due to their psychological capacity, it will lead to a more chronic case of depression.

1.1.3 Dysphagia after stroke appears as a series of serious complications. These complications, such as a choking cough, aspiration pneumonia, suffocation, nutritional disorders, etc., make the detriments to both patient physiology and psychology into a double blow. These concurrent conditions are difficult to cooperate with and affect the recovery of neural function rehabilitation through decreased exercise, increased length of hospital stay, and increased health costs. The burdens of finances and daily life further aggravate the depressive state of patients and the psychological burden of the patient at the same time, reducing the psychological emergency ability of stroke patients and, in turn, catalytic depression patients.

1.1.4 Dysphagia is also a somatic manifestation of post-stroke depression and is not caused by organic damage to the brain. Thus, a higher incidence of depression can be found in patients with dysphagia (11).

1.2 The personality traits of stroke patients were positively correlated with depression.

Wenhui Luan and Zhonghua Yang et al. showed that a patient's personality plays an important factor influencing depression (14-15). Zhonghua Yang reported that in the study of a post-stroke group and a non-stroke group, there were significant differences in the onset of depression between genders, previous personality characteristics such as impatience and introversion, before, after and score of the patients. The onset of depression is closely related to personality, and Storor showed that the increased risk of post-stroke depression is associated with pre-onset neuroticism and a previous history of mental disorders (16). Huiting Wang (17) also

showed that the emotional characteristics of PSD patients were closely related to their pre-disease personality.

1.3 The occurrence of depression is positively correlated with the degree of nerve damage

A study of post-stroke depression conducted by Berg et al. showed that the occurrence of depression was not only related to the severity of stroke, but also to the degree of neurological impairment (18). The more severe neurological impairment was, the more likely the patient was to have depressive symptoms. Herrmann et al. also showed that patients with severe neurological impairment had obvious depressive symptoms, and that PSD was directly correlated with neurological impairment (19). Huiting Wang (17) et al. reported that factors which influence depression and dysphagia as well as the degree of nerve defectiveness held a certain relationship. PSD can severely hinder the rehabilitation of swallowing and nerve dysfunction. In patients with and without further research, patients with dysphagia scored higher on a scale used to evaluate depression than patients without dysphagia. The effect of nerve defects on the onset of depression was significantly greater than the effect of dysphagia on the onset of depression.

1.4 Lijie Gu et al. showed that the occurrence of PSD was likely caused by a certain correlation between events patients have experienced throughout their lives and their ability to respond to psychological stress after psychosocial events (20). Yu Peng et al. reported that cerebral apoplexy is a severe stress event on the human body. Cerebral apoplexy can cause people with otherwise healthy limbs to suddenly become quadriplegics, develop speech disorders, have trouble in swallowing, and even disable sufferers to the point that they are unable to care for themselves. Such a huge psychological event and the accompanying stress attack can easily cause depression and anxiety in patients (9).

1.5 Relationship between the infarct site and PSD in stroke patients.

A study by Gothe et al. (21) showed that left hemisphere damage, seen in certain PSD patients, is more likely to appear after stroke due to blood circulation obstructions. However, Junfeng Qian et al. (22) contradicted this, showing that the correlation between the lesion site of stroke and the occurrence of PSD may not be relevant.

1.6 PSD is associated with family support.

Tsouna-hadjis et al. (23) showed that familial support can improve the depressive state of stroke patients and is beneficial to the overall healing of patients. Hongfang Zhou et al. (24) believed that, as the main caregivers of patients, their family members often have close contact with stroke patients. This plays an important role in the process of identifying and preventing the occurrence and development of PSD and in the rehabilitation of patients. Yanxia He et al. (25) proposed the "collaborative nursing model", where family caregivers are described as the leading model, implementing nursing guidance based on the family caregivers' and patients' own intervention. Xiuyun Zhou et al. (26), after implementing synchronous health education and nursing guidance for PSD patients and their families, showed that providing certain nursing guidelines for family members can improve the quality of life of PSD patients.

1.7 The occurrence of PSD is also related to gender.

Studies concluded that the incidence of was 78% higher in women than in men. There is no clear explanation, but it is certain that gender is an important indicator for PSD monitoring. The risk of PSD in women is 7.046 times that in men (15).

1.8 Genetic factors play a role in determining whether stroke patients develop PSD and the severity of depression.

Aiping Li et al. (27) believed that common genetic variations are vulnerable to developmental diseases that may not have pathways to recovery, especially when faced with great pressure and challenges.

2 The commonly used clinical depression scale

2.1 Hamilton Depression Scale (HAMD).

The HAMD scale was developed by Professor Hamilton in the United States in 1960 to assess if patients were clinically depressed. The original scale consisted of 21 items, and only the first 17 items were used to calculate the total score. Most clinicians used five scores ranging from 0 to 4, with higher scores indicating higher levels of depression. There are currently versions that involve 17, 21, and 24 items. Zhonghua Yang et al. (15) used the Hamilton Depression Scale to score in their research.

2.2 Center for Epidemiological Survey, Depression Scale (CES-D).

CES-D tables were developed by Sirodff of the National Institute of Mental Health in 1977 to assess patients for depressive symptoms. CES-D has a total of 20 items and adopts the 4-level 0-3 scoring system, among which 4 items are scored in reverse. The evaluation period occurs on the latest week, and the cumulative score is used as the analysis index, with the total score ranging from 0 to 60 points. The higher the score is, the higher the degree of depression in the patient is. Juan Li et al. (28) used CES-D table to screen subjects for depressive symptoms.

3 Nursing intervention

3.1 Ruchao Wang (29) reported that a comprehensive nursing intervention alleviates patients' anxiety and depression, and Cui Liu (30) et al. found that comprehensive rehabilitation nursing measures significantly improved the

swallowing dysfunction and depressive psychological states of patients with dysphagia after stroke compared to the group that received conventional treatment. Comprehensive psychological care measures include the assessment of a patient's psychological status at the time of admission, targeted counseling based on the assessment results, timely encouragement, and eliminating the patient's negative emotions. Nurses communicate with patients at the foot of the bed, once a day, 15 to 30 minutes at a time, to understand the patient's psychological change, create a dynamic assessment of the patient's mental status every week, and adjust intervention plans in a timely manner. The nurse also facilitates communication with patients and their families and provides health guidance. Through this process, the patient experiences support from family and hospitals and receives the necessary social interaction to support their health and reduce depression.

3.2 Zhigui Sun et al. (31) found that real-time psychological assessment prior to the appearance of symptoms, auxiliary and psychological counseling and a sound social and familial support system can enhance patient self-confidence, improve depressive symptoms, and allow patients to actively participate in the rehabilitation process, improving the patient's confidence in rehabilitation.

3.3 Qiaoling Li (32) showed that deploying a team of specialist nurses using a variety of follow-up communication forms such as phone, video, and home care and home follow-up in combination with the general nursing intervention model can improve the conditions of stroke patients with dysphagia, aid in the recovery of neural function, decrease patient nutritional risk and depressive symptoms, and improve patient self-care ability, daily activity ability, and compliance to rehabilitation procedures.

3.4 Hong Jiang et al. (33) reported that guided imagination training has significant interventional effects on sleep disorders, anxiety, and depression in

stroke patients, which can significantly improve sleep quality, anxiety, and depression and improve daily self-care ability. Guided imagery training is a physical and psychological intervention that utilizes the patient's own imagination and mental processing capabilities to form mental images. Visual, auditory, olfactory, somatosensory, and motor senses are used to envision objects, positions, events, or situations. The purpose of "seeing" mental images and responding to them is to consciously arouse the internal experience of perceived events without external stimuli, to improve the physical and mental health of patients through their own mental imagination.

3.5 Chenghua Tang (34) and Huiting Wang (35) reported that five-element music therapy played an important role in promoting the recovery of post-stroke depression patients. Five-element music therapy can significantly reduce the Hamilton Depression Scale score, reduce patient depressive symptoms, promote the recovery of limb function on the affected side, improve patient ability to care for themselves in daily life, and improve patient quality of life.

3.6 Yanfen Yu (36) et al. reported that TCM emotional nursing combined with acupuncture in the treatment of post-stroke depression can effectively improve the clinical treatment effect, improve patients' depression symptoms, improve the serum 5-HT content and aid in the patient's ability to take care of themselves in daily life.

4 Summary

Depression after dysphagia is common in post-stroke patients, and the degree of dysphagia is positively correlated with the incidence of depression. Therefore, attention should be paid to PSD screening, and the identification and prevention of post-swallowing depression is crucial. Although this practice is already used in clinical nursing interventions, there is a need for

comprehensive nursing intervention in a timely manner. Interventions should involve psychological assessment, psychological counseling, home care, a comprehensive intervention model, guided imagery training, etc. Although there are certain positive aspects, ultimately, there is still a need to set up a psychological rehabilitation framework system throughout the country. Further areas of development include psychological rehabilitation opportunities that involve the hospital, family, community, and society as well as the development of psychological rehabilitation intervention strategies based on evidence with the goal to mitigate depressive symptoms in patients with post-stroke dysphagia.

Declarations

1) **Consent to publication**

We declare that all authors agreed to publish the manuscript at this journal based on the signed Copyright Transfer Agreement and followed publication ethics.

2) **Ethical approval and consent to participants**

Not applicable.

3) **Disclosure of conflict of interests**

No conflict of interest exists.

4) **Funding**

None

5) **Availability of data and material**

We declare that the data supporting the results reported in the article are available in the published article.

6) **Authors' Contributions**

Authors contributed to this paper with the design (Haiyan Liu, Yanlin Heng, Haijuan Liu), literature search (Haiyan Liu), drafting (Haiyan Liu), revision (all), editing (all) and final approval (Haiyan Liu, Yanlin Heng).

7) **Acknowledgement**

None

8) **Authors' biography**

None

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