



Application of Mirror Therapy of the Face on Facial Muscle Ability in Stroke Patients at RST Dr. Soedjono Magelang

Ainnur Rahmanti

STIKES Kesdam IV/ Diponegoro Semarang

Abstract. Stroke is a reduced blood flow and oxygen to the brain due to blockage, narrowing, or rupture of blood vessels. Stroke leading weakness of the face, according to damage in the frontal motor area. One way to overcome a facial weakness is to apply mirror therapy of the face which is a combination of mirror therapy and facial exercises. The purpose of this case study is to illustrate the application of facial mirror therapy in stroke patients with facial muscle abilities. This type of research is descriptive by using a case study approach. The subjects in this study were 2 stroke patients with the criteria for facial muscle weakness, which is having a sagging face, having a recurrent attack or having just had a stroke. The study showed that an increase in facial muscle ability in subject 1 from the sufficient category (score 21) to the good category (score 29), subject 2 from the sufficient category (score 24) to the good category (score 32). Recommendation : Nurses can apply Mirror Therapy of the Face to improve the ability of facial muscles in stroke patients.

Keywords: Mirror Therapy, Facial Exercises, Facial Muscles, Stroke.

BACKGROUND

A healthy lifestyle is very important to prevent various diseases that arise. Choosing healthy food, getting enough rest, exercising regularly, not consuming alcohol and smoking, implementing a healthy lifestyle will prevent various diseases, one of which is stroke, stroke is a disease caused by reduced blood flow and oxygen to the brain due to blockages, narrowing, or rupture of a blood vessel. Stroke can result in disability and death, Apart from that, the incidence of stroke is increasing from year to year.

Hemiparesis (weakness) or hemiplegia (paralysis) occurs in one part of the body that occurs after a stroke. This decrease in ability is caused by a stroke of the anterior or middle cerebral artery, resulting in an infarction in the part of the brain that controls movement (motor nerves) of the front cortex. Generalized hemiplegia can occur in half of the face and tongue, as well as in the arms and legs on the same side of the body. An infarction that occurs on the right side of the brain will cause hemiplegia on the left side of the body (sinistra) and vice versa because the nerve tissue runs in a pyramidal pathway from the brain to the spinal cord. Strokes that cause hemiparesis or hemiplegia are usually accompanied by other stroke manifestations, such as partial sensory loss, partial blindness, not being able to make certain movements (apraxia), not being able to feel or recognize things (agnosia), and communication disorders (aphasia). .

Weakness or paralysis in the face, also known as a drooping face, will cause interference with the ability of the facial muscles. A drooping face must be treated immediately

because it can cause speech disorders, problems expressing the face, problems chewing and swallowing. Interventions for healing that can be carried out for stroke patients apart from medication or drugs include physiotherapy/exercises, such as stroke sufferers who experience speech disorders can be treated with a speech therapist, namely breathing exercises (pre-speech training) in the form of breathing exercises, swallowing, blowing, Lip and throat movement exercises as well as exercises in front of a mirror for tongue, lip movements and pronouncing words, for patients who experience facial muscle disorders can be trained using mirror therapy.

Mirror therapy of the face exercises are a combination of mirror therapy and facial exercises. Mirror therapy exercises are exercises that control and train the patient's motoric imagination or imagination, where the mirror will provide visual stimulation to the brain for the movement of body parts that experience muscle weakness. This must be done so that the facial muscles that experience hemiparesis can experience stretching. Meanwhile, facial exercises can increase the strength of the facial muscles because active movements of the face are carried out with repeated contractions. Gradually the strength of the facial muscles will increase so that the physiological properties of the facial muscles will maintain their elasticity.

THEORITICAL REVIEW

Concept of Stroke Theory

Stroke is a syndrome characterized by a sudden, non-convulsive attack caused by a non-traumatic brain blood circulation disorder. Stroke is a clinical syndrome with focal and/or global symptoms of brain function that last 24 hours or more and can result in death or disability that persists for more than 24 hours without any other cause except cerebral blood vessel disorders. Stroke occurs when blood flows to a certain location in the brain. disrupted so that the oxygen supply is also disrupted. Locations in areas lacking oxygen become damaged and cause symptoms. The type and severity of neurological deficits have varying symptoms depending on the parts of the brain affected.

Impaired blood flow to the brain is the most serious problem, and can even be fatal. Blood flow to the brain basically supplies nutrients and oxygen to the brain's nerve cells. If blood flow and oxygen supply to the brain runs smoothly, brain function will return to normal. The brain needs fresh blood about 1/5 of the needs of all other body organs, while the weight of the brain is only 1/40 of the body's weight. Without nutrition and oxygen, brain cells will die, disruption of blood flow to the brain will cause a reduction in oxygen supply to the brain. Oxygen being cut off for 8-10 seconds will cause brain function disorders.

Mirror Therapy

Understanding mirror therapy

Mirror therapy is a therapeutic intervention that focuses on moving undisturbed limbs. This is a form of imaging in which mirrors are used to convey visual stimuli to the brain through observing unaffected parts of a person's body as he or she performs a series of movements.

Mirror therapy exercises are a form of rehabilitation/exercise that relies on and trains the patient's motor imagery/imagination which induces activation of the sensory motor cortex nerves.

Benefits of mirror therapy

The mirror will provide visual stimulation to the brain (cerebral motor nerves, i.e. ipsilateral or contralateral for movement of the hemiparetic limb) through observation of body movements which will tend to be imitated in the mirror by the affected body part. Several studies conducted using brain mapping/scanning techniques found that during stroke patients doing exercises using mirror media (mirror therapy), the areas that were active during the implementation of this experiment were the prefrontal cortex, the premotor cortex area, the parietal cortex and the cerebellum which is the motor movement area. so that repeated stimulation causes an increase in muscle strength and prevents more severe neuromuscular damage and prevents spread to other areas.

Facial Exercises

Facial exercises are active facial muscle movements with the aim of increasing facial muscle strength and preventing potential facial muscle contouring. With repeated contractions, the strength of the facial muscles will gradually increase so that the physiological properties of the facial muscles will maintain their elasticity.

Facial exercises can increase the strength of facial muscles because active movements of the face are carried out with repeated contractions, then gradually the strength of the facial muscles will increase so that the physiological properties of the facial muscles will maintain their elasticity.

Facial Muscle Ability.

Definition of face

The face is the anterior part of the head from the forehead to the chin and from one ear to the other. The face provides identity as a human being. Therefore, defects (malformations, scar formation, or other changes caused by pathology or trauma) have real consequences beyond their physical effects. The basic shape of the face is determined by the underlying bones. Facial individuality is primarily due to anatomical variations: variations in shape and relative prominence of the features of the underlying cranium; fat tissue deposition, color and aging effects on the overlying skin; the nature, and location of the hair on the face and scalp.

The face has an important role in communication. Interaction with other people is mostly done by the face (including the ears); therefore, the term "interface" for a place of interaction. While the shape and image of the face indicate our identity, much of our influence on others and their perception of us is due to how we use our facial muscles to make subtle changes to our facial image which constitute facial expressions.

Facial Paralysis.

Paralysis is the most common disability experienced by stroke sufferers. Stroke is generally characterized by a disability on one side of the body (hemiplegia), if the impact is not too severe it only causes the limb to become powerless or in medical language it is called hemiparesis. Paralysis can occur in various parts of the body, one of which is paralysis of the face.

Facial paralysis occurs due to damage to the motor area in the frontal cortex. This damage is contralateral, meaning that if there is damage to the right hemisphere, muscle paralysis on the left side occurs. Lay people call it right stroke and left stroke to explain the side of the body that experiences paralysis. If the left side of the body is paralyzed, it is called a left stroke and if the right side of the body is paralyzed, it is called a right stroke.

RESEARCH METHODS

This type of research is descriptive using a case study approach method. The descriptive research design aims to explain or describe the research problem that occurs based on the characteristics of place, time, age, gender, social, economic, employment, marital status, way of life (lifestyle), etc. Or in other words, this plan describes a set of events or current population conditions. This description can occur in certain regional communities. This research is

quantitative and can also be. This case study aims to describe the application of mirror therapy of the face to facial muscle abilities in stroke patients.

RESULTS AND DISCUSSION

The results of a case study of 2 subjects who had a stroke showed that subject I came to the hospital because his body felt weak, he had difficulty moving the right side of his body, he spoke slurredly, BP: 200/100 mmHg, RR: 20x/minute, temperature: 36, 5oC. From the results of this study it can be said that the subject has signs and symptoms of stroke.

Stroke is a cerebrovascular disease (cerebral blood vessels) due to the death of brain tissue (cerebral infarction). The cause is reduced blood flow and oxygen to the brain due to blockage, narrowing or rupture of blood vessels. Signs and symptoms are paralysis of the face or one side of the body (hemiparesis) or hemiplegia (paralysis) that appears suddenly, dysarthria (cedal or slurred speech).

The subject said the body felt weak and it was difficult to move the right side of the body. The right side of the body was difficult for the subject to move due to a stroke in the anterior or middle cerebral artery, which resulted in an infarction in the part of the brain that controls movement (motor nerves) of the front cortex. Apart from that, slurred speech is caused by damage to the cranial nerves resulting in weakness of the muscles of the lips, tongue and larynx. The patient has difficulty speaking, especially in articulation, so his speech becomes unclear. However, patients can understand speaking, writing, listening and reading. Apart from these signs and symptoms, the subject also experienced facial disorders in the form of facial drooping.

The subject's facial drooping is caused by damage to the motor area in the frontal cortex. This damage is contralateral, meaning that if there is damage to the right hemisphere, the muscles on the left will be paralyzed. The family said that the subject had a history of hypertension for 5 years. Patients with hypertension are at risk of stroke because hypertension can be caused by atherosclerosis of the cerebral blood vessels, so that the blood vessels experience thickening and degeneration which then rupture/cause bleeding, thereby increasing the risk of blockage of the smaller brain blood vessels and can cause a stroke. Apart from that, subject I also often smokes and sometimes drinks coffee approximately 3 times a week.

Smoking is a real cause of stroke, which is more common in young adults than in middle age or older. However, the risk of stroke decreases after stopping smoking and is clearly visible in the period 2-4 years after stopping smoking. Smoking can trigger more fibrinogen (blood clotting factor) thereby stimulating atherosclerosis (hardening of the blood vessels). In smoking

patients the damage caused by stroke is more severe. because the inner (endothelial) walls of the brain's blood vessel system (cerebrovascular) are usually weak. This causes even greater damage to the brain as a result if a second stage stroke occurs. Apart from that, the patient also drinks coffee approximately 3 times a week, the caffeine content in coffee can trigger an increase in the patient's blood pressure. Coffee that enters the body will be distributed throughout the body by blood flow from the gastro intestinal tract in about 5-15 minutes. Caffeine absorption in the digestive tract reaches 99% and then reaches a peak in the bloodstream within 45-60 minutes. Caffeine works very effectively in the body so that it has various effects on the body. Caffeine is the largest ingredient in coffee which has an acute effect on blood pressure, especially in people with hypertension. Subjects who have a history of hypertension, plus consuming coffee can cause strokes in the subjects.

Subject II came to the hospital because he had fallen at home and had difficulty speaking, his face was drooping, the right side of his body was weak when moved and he had difficulty swallowing, BP: 170/90, RR: 22x/minute, HR: 114x/minute, temperature: 37.2oC. From this study it can be said that the subject has signs and symptoms of stroke, the signs and symptoms are speech disorders, paralysis of the face or side of the body (hemiparesis) or hemiplegia (paralysis) which appears suddenly, difficulty swallowing (dysphagia), the subject experiences difficulty speaking due to Broca's aphasia (motor or expressive) which is located in the frontal lobe of the brain, the subject can understand what other people/interlocutors are saying but the subject has difficulty in expressing speech apart from that the subject's face is drooping which is caused by damage to the motor area in the frontal cortex , this damage is contralateral, meaning that if there is damage to the right hemisphere, muscle paralysis on the left side occurs. And the subject had difficulty swallowing due to damage to cranial nerve IX. During swallowing the bolus is pushed by the tongue and the glottis closes and the food enters the esophagus. The family also said that the subject had a history of hypertension for approximately 7 years, patients with hypertension were at risk of stroke because it affected arterial damage, thickening, atherosclerosis or the arteries could burst or rupture. Apart from that, the subject's age is 72 years, age is one of the triggers for stroke. The older you get, the higher the risk of stroke, this is related to the elasticity of blood vessels, because the older you get, the blood vessels become harder and stiffer so that the blood becomes thicker which causes blood flow to the brain. reduce.

The results of the case study on both subjects showed that there was an increase in facial muscle strength scores in subject I from a score of 21 in the fair category to 29 in the good category and in subject II from a score of 24 in the fair category to 32 in the good category.

Based on these results, the application of mirror therapy with facial exercises is effective because mirrors can provide visual stimulation to the brain (cerebral motor nerves, i.e. ipsilateral or contralateral to the movement of the hemiparetic limb) through observation of body movements which tend to be imitated by the affected body part. disturbance, when the subject faces the mirror, the subject will see a face that has a disturbance and a normal part of the face, so the mirror acts as a visual impulse to the brain's nerves to stimulate the part of the face that is experiencing the disturbance. Meanwhile, facial exercises can increase the ability of the facial muscles because active movements are carried out on the face with repeated contractions. Gradually the strength of the facial muscles will increase so that the physiological properties of the facial muscles will maintain their elasticity. When the subject faces the mirror while doing facial exercises, the subject can see the facial muscles. the face is disturbed, therefore with the presence of a mirror the subject is stimulated to follow the movements of the part of the face that is not disturbed , so that mirror therapy and facial exercises can improve the ability of the facial muscles.

The comparison between subject I and subject II was that subject I recovered faster than subject II because based on the age factor, the older a person is, the more muscle strength decreases, one of which is the facial muscles. Muscle strength is defined as the ability of a muscle group to exert maximum contractile force against resistance in contraction. single. Muscular endurance is the ability of muscles to perform repetitive work or contractions at the same time. Muscle endurance decreases gradually with increasing age. The aging process changes the pattern of muscle fibers and this causes a slowdown in contraction time and a slowdown in the speed of muscle contraction. Muscle strength will also gradually decrease with age. Morphological changes in muscles cause functional changes in muscles, namely a decrease in muscle strength, muscle elasticity and flexibility, speed of reaction time and relaxation. Therefore, the age factor influences the ability of the subject's facial muscles. Apart from the age factor, the subject's motivation, family support and assistance are also factors in implementing the Mirror Therapy Of The Face intervention to improve the subject's facial muscle abilities.

Motivation for exercise is one of the factors that influences the ability of the subject's facial muscles. Subject I when the Mirror Therapy Of The Face intervention was carried out was very enthusiastic compared to subject II who was less enthusiastic. Motivation or zest for life is very important for a patient who is undergoing medical treatment. , because if a person is motivated to recover, there is a greater chance that he will recover. Apart from that, family support and assistance also influenced the subject in implementing the Mirror Therapy Of The

Face intervention, in subject I the family accompanied and supported the subject when the intervention was carried out and in subject II there was a lack of family support and assistance to the subject when carrying out the Mirror Therapy Of The Face intervention, Factors Assistance has a huge function as a motivator to speed up recovery.

The results of this case study support the results of previous research according to research conducted by Hanifa Auliya, Farida Hayati, Diana Rachmania in 2018 regarding the Application of Mirror Therapy of the Face on Facial Muscle Ability in Stroke Patients, showing that all respondents scored facial muscle abilities before the intervention. with Mirror Therapy, the score range was 25-36, the fourth respondent had a score of 27, which was still categorized as good but had facial muscle disorders, and after mirror therapy the score range was 25-36, while the lowest range was the fourth respondent, who had a score range of 25-36. or 29 which are categorized as good.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the case study regarding the application of mirror therapy of the face to the facial muscle abilities of the subjects, it can be concluded that there was an increase in facial muscle abilities in both subjects. The first subject before the facial muscle ability intervention was carried out with a score of 21 in the sufficient category, after the intervention the score was 29 in the good category. Subject two before the facial ability intervention was carried out with a score of 24 in the sufficient category and after the intervention it became 32 in the good category.

Suggestion

Based on the research analysis and conclusions, in this sub-chapter the author will convey several suggestions, including:

1. For the Community

Mirror Therapy of the Face can be done independently for people who have had a stroke, there are facial disorders, namely facial drooping. Apart from that, facial exercises can be applied in daily activities to relax facial muscles and as input in the nursing education process so that nurses can be more improve abilities and skills, especially in applying mirror therapy of the face to facial muscle abilities in stroke patients.

2. For the development of Nursing Science and Technology

The application of mirror therapy of the face intervention on facial muscle ability in stroke patients can be used as a reference and consideration for providing nursing care for further nursing practice in improving facial muscle ability in stroke patients.

3. For Nurses and Hospitals

As input in the nursing process so that nurses can further improve their abilities and skills, especially in dealing with facial muscle abilities in stroke patients.

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