Prevention of Decubitus by Shift Technique and Slow Stroke Back Massage In Hemorrhagic Stroke Patient

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Abstract

Introduction: Hemorrhagic stroke patients can experience a decrease in consciousness which makes the patient have to undergo long bed rest. Stroke patients who undergo bed rest treatment at the hospital have a high risk of developing decubitus ulcers. Nursing actions can be taken to prevent pressure ulcers using shift technique and slow stroke back massage, however limited study examine the nursing intervention to prevent decubitus in unconscious patients. Aim: This research aims to determine the effect of decubitus prevention using shift technique and slow stroke back massage in hemorrhagic stroke patient with decreased consciousness. Method: the research design used was a case study with a nursing care approach of an unconscious patient from a referral hospital di Sumedang. Results: this case study showed an increase in the Braden scale score from 12 to 15 after undergoing three days of treatment at the hospital and no decubitus symptoms were found based on the observations. Discussion: shift technique can be more effective in reducing the risk of decubitus when combined with slow stroke back massage. Conclusion: the shift technique and slow stroke back massage interventions in stroke patients with decreased consciousness can positively impact reducing the risk of decubitus ulcers. Furthermore, research with a larger sample with a longer time to observe the effect of the interventions is needed.

Keywords: decubitus, shift technique, slow stroke back massage

Introduction

A stroke is an acute event caused by a blockage that prevents blood from flowing to the brain or due to bleeding from a blood vessel in the brain or from a blood clot (World Health Organization 2021). A stroke that occurs due to a disruption in the blood supply to the brain is called an ischemic stroke, while a stroke that occurs due to a ruptured brain blood vessel is called a hemorrhagic stroke (Hinkle and Cheever 2018). Ruptured brain blood vessels can cause blood to flow into the cavities around the brain tissue so that the brain cannot receive oxygen from the blood, which will cause brain tissue cell death (Hutagalung 2021). Approximately 80% of hemorrhagic strokes are caused by primary intracerebral hemorrhage from spontaneous rupture of small vessels, mainly due to uncontrolled hypertension (Hinkle and Cheever 2018). In hemorrhagic stroke, clinical manifestations are headaches that appear suddenly accompanied by vomiting to loss of consciousness (Hutagalung 2021).

In 2019, data from the World Stroke Organization (WSO) stated that new stroke cases could reach more than 13.7 million annually. In general, one in four people over the age of 25 may experience a stroke during their lifetime and 5.5 million people die from a stroke each year (Lindsay et al. 2019). Meanwhile, Indonesia's average stroke incidence rate was 10.9 per mile in 2018 (RISKESDAS 2018). Based on BPJS Health data in 2018, the cost of stroke care amounted to IDR 2.56 trillion. The cost of this treatment has increased from previous years (Kemenkes RI 2019). Stroke can cause a person to experience weakness or paralysis of limbs, so he has to undergo bed rest during treatment. It can cause several complications, including joint stiffness, risk of falling, depression, and decubitus ulcers. Stroke patients undergoing treatment get the highest rating for decubitus compared to patients with kidney failure, orthopaedic disorders, and diabetes mellitus (Alimansur and Santoso 2019).

Decubitus ulcers are wounds from prolonged pressure if the patient does not change position for more than 6 hours (Sunaryanti 2015). It can happen because protracted pressure on the part of the body can make blood circulation not smooth and cause cell death to tissue necrosis which then develops into an ulcer (National Pressure Ulcer Advisory Panel 2014). In Indonesia, the prevalence of decubitus ulcers reaches around 40%, the highest prevalence in Southeast Asia (Primalia and Hudiyawati 2020). Previous research conducted at a stroke centre hospital in Indonesia in 2011 found that 28% of patients experienced pressure sores during hospitalization (Amir et al. 2013). Decubitus ulcers take a long time to heal, so they can become a severe problem. Decubitus ulcers can affect the patient's quality of life, slow down the treatment program, worsen the patient's condition, and increase the cost of treatment for the patient's family (Coleman et al. 2014). In addition, the presence of pressure sores can also cause other complications such as chronic infection, cellulitis, sepsis, and even death in elderly patients (Coleman et al. 2014). With the impact of the decubitus wound, preventive actions can be a priority in nursing actions. Good nursing actions can prevent about 95% of cases where patients experience pressure sores (Sihombing, Yuniarlina, and Supardi 2016).

Prevention of decubitus ulcers is an indicator of the quality of hospital services. The high incidence of decubitus can reflect the low quality of hospital services, especially nursing. Nurses are responsible for making early prevention efforts related to hospital decubitus ulcers (Okatiranti, Sitorus, and Tsuawabeh 2013). Decubitus ulcers can occur at the beginning of treatment. About 26.7% of bedridden patients experience decubitus ulcers on the second day of treatment; on the fourth day, it increases to 40% (Okatiranti et al. 2013). Therefore, prevention of decubitus ulcers must begin early when the patient is being treated at the hospital to prevent decubitus ulcers from occurring. Nursing actions that can be taken to prevent pressure sores include providing a lying position and back massage. Research by Mayangsar & Yenny (2020) found that giving a recumbent position to patients who experience mobility problems can reduce the risk of decubitus. In addition to providing a lying part, the patient can also be given a back massage by giving massage to the back area using the palms of the hands. Back massage can help

increase blood circulation and oxygen flow in the blood so that it can have a relaxing effect on the patient. Providing back massage measures needs to be accompanied by the use of a moisturizer that can protect the skin from excessive evaporation so that the risk of skin damage is reduced (Sihombing et al. 2016). One method of back massage that can be applied is a slow stroke back massage (SSBM) which was first introduced at the hospital by Elizabeth in 1996 as slow, gentle, and rhythmic hand movements on the patient's back at a constant speed (about 60 moves per minute). This movement lasts 3 - 10 minutes (Jalalodini et al. 2016). This research aims was to determine the impact of decubitus prevention using bed rest techniques and slow stroke back massage (SSBM) in hemorrhagic stroke patient who experience decreased consciousness.

Research Methods

The research design used was a case study with a nursing care approach in hemorrhagic stroke patients with decreased consciousness. According to Nur'aini in Yin (1981), case studies are a research method based on experience or observation of phenomena that occur in real life (Nur'aini 2020) Case studies were conducted on stroke patients in the Carnation High Care Unit (HCU) room at Sumedang Hospital from September 24, 2022, to September 27, 2022. The data source was based on the results of interviews, observations, and patient medical records and then carried out the nursing process. The nursing process starts with an assessment, formulation of diagnoses, preparation of intervention plans, implementation, and evaluation of nursing.

Case

Mr. S (58 years) was hospitalized on September 23, 2022, with a loss of consciousness. The patient has a history of hypertension but does not routinely take medication. The family said that the patient liked coffee and sweets. Based on the narrative from the family, the patient had no history of hereditary diseases and had just experienced a stroke for the first time. The patient had a history of headaches, vomiting, slurred speech, and weakness in the right limbs for two weeks before being taken to the hospital. However, the patient was brought to the hospital by the family after the patient suddenly fainted. The assessment was carried out on September 24, 2022, 21 hours after the patient was taken to the hospital. The patient experienced interference in fulfilling the activity of daily living (ADL) because he had to undergo bed rest.

The results of examining the patient's vital signs and anthropometry on September 24, 2022, found GCS E2M2V1, BP: 111/81 mmHg, HR: 97 x/minute, RR: 21 x/minute, temperature: 39.9 oC, SpO2: 99% with nasal cannula 5 L/minute, MAP: 91 mmHg, weight: 70 kg, height: 160 cm and the patient's BMI was 27.34 (overweight). The physical examination results showed no problems with the cardiovascular and respiratory systems. The patient's bowel sounds were found 5 x/minute in the digestive system. In the musculoskeletal system, assessing the patient's muscle strength and sensory response is complicated because the patient is in a state of stupor. The patient has an NGT and catheter attached. In the neurological system, the patient's face looks symmetrical, and there is a light reflex, isochor pupils with a size of 3 mm, dysphagia, and the patient has OPA installed.

The results of the diagnostic examination on September 23, 2022, found hemoglobin: 14.6 gr/dL, hematocrit: 42.9%, platelets: 426,000/mm3, leukocytes: 30,280/mm3, and the patient's current blood sugar level (GDS) was 225 mg/dL. The results of the CT scan of the head that had been performed showed that the patient had intracerebral, intraventricular, subdural, and subarachnoid hemorrhage with a bleeding volume of 79.1 ccs. The patient was medically diagnosed with an intracerebral hemorrhagic stroke. Patients were given pharmacological therapy in the form of 2x1 amp ranitidine, 2x1 amp citicoline, 4x100 ml mannitol, 1x1 Adalat oros tablet, and 0.9% NaCl infusion.

Intervention

The intervention for preventing decubitus in the form of lying down or changing position is carried out every 2 hours, while

the slow stroke back massage (SSBM) intervention using a moisturizer is carried out once with slow, gentle, and rhythmic hand movement techniques on the patient's back at a constant speed of around 60 movements per hour. Minutes for 3 - 10 minutes (Jalalodini et al. 2016). SSBM is done using lotion, which aims to keep the patient's skin moist. However, applying creams or other topical agents is not recommended for patients with pressure sores (National Health Service 2022). Back massage should ideally use olive oil for more optimal decubitus prevention. Previous research has proven that olive oil prevents decubitus ulcers in patients at risk for developing pressure sores based on the Braden scale (Laily, Saragih, and Sirait 2019). The SSBM intervention consists of 5 steps. The first step: the patient has positioned sims, then the researcher using a moisturizer, makes small circular movements on the patient's upper neck using the thumb. Second step: the researcher places his palms at the base of the skull and creates long, smooth movements along the spine. Step three: the researcher places hands on both sides of the neck, strokes the patient's collarbones with his thumbs, and repeats the movement several times. Step four: the researcher places the thumbs on the sides of the patient's spine, starting at the shoulders, moves the thumbs down the spine to the waist, and repeats this movement several times. Fifth step: the procedure ends by placing your palms on the sides of the patient's neck, then making continuous sweeps over the shoulders and back and repeating this several times (Elkheshen, Ahmed, and Abdelgawad 2017).

In addition to changing positions and SSBM, other interventions based on Indonesian nursing intervention standards are also implemented, including keeping sheets dry without folds, using exceptional decubitus cases, monitoring the patient's skin status, and evaluating the patient's decubitus risk (PPNI 2018). The risk assessment of decubitus ulcers was measured using the Braden scale. The Braden scale includes six parameters: sensory perception, mobility, nutrition, friction, humidity, and activity. The threshold value of the Braden scale (cut of the point) used is 16. A Braden scale score ≤ 16 indicates the patient is at risk for decubitus ulcers, while a Braden scale score > 16 shows the patient is not at risk for decubitus ulcers (Sukurni et al. 2018).

Ethical considerations

The author has made informed consent to the patient's family before researching because the patient is still in a state of decreased consciousness. The patient's family has also agreed regarding the informed consent described by the author and has signed the informed consent sheet. The author applies ethical principles while carrying out this case study. The ethical principles used by the author include autonomy, beneficence, non-maleficence, integrity, and confidentiality.

Results

Nursing implementation was carried out for three days, from September 24, 2022, to September 27, 2023. Evaluation of decubitus risk was carried out three times using the Braden scale. The evaluation results regarding the patient's decubitus risk are described in Table 1.

Table 1. Evaluation of decubitus risk using the Braden scale

Treatment Day	Braden Scale Score	Interpretation
Day 1	**12**	**At the risk of decubitus**
Day 2	**13**	**At the risk of decubitus**
Day 3	**15**	**At the risk of decubitus**

Discussion

Hemorrhagic strokes can occur due to a ruptured brain blood vessel that can cover the brain tissue spaces. Hypertension is hemorrhagic stroke patients' most common risk factor (Setiawan 2020). Hypertension can increase perfusion pressure in the intracerebral vessels, causing symptoms of neurological disorders that appear suddenly and are often accompanied by complaints of severe headaches. High pressure in the blood vessels can cause the blood vessels to rupture. Bleeding due to the rupture of a blood vessel in the brain can cause a space-occupying effect causing an increase in intracranial pressure (ICP) (Setiawan 2020). It also happened to Mr. S, who has a history of uncontrolled hypertension, where the patient also complains of severe headaches accompanied by vomiting before losing consciousness.

Patient Mr. S experienced hyperglycemia, as indicated by the patient's current blood sugar (GDS) was 225 mg/dL. However, based on narratives from his family, the patient had no previous history of diabetes mellitus. Acute stroke patients often experience hyperglycemia in patients with or without diabetes. Hyperglycemia conditions can be a risk factor for poor prognosis in patients who experience acute stroke. This condition can occur in 30-40% of acute ischemic stroke patients and around 43-59% of hemorrhagic stroke patients (Saskia, Apriyanto, and Darmawan 2021). Increased blood glucose in the body in patients with acute stroke can also be associated with a larger hematoma volume, more severe neurological disorders, and a poor prognosis (Saskia et al. 2021).

The results of the diagnostic examination showed that there was an increase in leukocytes in Mr. S up to 30,280/mm3. This increase in leukocytes is related to the large area of tissue damage in stroke patients. During a stroke, the inflammation that occurs can activate leukocytes. Leukocyte activation can increase leukocyte adhesion to the endothelium, migrating to the brain parenchyma. It results from the central nervous system's reaction to injuries that occur in the brain (Hamzah 2015).

Decreased consciousness is a clinical manifestation that is closely related to hemorrhagic stroke. Previous research stated that decreased awareness had a significant relationship with the incidence of intracerebral hemorrhage stroke (Sanyasi and Pinzon 2018). Decreased consciousness in stroke patients can be concluded through a neurological examination using the Glasgow Coma Scale (GCS). Patient Mr. S has a total GCS score of 5, where the patient is in a stuporous state. A stupor is a loss of consciousness in which the patient can only respond when given painful stimuli (Aprilia and Wreksoatmodjo 2015). This condition is included in the loss of consciousness.

Average blood circulation depends on muscle activity. Conditions of immobility can inhibit circulation and reduce the supply of nutrients to certain areas. As a result, skin damage and pressure sores (decubitus) can occur (Berman, Snyder, and Frandsen 2016). Stroke patients with decreased consciousness may experience immobility because the patient is unable to move. It can make the patient unable to change position independently, which causes the patient to be at risk of developing decubitus ulcers. In addition, previous studies have also found that the patient's dependency level has a significant correlation with the risk of decubitus, where patients with total care have the highest risk of developing decubitus (Okatiranti et al. 2013). It is following the condition of the patient Mr. S who experienced a high level of dependence, so it needed total care.

Patients with other comorbid diseases, such as diabetes mellitus and obesity, have a higher risk of developing decubitus ulcers (Ciríaco et al. 2023). Mr. S did not have a history of diabetes mellitus, but the diagnostic examination results showed Mr. S has hyperglycemia. Increased blood glucose levels can reduce the body's vascularity due to high blood viscosity, which reduces blood circulation and oxygen supply to body tissues (Veranita et al 2016). In addition, Mr. S has a body mass index (BMI): 27.34 kg/m2, which can be categorized as overweight. Excess weight in patients can cause reduced vascularization to adipose tissue and increase pressure in areas prone to decubitus, such as the sacrum, coccyx, and heels (Ciríaco et al. 2023).

Decubitus sores can arise when body weight puts pressure on the skin between the bony prominences and the outer surface, such as the patient's bed surface. It can inhibit blood circulation resulting in tissue hypoxia. If tissue hypoxia occurs continuously, it can cause the tissue to experience necrosis. The critical duration of tissue ischemia before it becomes a decubitus wound is around 30 to 240 minutes (Amirsyah, Amirsyah, and Putra 2020). Approximately 70% of decubitus ulcers can occur in the area of the sacrum, ischial tuberosity, or greater trochanter, while about 15-25% occur in the lower extremities, such as the heels. In addition, pressure sores can also occur on parts of the body that experience prolonged pressure, such as the elbows, back, and ears (Amirsyah et al. 2020).

The risk of decubitus ulcers can also be influenced by other factors, such as in patients who experience decreased sensory perception, skin moisture, skin friction, malnutrition, elderly, low arteriolar pressure, emotional stress, smoking behavior, and increased body temperature (Mahmuda 2019). It follows the results of a systematic review which states that the most frequent risk factors that arise as the leading cause of the development of decubitus sores include three main domains, namely mobility/activity, perfusion, and skin status. In addition, skin moisture, age, hematological examination, nutrition, general health status, and body temperature can also be significant risk factors for developing decubitus ulcers (Coleman et al. 2013). Apart from experiencing immobility due to decreased consciousness, patient Mr. S also experienced hyperthermia with a body temperature of 39.9 oC. Increased skin temperature can cause the body to sweat, increasing frictional forces on the skin to tears in the underlying tissue. Increasing skin temperature will also increase the metabolic rate, making the tissue more susceptible to ischemic damage. Every 1°C increase in tissue temperature is associated with an increase in oxygen consumption by tissue cells of 10-13% (Gefen and Soppi 2020).

Decubitus ulcers can be prevented by doing bed rest techniques or massage therapy using moisturizers. The moisturizer can protect the skin from excessive evaporation from sweat to reduce the risk of skin damage (Sihombing et al. 2016). The use of a decubitus mattress, as given to the patient Mr. S, aims to reduce the pressure exerted by the body on the surface of the patient's bed and reduce the frictional force that can occur when the patient changes position. This decubitus mattress is recommended to be used from the beginning of the patient's treatment to prevent decubitus ulcers (Amirsyah et al. 2020). Patient Mr. S, who was given the SSBM intervention and bed shifts, did not find any signs of decubitus symptoms, such as skin redness, after three days of treatment. In addition, patients also experienced a decrease in the risk score for developing decubitus based on the Braden scale measurement after undergoing three days of medicine at the hospital. It aligns with a study that showed that position change interventions can reduce decubitus events in bedridden patients with a Braden scale score <17 after three days of hospitalization (Mayangsar and Yenny 2020). Other research also states that position change interventions are more effective for reducing the risk of decubitus when combined with back massage therapy before 72 hours of bed rest treatment at the hospital (Andani, Kristiyawati, and Purnomo, S 2016). It follows the condition of Mr. S, who had just been hospitalized for 21 hours.

Slow Stroke Back Massage (SSBM) intervention is not only practical for decubitus prevention. Still, it can also be a non-pharmacological therapy to help lower blood pressure in stroke patients. Slow Stroke Back Massage can relax the tendons, muscles, and ligaments, increasing parasympathetic activity and activating the neurotransmitter acetylcholine. It can inhibit sympathetic nerve activity resulting in systemic vasodilatation and decreased cardiac muscle contractility, causing heart rate, cardiac output, and stroke volume to fall, resulting in a decrease in blood pressure (Pinasthika 2018).

Conclusion

Providing bed transfer intervention and Slow Stroke Back Massage (SSBM) in stroke patients with decreased consciousness can reduce the risk of decubitus ulcers. However, interventions to prevent decubitus ulcers

based on Indonesian nursing intervention standards are still being carried out to support this intervention of bed rest and SSBM.
This case study still has limitations, including the SSBM intervention, which was only carried out once due to the limited time for conducting the research. In addition, interventions are also limited to only one characteristic of stroke patients. Advice that can be given for further research is to conduct research with a larger sample with a longer time to see the effect of the interventions that can be given.

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