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Implementation of Warm Compresses on the Nape of the Neck Reduces Pain Levels in Hypertension Patients

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Abstract

Background: Hypertensive pain can result from blockage of blood vessels due to structural changes in small arteries and arterioles. Arteries can be disrupted if blood vessel pressure narrows and increased blood vessels can cause circulation problems in the brain, resulting in patients experiencing headaches which cause pain in the nape of the neck. Pain in hypertension can be controlled with pharmacological and non-pharmacological management. One non-pharmacological application is to apply a warm compress to the nape of the neck Objective: Knowing the application of warm compresses to the nape of the neck to overcome the main problem of chronic pain in hypertensive patients. Method: This research is a qualitative descriptive research with a case study strategy using 2 respondents, namely patients who experience pain in hypertension. The procedure is carried out for 3 consecutive days by applying a warm compress to the nape of the neck for 15-20 minutes, measuring the pain scale before and after the procedure. Data collection was carried out through participatory observation, structured interviews, pre-test and post-test methods, as well as documentation. Results: Applying a warm compress to the nape of the neck resulted in no reduction in pain levels in both patients. Patient I complained of moderate pain on scale 5 after application did not decrease but remained moderate pain on scale 5 and patient 2 also did not experience a decrease in pain level from moderate pain on scale 6 after application remained moderate pain on scale 6. Conclusion: Applying a warm compress to the nape of the neck was not effective in treating the main problem of chronic pain in the two respondents who were hypertensive patients.

Keywords: Hypertension Pain; Pain Scale; Warm Compresses

1. INTRODUCTION

Hypertension is an increase in blood pressure in the arteries with the results of an examination of systolic pressure of more than 140 mmHg and diastolic pressure of more than 90 mmHg (Ekasari et al., 2021). Data from the World Health Organization or WHO (2021) states that the world population has increased by 150 million people have suffered from hypertension by 1.28 billion, compared to 1.13 billion in 2014. Based on the prevalence results, hypertension in Central Java province is 37.57%, so that the disease occupies the largest proportion of all non-communicable diseases (NCDs) reported at 76.5% (Central Java Provincial Health Office, 2021). The percentage of hypertension sufferers in Magelang City every year continues to increase from 28,586 people in 2021 and in 2022 to 79,933 people (Magelang Regency Health Office, 2022).

Patients with hypertension who continue to increase if not treated appropriately will cause impacts or complications such as chronic kidney disease, coronary heart disease, stroke, atherosclerosis, myocardial infarction, and encephalopathy (Matassarin, 2014). The impact that occurs on hypertension is usually headaches, the nape of the neck feels tense in the neck so that the patient feels pain. Pain can be felt due to an increase in blood vessel

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pressure in the neck area leading to the brain so that it can cause a decrease in blood supply and an increase in spasm. Hypertensive patients will experience pain in the nape of the neck which can interfere with their daily activities (Puspita, 2023). General management to reduce pain in hypertensive patients focuses on using pharmacological therapy, but independent management with non-pharmacological measures to reduce neck pain, namely warm compresses, needs to be further studied to determine the scale of the patient's pain after being given warm compress therapy with the nape of the neck.

2. LITERATURE REVIEW

Blood vessel pressure when there is an increase will cause pain in the neck to the brain and can result in pressure on the nerves, so that the main nursing problem that arises in hypertension is chronic pain (Lemone et al., 2016). Chronic pain is a sensory or emotional experience related to actual or functional tissue damage, with a sudden or slow onset and mild to severe and constant intensity, which lasts more than 3 months (Tim Pokja SDKI DPP PPNI, 2017). Causes that can arise in chronic pain are chronic musculoskeletal conditions, nervous system damage, nerve suppression, tumor infiltration, imbalances (neurotransmitters, neuromedular, and receptors), immune disorders such as HIV, metabolic function disorders, and a history of static work positions (Tim Pokja SDKI DPP PPNI, 2017).

Signs and symptoms in chronic pain are divided into two, namely major and minor (objective subjective) symptom signs. Major subjective symptoms and signs in chronic pain are complaining of pain and feeling depressed (depressed) while the objective is appearing grimacing, restless, and unable to complete activities. Subjective minor symptoms and signs are fear of recurrent injuries while objective is being protective (e.g. pain avoidance position), alertness, changes in sleep patterns, anorexia, narrowed focus, and focusing on oneself (Tim Pokja SDKI DPP PPNI, 2017).

The management of hypertension includes pharmacological and non-pharmacological therapy. Pharmacological therapy can be done with hypertension drugs Diuretics, Beta blockers, Alpha blockers, ACE inhibitors, Ca blockers are very effective and most common methods to lower blood pressure (Rohimah & Kurniasih, 2015). Non-pharmacological therapies that can be done to reduce chronic pain in hypertension are hypnosis, distraction techniques, music therapy, hot or cold compresses (Tim Pokja SIKI DPP PPNI, 2018).

A method that can reduce pain in the nape of the neck with warm compresses, this application is in accordance with the research of Fadlilah (2019) which can help reduce neck pain in hypertensive patients by obtaining results from 20 respondents in the control group

before the application experienced a moderate pain scale of 12 respondents (60%) and after being given warm compresses experienced mild pain as many as 17 respondents (75%).

Warm compresses are one of the applications that can provide a warm feeling in the nape of the neck area, able to dilatate blood vessels which cause blood flow and oxygen supply to run smoothly (Ociviyanti, 2013). Warm compresses can be done for 15 minutes with a temperature of 45-50ºC. This warm temperature can stimulate receptors in the nape of the neck which can affect the brain's perception process, can cause conduction heat transfer which is able to widen blood vessels so that it can reduce muscle tension in patients who are feeling it (Sribekti, 2016).

The results of a previous study by Puspita et al. (2023) on the effect of warm compresses on the nape of the neck experienced a decrease in pain. Before the treatment of moderate pain was 60% and after the treatment of warm compresses became mild pain of 45% with a value of p value = 0.000 < 0.05. Researchers conducted by Rohimah & Kurniasih (2015) had the effect of neck pain scale before moderate pain treatment in 12 respondents (60%) and after being given warm compresses, 17 respondents (75%) experienced mild pain with a value (*p value* = 0.000). Another researcher, Fadlilah (2019), before the treatment, experienced moderate pain in 12 respondents and after being given warm compresses became mild pain.

PKU Muhammadiyah Temanggung Hospital is one of the referral hospitals in Temanggung Regency, Central Java. The number of hypertension patients who come and receive treatment at this hospital is quite high every year. Hypertension patients with the female sex compared to men, in 2023 there will be 891 patients and at the beginning of 2024 it has reached 400 patients. The increasing number of hypertension patients prompted researchers to conduct a case study on hypertension patients at the hospital using nonpharmacological therapy, namely warm compresses on the nape of the neck to treat chronic pain.

3. METHOD

This study is a qualitative descriptive research with a case study approach on the application of warm compresses in hypertensive patients. The subjects of the study were 2 patients in the shofa room II of PKU Hospital Muhammadiyah Temanggung who experienced chronic pain nursing problems with a medical diagnosis of hypertension. The selection of subjects used research sampling techniques and non-probability sampling with a purposive sampling approach. The subjects of the study were hypertensive patients with

inclusion criteria; (a) Patients diagnosed with hypertension accompanied by comorbidities with a history of irregular medication taking; (b) Patients with moderate pain problems (4-6) in the nape of the neck or headache; (c) Patients after taking hypertension medication; (d)Patients who have experienced headache or neck pain for more than 3 months; (e) Patients aged 50-70 years; (f) The patient is willing to be a respondent. The research was conducted in January-July 2024. The validity test in obtaining data or information requires high validity, namely using data sources from patients, nurses, patients' families, and medical records as sources of information and documentation sources to validate the data that has been obtained.

4. RESULT

1. Assessment of Respondent Criteria

The implementation of the case study used 2 respondents of hypertension patients in accordance with the inclusion criteria written by the researcher. The researcher identified the inclusion criteria by describing them in table 1.

Table 1. Results of the Assessment of Respondent Criteria

No	Inclusion Criteria	Mrs. St		Mrs. So	
		Exist	None	Exist	None
1	Patients diagnosed with hypertension accompanied by comorbidities with a history of irregular medication	√		√	
2	Patients with moderate-scale pain complaints (4-6)	√		√	
3	Patients after taking hypertension medication	√		√	
4	Patients who experience headache or neck pain	√		√	
5	Patients are willing to be responders	√		√	
6	Patients aged 50-70 years	√		√	

Source : Primary Data (2024)

The conclusion from the table above is that both respondents met the inclusion criteria to then be used as case study subjects.

2. Nursing Diagnosis

Based on the initial assessment of Mrs. So and Mrs. St, a major grouping of signs and symptoms can be taken, the grouping is described in the following table 2:

Table 2. Identification of Chronic Pain Problems

Signs of major symptoms	Mrs. St		Mrs. So	
	Yes	None	Yes	None
Complaining of pain	√		√	
Feeling depressed (depressed)	√		√	
Looks grimacing	√		√	
Restless	√		√	
Unable to complete activities		√	√	
Sum	4	1	5	

Source : Primary Data (2024)

The results of the problem identification in table 2 showed that 90% of the symptoms were major and had occurred for more than 3 months with the pain disappearing, so it can be concluded that Mrs. St and Mrs. So experienced chronic pain nursing problems.

3. Before the Implementation of the Action

The researcher examined the two respondents to find out the signs and symptoms experienced in the form of chronic pain examination as described in the following table 3:

Table 3. Observation Results Before Taking Action

No	Observation	Mrs. St	Mrs. So
		April 30, 2024	May 2, 2024
1.	Complaining of pain (NRS)	5	6
2.	Feeling depressed (depressed)	Yes	Yes
3.	Looks grimacing	Yes	Yes
4.	Restless	Yes	Yes
5.	Unable to complete activities	Not	Yes

Source : Primary Data (2024)

The results of the examination found that both respondents experienced moderate scale pain of 5-6. Based on the examination data, the researcher planned pain management nursing actions with a focus on applying warm compresses to the nape of the neck for 3 days. This action is carried out to address the main problem of chronic pain in hypertensive patients.

4. Implementation of Actions

Warm compresses are an independent nursing action to facilitate patients who can provide a sense of warmth to the nape of the neck area, able to dilate blood vessels which cause blood flow and oxygen supply to run smoothly (Ociviyanti, 2013). The application of warm compresses can be started after both respondents understand the explanation of the case study study and sign the informed consent given to Mrs. St and Mrs. So. The application of warm compresses is given in accordance with the SOPs that have been made by the researchers. Implementation begins with making a contract between the two respondents and explaining the objectives and procedures of action to the patient/family.

The implementation of the application of warm compresses on the nape of the neck given to Mrs. St began on April 30, 2024 at 13.00 WIB with a gap of 6 hours after the administration of Furosemid analgesic and taking the hypertension drug Candesartan 16 mg which was given at 07.00 WIB, the stages began by conducting the orientation phase, explaining the purpose of doing the warm compress on the nape of the neck, explaining the procedure for actions that will be carried out according to the SOP, The researcher

previously explained the pain scale using the Numeric Rating Scale (NRS) where the patient then determined the pain scale by circling the number on a scale of 5, measuring blood pressure, pulse before applying warm compresses, preparing hot bottles that had been measured with warm water temperature using a water thermometer of around 44.6ºC. The action on the second day was carried out on May 1, 2024 at 14.00 WIB, a 7-hour break after the administration of Furosemid analgesic and taking medication hypertension Candesartan 16 mg which was given at 07.00 WIB. The application of the 3rd day was carried out on May 2, 2024 at 15.30 WIB with a break of 8 and a half hours after the administration of Furosemid analgesic and taking the hypertension drug Candesartan 16 mg which was given at 07.00 WIB. Researchers experience obstacles in not being able to create a comfortable environment because it is crowded with the voices of other patients or people who are visiting, causing patients to be distracted in taking action. The supporting thing from this application is that the patient looks comfortable when in a warm compress.

The implementation of the application of warm compresses on the nape of the neck given to Mrs. So began on May 2, 2024 at 17.00 WIB with a gap of 10 hours after the administration of Furosemid analgesic and taking the hypertension drug Candesartan 16 mg which was given at 07.00 WIB. The first day's action, the implementation began with doing the orientation phase, explaining the purpose of doing a warm compress on the nape of the neck, explaining the procedure for actions to be carried out according to the SOP, asking about the pain scale using the Numeric Rating Scale (NRS), measuring blood pressure, pulse before and after the application of the warm compress, preparing hot bottles that have been measured using a water thermometer of about 45ºC. The action begins by recommending position the patient as comfortably as possible, then wear clean gloves and attach hot bottles to the pain area of the nape of the neck within 20 minutes, after doing warm compresses there are no signs of redness. The second day of action was carried out on May 3, 2024 at 13.20 WIB, a break of 6 hours and 20 minutes after the administration of Furosemid analgesic and taking the hypertension drug Candesartan 16 mg which was given at 07.00 WIB. The next action on the 3rd day was carried out on May 4 at 15.00 WIB with a break of 8 hours after the administration of Furosemid analgesic and taking the hypertension drug Candesartan 16 mg which was given at 07.00 WIB. The obstacles that the researcher had were still the same as the patient in a lying position on his left side so that the researcher held a warm compress device during the application.

5. After the Implementation of the Action

Evaluation is carried out every time the nursing action of applying warm compresses is completed. The purpose of the evaluation was to determine the effectiveness of the administration of warm neck compresses on pain reduction in hypertensive patients. The researcher used external observation of pain level (SLKI, 2017) with the hope that pain decreased after being given nursing intervention for 3 days in table 4.

Table 4. Observation Results After Implementation

No	Indicators	Mrs. St					
		Day 1		Day 2		Day 3	
		Pretest	*Postest*	*Pretest*	*Postest*	*Pretest*	*Postest*
1.	Complaining of pain	5	5	4	4	4	4
2.	Feeling depressed (depressed)	Yes	Yes	Yes	Not	Yes	Not
3.	Looks grimacing	Yes	Yes	Yes	Not	Yes	Not
4.	Restless	Yes	Yes	Yes	Not	Yes	Not
5.	Unable to complete activities	Not	Not	Not	Not	Not	Not

Source : Primary Data (2024)

Table 5. Observation Results After Implementation (Continued)

No	Indicators	Mrs. So					
		Day 1		Day 2		Day 3	
		Pretest	*Postest*	*Pretest*	*Postest*	*Pretest*	*Postest*
1.	Complaining of pain	6	6	5	5	4	4
2.	Feeling depressed (depressed)	Yes	Yes	Yes	Yes	Yes	Yes
3.	Looks grimacing	Yes	Yes	Yes	Yes	Yes	Yes
4.	Restless	Yes	Yes	Yes	Yes	Yes	Yes
5.	Unable to complete activities	Yes	Yes	Yes	Yes	Yes	Yes

Source : Primary Data (2024)

The results of the examination in the two respondents after the application of warm compresses were not effective enough in reducing the level of pain with the results of the evaluation of the two respondents remaining on a moderate pain scale.

5. DISCUSSION

1. Characteristics of respondents

Based on the results of the study, the two respondents had an age difference, namely Mrs. St was 52 years old and Mrs. So was 67 years old. Hypertension can occur at any age but often occurs in the elderly, this is because blood vessels will naturally thicken and become stiffer. Systolic pressure will continue to increase until the age of 80, while diastolic pressure will continue to increase until the age of 55-60 years and then it will decrease slowly or even decrease drastically (Anonymous, 2010). According to Dinata (2015), the influence of age on blood pressure can be seen from the vascular aspect, namely increasing age will decrease the elasticity of peripheral arterial blood vessels so as

to increase peripheral blood vessels which later blood pressure will increase. Women who have entered the elderly will experience thickening of the artery walls which results in narrowing and stiffness of blood vessels. The sisolic and diastolic pressure becomes increased due to reduced muscle flexibility of the blood vessels.

Everyone reacts differently to pain. There are people who face their pain with feelings of anxiety, fear, and anxiety, while others feel it with optimism and tolerance. Excessive reaction to pain is a form of a person's response to pain such as fear, anxiety, restlessness, screaming, and crying (Hidayat & Uliyah, 2017). The results of the two respondents involved in this application had different reactions to pain. The pain reaction was more shown in respondent II, namely Mrs. So said that the pain was felt continuously, restless, seemed protective to avoid pain by lying on the left side in bed only and activities were still assisted while in respondent I Mrs. St said that the pain disappeared, she could still do activities independently when the pain was felt.

The administration of medical therapy to Mrs. St and Mrs. So has similarities, namely Furosemid 10 mg 2x1 per 12 hours through an intravenous use to reduce excess fluid in the body, Candesartan 16 mg 1x1 per 24 hours administered orally to lower blood pressure in hypertension and treatment of heart failure, NS 10 tpm infusion to replace lost body fluids and keep the body well hydrated. The administration of different drugs is Mrs. St gets Amlodipine at a dose of 10 mg 1x1 per 24 hours orally to lower blood pressure and make the heart easier to pump throughout the body, Folic Acid 400 mcg 3x1 per 6 hours orally to overcome folic acid deficiency and treat anemia, Osteocal 3x1 per 6 hours orally to maintain blood pressure, relaxes nerves and helps overcome sleep disorders.

2. Conditions before the implementation of warm compress therapy

Researchers have studied the major signs and symptoms of patients and found that the main nursing diagnosis is chronic pain. Before implementation, the researcher will measure the pain scale using the Numeric Rating Scale (NRS) which obtained moderate pain results on Mrs. St scale 5 and Mrs. So scale 6. Hypertensive patients will experience increased pressure on the walls of blood vessels, one of which is an increase in blood vessels in the nape of the neck so that blood flow becomes unsmooth. Predisposing factors also affect the occurrence of hypertension, including age, occupation, reaction to pain which can result in vascular damage to blood vessels with structural and functional changes in the peripheral vascular system responsible for changes in blood pressure in old age. These changes include atherosclerosis, loss of connective tissue elasticity, and a decrease in muscle relaxation of blood vessels. Blood vessels so that they narrow and

result in impaired blood circulation to the brain can cause resistance to the brain vessels to rise, this results in patients feeling headaches that cause pain in the nape of the neck and disturbances in sleep patterns (Nuraini, 2018).

Non-pharmacological techniques that can be used to reduce pain in hypertensive patients, one of which is the application of warm compresses on the nape of the neck (Setiawan, 2017). Warm compress of the nape of the neck is a simple method of using a warm temperature applied to the nape of the neck area that feels pain and tension. Warm compress the jars in the nape of the neck are large arteries that run the brain. The brain's perception process is affected when doing warm compresses, so that the receptors are stimulated by the heat-sensitive hypothalamus. The blood vessels around the nape of the neck will undergo a change in size that can facilitate oxygen circulation, prevent muscle spasm, and reduce headaches (Valerian et al., 2021).

This is in accordance with the research of Fadlilah (2019) which states that warm compresses have conduction heat transfer properties which can cause dilation of blood vessels and also muscle relaxation which results in an increase in oxygen supply to the brain, so warm compresses are considered a method to reduce pain.

3. Condition After the action of warm compress

Hypertensive pain is an unpleasant feeling that can be accurately explained by the person who experiences it, because everyone's experience of pain and discomfort is different (Novitasari & Wirakhmi, 2018). Warm compresses can be used to provide comfort to patients with headache complaints which can have physiological effects such as reducing pain, relaxing muscle tension in the throat, blood flow can run smoothly and reducing stiffness in the joints (Mubarak, 2015).

Warm compresses are an act of providing warmth to the nape of the neck that feels painful can reduce muscle spasms which can cause vasodilation and increased blood flow in the area performed. The administration of warm compresses is one of the implementations that can cause conduction heat transfer and be able to widen blood vessels and increase muscle relaxation so as to facilitate oxygen circulation.

The warm compress intervention is carried out for 3 consecutive days with one action. This application was carried out on respondent I Mrs. St and respondent II Mrs. So before the action of warming the nape of the neck, a pain scale measurement was carried out first on both respondents experiencing a moderate pain scale. The results of the pain scale assessment showed that there was no decrease in the pain scale in respondents who remained on a scale of 4. The results showed that there was no effect of warm compress

on pain intensity in hypertensive patients. The treatment of warm compresses for neck pain is given for 3 consecutive days with 1 time every day. Position the patient as comfortably as possible then awarm ompres on the nape of the neck is given for 15-20 minutes after taking hypertension medication with warm water temperature 40-45ºC, then the results are evaluated every day after implementation.

The evaluation obtained before the application of warm compresses to respondents I Mrs. St was complaining of moderate pain (scale 5). The application of warm compresses to Mrs. St for 3 days showed no decrease in the level of persistent pain in moderate pain (scale 4). Respondent II, Mrs. So, the evaluation obtained before the application of warm compresses complained of moderate pain (scale 6). The application of warm compresses to Mrs. So for 3 days did not change, i.e. the pain level did not decrease, remained at moderate pain (scale 4). The influence of age on blood pressure can be seen from the vascular aspect, namely increasing age will decrease the elasticity of peripheral arterial blood vessels so as to increase peripheral blood vessels which later will increase blood pressure. This is because the blood vessels of the artery wall will undergo thickening, resulting in narrowing and stiffness of the blood vessels.

The results obtained from the application of warm compresses showed that there was no change before and after the action was carried out for 3 days in respondents I and respondent II. The application of warm compresses to the headache of patients with hypertension showed no decrease in pain levels so the application was not effective enough to address the main problem of chronic pain in the nape of the neck for both respondents.

The results of the analysis of the application of warm neck compresses from both respondents who experienced chronic pain in hypertensive patients were carried out for 3 days, 1 action per day obtained ineffective results in both respondents. If you look at the results carried out by the researchers from days 1 to 3, there is indeed a decrease from the scale of 6 to 4, but for each day after the implementation of the measure, there is no decrease in the pain scale in hypertensive patients. During the action of warm compresses on the nape of the neck, the respondents continued to consume the hypertension medication Candesartan 16 mg and Amlodipine 10 mg as well as a low-salt diet that was followed while in the hospital.

6. CONCLUSION

Based on the results of a case study on the application of warm compresses on the nape of the neck to overcome the main problem of chronic pain in hypertensive patients at PKU Muhammadiyah Temanggung, the condition after 3 days of action was carried out on Mrs. St's respondents, namely complaining of moderate pain (scale 5). The application of warm compresses on Mrs. St for 3 days showed that the pain level did not decrease, but moderate pain (scale 4). The second respondent, Mrs. So, the evaluation obtained before the application of warm compresses complained of moderate pain (scale 6). The application of warm compresses to Mrs. So for 3 days did not decrease, i.e. the level of pain did not decrease, but remained in moderate pain (scale 4). It is hoped that the next researcher can conduct research on the application of cold compress on the nape of the neck by increasing the number of respondents and using other research methods and can be compared with the application of cold compress.

7. LIMITATION

This study still has some limitations for its implementation, such as the number of respondents who cannot describe exactly the ineffectiveness of applying warm compresses to reduce neck pain in hypertensive patients, as well as comorbidities that can cause pain other than the main cause of chronic pain disease.

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