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RESEARCH ARTICLE

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Cold Compress on Vertebra (Cervical) on The Pain Scale of Postoperative Patients

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ABSTRACT

Postoperative pain is the most common problem in hospital. One of the non-pharmacological actions to reduce postoperative pain is cold compresses. A cold compress is one of the distraction techniques that is often used in health services to overcome the problem of postoperative pain. This study aimed to determine the scale of pain before and after cold compress in the vertebrae (cervical) in postoperative patients. Method: This study was a quantitative study with a quasi-experimental method to determine the pain scale of postoperative patients before and after cold compress (cervical). The sample size were 16 postoperative patients in the KRMT Wongsonegoro Hospital, Semarang, Indonesia. The results of this study indicates that the average pain scale of postoperative patients before cold compressions on the vertebrae (cervical) was 5.44. While the pain scale of postoperative patients after cold compress on the vertebrae (cervical) was 3.25. There was difference in the mean pain scale of postoperative patients before and after cold compress on the vertebrae (cervical) with p-value = 0.000. The cold compress effectively reduces postoperative pain because with a cold compress on the cervical cause transmission of pain is closed so the cortex cerebral cannot receive signals because the pain has been blocked with cold stimulation that reaches the brain first. This is related to gate control theory where the stimulation of the skin in the form of cold compress in the cervical area which is located adjacent to the brain and rich in blood vessels, the activation of transmission of larger and faster A-beta sensory nerve fibers, thus closing the "gate" and lowering pain transmission through small diameter C fibers.

Keywords: Cold compress, Postoperative pain

INTRODUCTION

Surgery is an action by cleaning or removing contaminated tissue or dead tissue by making the skin open and injured so that it stimulates the pain impulses to the sensory nerves (A-delta fibers and C fibers) are activated and transmitted to the posterior horn in the spinal cord. Afferent nerves will convey pain perception to the brain^{(1),(2)}. One problem that often arises from surgery is pain.

Postoperative pain is the body's complex reaction to tissue damage resulting in complaints of physical, emotional and autonomous responses⁽³⁾. Postoperative pain is the most common problem in hospitals. As many as 77% of postoperative patients received inadequate pain treatment⁽⁴⁾. Postoperative pain causes nociceptive stimulation and an inflammatory response in the area around the operation, where chemical substances (prostaglandin, histamine, serotonin, bradykinin, substance P and leukotriene) are released by damaged tissue and inflammatory cells that play a role in the transduction process pain⁽⁵⁾. Effective management of postoperative pain is an essential component in the care of surgical patients. The experience of postoperative pain for some people is the experience of the most painful pain in his life, especially if not handled professionally and intensively. Understanding postoperative pain is the most important thing for the management of pharmacological and non-pharmacological therapies.

One of non-pharmacological management that can overcome pain is cold compress. A cold compress is a method of using local low temperatures which can cause some physiological effects. The cold compress is thought to have analgesic effects by slowing down the speed of nerve impingement so that pain impulses that reach the

brain are less so that cold perception becomes dominant and reduces pain perception⁽⁶⁾. According to Andarmoyo, the provision of cold compress can stimulate the release of endorphins then reduce pain transmission through small-diameter A-delta and C fibers and activate faster and greater transmission of A-beta nerve fibers⁽⁷⁾.

The effect of cold compress on the back of the neck or the nape of the neck aims to inhibit the sensation of pain that will be delivered by nerve impulses to the central nervous system (brain). William & Ramakhrisan stated that cold compress in the back of the neck in patients with a headache could cause a diminution of blood vessels, inhibit blood flow, kill sensation of pain, and slow down the inflammatory process⁽⁸⁾. Tracy & Lane recommend the temperature of cold compress to be given is 10-20°C⁽⁹⁾. The neck is innervated by the cervical nerves. The cervical nerves are formed by the cervicobrachial plexus and nerves to the head which play a role in the functioning of the upper extremities and are involved in the production of pain⁽¹⁰⁾. The neck (back neck) is an area rich in blood vessels and nerves. The neck is also a location close to the brain area⁽⁵⁾. Daily Nutrition News states that placing ice cubes in a curve at Feng Fu's point for 10-20 minutes will provide an incredible sensation⁽¹¹⁾. At first 30-40 seconds feel cold, then it will give a sense of warmth. This is because cold stimulates endorphins released by the brain and flows into the blood vessels, making euphoria and relaxing the body. Endorphins are one of the endogenous analgesics that are beneficial to our body.

Giving a cold compress to the cervical is not fully done in the hospital. Based on the background above, it is very important that this study be conducted to determine the difference in pain scale of postoperative patients before and after cold compress in the vertebrae (cervical).

METHODS

This research method uses a quasi-experimental method to determine the difference in pain scale before and after treatment in postoperative patients. The populations in this study were postoperative patients in the city of Semarang. The sample in this study amounted to 16 postoperative patients in the KRMT Wongsonegoro Hospital Semarang with inclusion criteria namely patients aged 21-45 years and first time undergoing surgery, while the exclusionary criteria included patients suffering from Diabetes Mellitus, allergies to cold temperatures, and patients who hearing loss. The instrument in this study was ice pack for cold compress therapy and Visual Analog Scale (VAS) to measure pain scale. Data collection was carried out after obtaining a permit and ethical clearance from the Ethics Committee of the Faculty of Nursing, Sultan Agung Islamic University, Semarang.

RESULTS

The average pain scale of postoperative patients before cold compress on the vertebrae (cervical) was 5.44. While the scale of pain after a cold compress on the vertebra (cervical) has decreased by 3.25 (Figure 1).

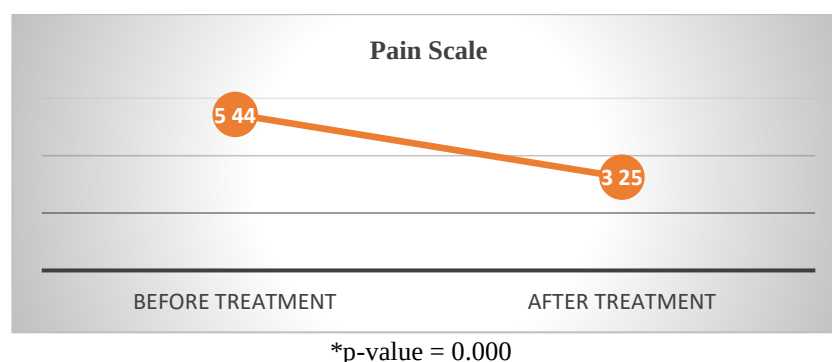


Figure 1. Analysis of the difference in the mean scale of postoperative pain before and after cold compress on the vertebrae (cervical) area in KRMT Wongsonegoro Hospital, Semarang, Indonesia

DISCUSSION

The scale of pain after a cold compress on the vertebra (cervical) has decreased by 3.25. This is in line with the research of William & Ramakhrisan stating that cold compress in the cervical (back neck) in patients with a headache can cause a diminution of blood vessels, inhibit blood flow, kill sensation of pain, and slow down the inflammatory process⁽⁸⁾. In addition, this cold compress is one way to stimulate the skin. This stimulus sends impulses from the periphery to the hypothalamus which then becomes a sensation of normal body temperature⁽¹²⁾. According to Mander, a cold compress can also cause pain transmission to be closed so that the cortex cerebral cannot receive signals because the pain has been blocked with cold stimulation that reaches the brain first⁽⁹⁾.

The results of the statistical test from this study obtained $p\text{-value} = 0.000$; it can be concluded that there were differences in the mean pain scale of postoperative patients before and after cold compress on the vertebrae (cervical). Cold compress cause a decrease in pain that is performed in the cervical area which gives effect to local anesthetics, making the surrounding area numb. Cervical or nape (back neck) is an area that is rich in blood vessels, nerves and is a location close to the brain area⁽¹³⁾. According to Daily Health News states that placing ice cubes on the neck at Feng Fu's point for 10-20 minutes will reduce a headache⁽¹⁴⁾. This is because cold stimulates endorphins released by the brain and flows into the blood vessels, making euphoria and relaxing the body. Endorphins are one of the endogenous analgesics that are beneficial to our body. The results of other studies according to Rohmani said there was the effectiveness of cold compress on the nape of the pain intensity reduction in hemorrhoidectomy patients with $p\text{-value} = 0.0001$ ⁽¹⁵⁾. This is related to gate control theory where skin stimulation in the form of cold compress can activate the transmission of sensory nerve fibers A -beta bigger and faster. This closes the "gate" thus decreasing pain transmission through C fibers with small diameters⁽¹²⁾.

The researchers' assumption is based on the above research that the use of cervical cold compress based on previous relevant research is able to reduce the scale of pain in postoperative patients, where the cervical portion is the closest to the brain and rich in blood vessels. If there is a stimulus in the form of a cold compress, then the transmission of fibers - nerve fibers will be more quickly forwarded to the brain first and then close the "gate" so as to reduce pain transmission.

CONCLUSION

Based on the result of research, it can be concluded that there is a difference in the pain scale of postoperative patients before and after cold compress on the vertebrae (cervical). The results of this study are expected to be an alternative non-pharmacological action for nurses to overcome postoperative pain in the hospital.

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