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CASE REPORT PAIN MANAGEMENT

Intervention of warm compress and Benson relaxation to reduce acute pain in perioperative patients with hernia nucleus pulposus: a case report

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ABSTRACT

Background: Hernia Nucleus Pulposus (HNP) is a condition in which the soft cushion between the vertebrae undergoes pressure and ruptures, leading to the narrowing and compression of the nerve blood vessels. One of the signs and symptoms in patients with HNP is significant pain, particularly in the lower back region. The purpose of this writing is to examine the intervention of warm compresses and Benson relaxation in alleviating acute pain in perioperative patients with HNP.

Case Description: This study used a descriptive case study approach. The intervention performed on patients with HNP experiencing acute pain includes the application of warm compresses and Benson relaxation. The warm compress is applied for 20 minutes and followed by Benson relaxation. After implementing the intervention over five days of care, including pre-operative, intra-operative, and post-operative phases, the patient's acute pain decreased from a pain scale of 6 to a pain scale of 1.

Conclusion: The compress applied to the lower back area of the spine reduces pain, as the generated heat enhances circulation to the region, thereby relieving the pressure-induced constriction. Benson relaxation induces a relaxation response, engaging the patient's beliefs, which accelerates their state of relaxation and amplifies the overall effect.

Abbreviations: HNP – Hernia Nucleus Pulposus

Keywords: Hernia Nucleus Pulposus, warm compress, Benson relaxation

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1. INTRODUCTION

The current lifestyle of society has become increasingly hectic with demanding work schedules, high levels of stress, and a frequent disregard for health conditions, leading to the onset of various diseases, one of which is Hernia Nucleus Pulposus (HNP).[1] HNP is a condition where the soft cushion between the spinal bone ruptures due to pressure, compressing the nerve blood vessels and causing significant pain, particularly in the lower back.[2] Approximately 90% of HNP cases are lumbar HNP, which typically develops in the lower back or waist.[3]

The prevalence of lower back pain caused by HNP is approximately 30%-40% in Germany and 81.4% in Korea.[4] In Indonesia, the specific prevalence of HNP has not been clearly stated; however, the prevalence of joint diseases significantly increases in individuals over the age of 45. The exact number of lower back pain sufferers in Indonesia is not known, but it is estimated to be between 7.6%-37%.[5]

Repetitive minor trauma to the intervertebral discs tears the annulus fibrosus, subsequently causing pain and leading to HNP.[6] The pain may manifest as a burning sensation, tingling, or sharp stabbing. This pain becomes a significant health issue as it can disrupt daily activities and result in prolonged discomfort. If left untreated, the pain associated with HNP may lead to paralysis and disability, affecting both men and women.[7]

Pain is one of the most common symptoms experienced throughout the course of the disease. The impact of chronic pain, if not protective, may develop into a separate condition, significantly affecting the patient's life and potentially leading to physical and psychological disabilities.[8] Pain can be managed through conservative therapy and surgical intervention. The surgical procedure performed on HNP patients is laminectomy. During surgery, opioid-free anesthesia can be used, which has been proven effective in relieving postoperative pain.[9]

Non-pharmacological management of pain through heat therapy can be implemented using warm compresses.[10] Warm compresses are typically applied to specific areas of the body. The application of heat dilates blood vessels, thereby enhancing blood circulation to the tissues. This method promotes the elimination of waste substances and increases the distribution of acids and nutrients to the cells. The increased cellular activity reduces pain and supports the healing process of wounds and inflammation.[11]

One of the relaxation therapies that can be employed is Benson relaxation. The deep breathing technique in Benson relaxation can reduce pain intensity by relaxing the skeletal muscles experiencing spasms or contractions caused by increased prostaglandin levels, which then leads to vasodilation and improves blood flow to the areas affected by spasms or ischemia.[12,13]

Research conducted by Haryanti & Juniarti,[10] indicates that warm compresses are effective in reducing lower back pain in the elderly. Similarly, a study by Putri, [14] found that warm compresses also have a significant effect in lowering the intensity of back pain in pregnant women. Benson relaxation, as demonstrated in research by Momen,[15] has been proven to decrease pain levels in patients post-laminectomy.

2. CASE DESCRIPTION

This study employs a descriptive research design using a case study approach. The approach utilized is a nursing care model that includes assessment, nursing diagnosis, intervention, implementation, and evaluation. This research was conducted on a patient with HNP in January 2024 at RSUD Karsa Husada Batu, specifically in the Edelweis Ward.

The respondents were selected based on inclusion and exclusion criteria. The inclusion criteria for patients with HNP include: (1) those willing to participate as respondents for the intervention; (2) those scheduled for laminectomy surgery. The exclusion criteria included patients with a treatment period of less than 3 days.

The data collection method used structured interviews and observations. Information such as biodata, chief complaints, past medical history, family health history, physical examination, and vital signs assessment were gathered through interviews and observations of the patient and their family.

The research mechanism includes: (1) Establishing rapport with the respondents and providing an explanation of the purpose and objectives of the study. Respondents who agree are then informed about the research procedures; (2) Conducting nursing care; (3) Implementing interventions by applying warm compresses and Benson relaxation to reduce pain in patients with HNP, administered once per shift for a duration of 20 minutes; (4) Documenting the nursing care provided, including assessment, diagnosis, planning, implementation, and evaluation.

Based on the case study conducted using the nursing process from assessment to evaluation, several issues were identified in the case of HNP. The establishment of nursing diagnoses, action plans, and client responses after five days of nursing care led the author to prioritize the nursing problem of acute pain.

Based on the assessment and data analysis obtained from the respondent, Mr. M, the nursing diagnosis formulated on the first day or pre-operative phase was acute pain related to physiological injuring agents, as indicated by complaints of pain, a grimacing expression, and a protective posture. The pain was described as stabbing, aggravated by changes in position, radiating from the waist to the legs, and fluctuating in intensity. Based on this, the nursing intervention provided to Mr. M to address the acute pain included the application of a warm compress and Benson relaxation simultaneously. The results of the intervention on the first day showed a reduction in pain, decreasing from a scale of 6 to 5. The patient was observed grimacing when changing positions, tilting slightly, and maintaining a protective posture.

On the second day, or post-operative phase, the nursing diagnosis identified was acute pain related to physical injuring agents, as indicated by complaints of pain, a grimacing expression, and a protective posture. Post-operatively, Mr. M reported a pain scale of 3, experiencing pain during movement, described as cutting and intermittent. Based on the data obtained from the patient, the implementation of warm compresses and

Benson relaxation was administered for 4 days. On the fifth day of care, the patient reported that the pain at the surgical site was no longer severe, occurring mainly during movement, described as a cutting sensation in the back, with a pain scale of 1, and intermittent in nature.

3. DISCUSSION

The assessment results indicate that Mr. M reported pain in the lower back radiating to his legs. The nursing diagnosis identified in the patient with HNP is acute pain. Pain is an unpleasant sensory and emotional experience caused by actual or potential tissue injury or described in terms of such damage. It is a multidimensional sensory experience.[16]

Several evidence-based practices are utilized in pain management, such as administering warm compress therapy and Benson relaxation as non-pharmacological interventions to alleviate pain. Applying a warm compress to the lower back area of the spine can reduce pain, as the generated heat enhances circulation to the area, thereby releasing obstructions caused by pressure.[14] Benson relaxation induces a relaxation response that incorporates the patient's beliefs, accelerating their state of calmness. The impact of relaxation is significantly amplified when the patient's beliefs and the relaxation response are combined.[17]

The results in Mr. M indicate that warm compress therapy and Benson relaxation were effective in reducing the pain level, as evidenced by a decrease in the pain scale experienced by the patient after five days of treatment. Benson relaxation alleviates pain by incorporating elements such as a calm environment, mental engagement, a passive and accepting attitude, and a comfortable lying or sitting position. These four factors work synergistically to create an environment that truly helps the patient feel at ease, transforming the sensation of pain into one of comfort.[18]

According to research conducted by Suryanti, warm compresses are effective in reducing the degree of back pain in third-trimester pregnant women.[19] Warm compresses have the potential to dilate blood vessels and induce physiological changes, thereby enhancing blood flow and alleviating pain. It is this heat reaction that is utilized to lessen discomfort. The application of warm compresses has a therapeutic effect, which includes reducing joint stiffness and muscle spasms.

Benson relaxation, as demonstrated in the study by Momen, has been proven effective in reducing acute postoperative pain following a laminectomy.[15] The Benson relaxation technique involves the repetition of a specific word or phrase in a rhythmic manner while focusing intently on it. Deep breathing provides sufficient energy, as exhaling releases carbon dioxide (CO_2), and inhaling deeply supplies the oxygen needed by the body to cleanse the blood and prevent brain tissue damage caused by oxygen deficiency or hypoxia. During deep inhalation, the abdominal wall muscles (rectus abdominis, transversus abdominis, internal and external obliques) press the lower ribs backward and push the diaphragm upwards, resulting in an increase in intra-abdominal pressure. This action stimulates the blood flow return through the inferior vena cava and abdominal aorta, thereby enhancing blood circulation (vascularization) throughout the body, especially to vital organs such as the brain, ensuring adequate oxygen supply and promoting a state of relaxation.[20]

Based on the study, it has been proven that warm compress therapy and Benson relaxation can effectively reduce the level of pain experienced by the patient. These therapies can be administered anytime, anywhere, and by anyone, as they are simple to apply. Warm compresses generate heat that enhances circulation to the compressed area, thereby relieving obstructions caused by pressure. [14] Benson relaxation accelerates the patient's state of calm by combining the patient's beliefs with the relaxation response, thereby amplifying the resulting relaxation effect. [17]

4. CONCLUSION

After five days of nursing care for Mr. M, who had HNP at RSUD Karsa Husada Batu, the author identified the nursing problem of acute pain. Based on the analysis and discussion regarding acute pain and the non-pharmacological interventions of warm compresses and Benson relaxation, the results showed an improvement, with the NRS decreasing from 6 to 1.

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6. Conflict of interest

All authors declare no conflict of interest.

7. Author's contribution

TJAY: Conception; data collection; management data; data analysis; design writing, concept writing; data analysis; development script; review; injection; delivered
YA, S: Conception; data collection; management data; data analysis; script writing

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