
Original Articles: Case Study

**ANALYSIS OF NURSING CARE WITH THE APPLICATION OF
THERMOTHERAPY TO OVERCOME PAIN ACUTE PROBLEMS AMONG
ACUTE CORONARY SYNDROME PATIENTS AT ICU RSI JEMURSARI
SURABAYA**

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Abstract

Background: Acute Coronary Syndrome (SKA) includes a heart emergency disease with clinical manifestations in the form of feelings of discomfort or chest pain.

Objective: The purpose of this study was to analyze the application of thermotherapy in acute coronary syndrome patients to overcome acute pain problems in ICU RSI Surabaya Jemursari.

Methods: This research uses a descriptive method of case studies. The subjects used were 1 patient with acute coronary syndrome who had acute pain nursing problems. Thermotherapy is given for 3 days every 15-20 minutes repeated twice a day or every 12 hours. Data were collected by direct interviews with patients and families, observation and physical examination. Data collection methods include assessment, diagnosis, intervention, implementation and evaluation.

Result: After nursing care for 3 days with the application of thermotherapy, namely placing a compress bag containing warm water with a temperature of 50 ° C wrapped with a cloth to be attached to the back / posterior, and attaching a warm compress cloth to the patient's chest area for 15-20 minutes repeated 2x or per 12 hours making the pain felt by the patient can decrease until it does not feel evidenced by complaints of decreased pain, Grimacing decreases, restlessness decreases, difficulty sleeping decreases, pulse frequency improves, breathing patterns improve.

Conclusion: The application of thermotherapy has proven effective in reducing acute pain in the chest in patients with acute coronary syndrome. For health services, this research can be applied in nursing services professionally in improving nursing care comprehensively, making thermotherapy one of the non-pharmacological therapies to overcome acute pain.

INTRODUCTION

Chest pain is a major indicator of acute coronary syndrome. The pain is a progressive problem, so this type of chest pain requires serious treatment and further examination. Uncontrolled chest pain will cause physiological and psychological problems that have an impact on the high mortality rate that

often occurs due to acute pain that is not treated immediately (Satoto, 2014). The use of analgesics is the most effective management to reduce pain intensity. However, in reality not all pain can be intervened with systemic analgesics even some studies show poor results in the use of pain-reducing drugs (Brown, 2014). So that non-pharmacological management is needed to be applied as a substitute for intervention or combination in reducing pain intensity (Kneale & Davis, 2016).

SKA is a type of coronary heart disease (CHD), which causes one-third of total deaths in people older than 35 years (Singh et al., 2022). *The World Health Organization* (2021) states that around 20-25% of the world's population or 2,000,000 people and 6,000,000 other people have a risk of being diagnosed with acute coronary syndrome. Based on data from Basic Health Research (Riskesdas) (2018), the prevalence of coronary heart disease as the main etiology of acute coronary syndrome (SKA) in Indonesia is 1.5%. In Indonesia, acute coronary syndrome (which is classified into circulatory system diseases) is the leading and first cause of all deaths, at 26.4%, this figure is four times higher than the death rate caused by cancer (6%). According to *the American Heart Association* in 2014, acute coronary syndromes include *unstable angina. Pectoris* (UAP), *ST Elevation Myocardial Infarction (STEMI)* and *Non-ST Elevation Myocardial Infarction (NSTEMI)*. Based on data obtained at the ICU of RSI Surabaya Jemursari from June 1 to August 31, 2023, a total of 27 patients were obtained with SKA diagnoses, including Unstable Angina Pectoris, STEMI, and N-STEMI. Of the 27 patients, 100% of patients experienced typical chest pain problems with moderate to severe pain scales.

Acute Coronary Syndrome (SKA) is a disease of the heart due to reduced blood supply because the coronary arteries are narrowed due to atherosclerosis or blockage of the arteries by embolism or thrombus in total so that the supply and oxygen needs of the heart are not appropriate (Farrell, 2017). Once the coronary blood vessels have been occlusion or blockage of more than 70%, the patient will begin to experience symptoms such as chest pain. According to *the International Association for the Study of Pain* (IASP), pain is an unpleasant sensory and emotional experience associated with or indicating actual or potential tissue damage (King S et al., 2021). Pain felt by patients with SKA is caused by a mismatch in oxygen supply and demand in the heart Because this mismatch can cause *myocardium infarct* which has the potential to cause permanent damage to the myocardium or heart muscle (Boyette & Manna, 2022).

Management in severe pain patients is directly given analgesic drugs, opioid and nonopioid types, but in mild pain still often patients are immediately given drugs without first being educated on complementary therapies that can be done independently (Setiawan, 2017). Non-pharmacological measures are used as a complement to reduce symptoms, influence pain perception, aid relaxation and improve sleep patterns. One of the non-pharmacological therapies applied to reduce chest pain in acute coronary syndrome is heat therapy (*thermotherapy*). This therapy serves to reduce pain, muscle tension, reduce edema, because this *thermo therapy* can increase blood flow by dilating blood vessels so that the supply of oxygen and nutrients to the tissues increases (Hapsari et al., 2022). In line with research conducted by (Hala et al., 2018) entitled "*Effect Local Heat Application on Physiological Status and*

Pain Intensity among Patients with Acute Coronary Syndrome", thermotherapy using a *hot pack* filled with warm water and wrapped in cotton cloth then placed on the anterior part of the chest for 20 minutes which obtained the results of reducing chest pain for 24 hours of administration Therapy as much as 60% with indicators of no pain and 40% pain felt mild.

METHODS

Study Design

The research design used is descriptive with a case study approach. This design uses the application of thermotherapy in patients with acute coronary syndrome to address acute pain problems that have been designated as samples in the final report of the profession.

Settings

The location of the study was conducted in ICU RSI Surabaya Jemursari. The research was conducted from August 31, 2023 to September 2, 2023.

Research subject

The subjects in this study were 1 case of acute pain nursing problems in patients with a medical diagnosis of acute coronary syndrome.

Instruments

This study used observation instruments, interviews, and *numeric scale pain assessment*.

Data collection

Interview Method

The researcher directly interacted with Acute Coronary Syndrome (STEMI Inferior), obtained informed consent from the respondent indicating that the respondent was willing to be a case study subject, contracted the time, place and topic of the interview with the respondent and asked several questions in accordance with the interview guidelines.

Observation Method

The researcher made direct observations about the client's response to the application of effective coughing and chest physiotherapy which was carried out systematically.

Physical examination

Carrying out a physical examination using IPPA (inspection, palpation, percussion and auscultation) to assess physical changes due to ineffective airway clearance

Documentation

Record information on the client's health status regarding the problem of ineffective airway clearance including laboratory and treatment data. As well as journals as theoretical references.

Data Analysis

The data analysis used in this study is descriptive analysis based on data in the format of nursing care.

Ethical Consideration

The researchers applied for permission to the RSI Jemursari Surabaya to conduct research by bringing an application permission letter from Nahdlatul Ulama University Surabaya. Meanwhile, research subjects were given informed consent before nursing care was carried out.

RESULTS

The patient assessment was conducted on 31/8/23 at 14.00, the patient named Mr.Y was 61 years old, male gender medical record number Mr.I 438xxx Mr.Y's medical diagnosis was Acute Coronary Syndrome (STEMI Inferior). The main complaint at the time of the assessment at 14.00 the patient complained that his chest still felt pain like being pierced through to the back until his left hand still felt heavy, the patient said pain with a scale of 6, persistent pain, pain increased when the patient moved a resting / moving position. The patient was transferred from the ER to the ICU with complaints when the patient came to the ER, namely weakness, chest pain such as being stabbed to the back until it felt hot, in the ER had vomited 1x because the stomach felt sore and nauseous, cold sweat came out and almost fainted on the way to the ER. In the emergency room, patients are indicated for the administration of fibrinolytic therapy by a cardiologist. After giving fibrinolytic therapy for 30 minutes then observed for up to 1 hour in the emergency room, then the patient was transferred to the ICU.

On physical examination, it was found that Mr.I's general condition seemed weak, the patient's general condition seemed restless and grimaced feeling his chest that was still painful so that the patient seemed difficult to sleep. On examination of vital signs showed that RR increased by 26x/min, TD tended to be high at 150/87mmHg, body temperature was 37°C, pulse rate increased by 122x/min. In the B1 (*Breath*) examination, the patient uses an O2 breathing apparatus, a simple mask of 8 liters per minute with SpO2 98%, On the B2 (*Blood*) examination, a murmur sound, a picture of heart rhythm, a drop in the rhythm of atrial fibrillation, warm palpable acral, edema appears in the right and left leg area. ECG images show Inferior STEMI marked by ST Elevation segments in Leads II, III and aVf. In the B3 (*Brain*) examination of the consciousness of composmentis patients with GCS E = 4 V = 5 M = 6, the pupil examination obtained isochore results, positive light reflexes. In the assessment of pain, it was found that the pain was caused (P) by myocardial ischemia, the quality of pain (Q) such as stabbing, the pain area (R) was in the chest area through to the back, the patient said if the pain scale (S) was at number 6, the length of pain (T) felt by the patient the pain persisted and increased when the patient moved to a resting / moving position. On examination B4 (*Bladder*) the patient appears to have a *size 16 catheter* folley. At B5 (*Bowel*) examination the patient still feels nausea but does not vomit and appetite, On B6 (*Bone*) examination the patient is palpable warm The patient's joint movement is not limited. HS Troponin laboratory examination showed an increase with results of 51ng / L.

From the analysis of the data that has been obtained, the formulation of nursing problems was drawn on Mr. Y, namely acute pain associated with physiological injury agents (ischemia) evidenced by the patient appearing to grimace complaining of pain, pain like being pierced through to the back

until his left hand still feels heavy, the patient said pain on a scale of 6, persistent pain, pain increases when the patient moves to a resting / moving position, Pulse frequency increased by 122x/min, breathing frequency increased by 26x/min, patient restless, seemed sleepless.

From the acute pain nursing problem in the case of Mr.Y, the appropriate intervention is to carry out pain management (D0077) expected after intervention for 3x24 hours decreased pain (L08066). Implementation is carried out in accordance with pain management interventions and emphasizes the act of providing non-pharmacological therapy by *thermotherapy*, namely placing a compress bag containing warm water to be attached to the back that feels pain and attaching a warm compress cloth to the patient's chest area for 15-20 minutes repeated 2x or per 12 hours with a water temperature of 50 °C.

DISCUSSION

Overview of Nursing Care

From the results of the study, one of the typical complaints of heart disease is retrosternal chest pain such as squeezing, stabbing, pressing, heat, or being crushed by heavy items. The chest pain felt is similar to angina, but more intensive and persists for more than 30 minutes (Siregar, 2011 in Dasna, 2014). From the analysis of the data that has been obtained, the formulation of nursing problems in Mr.Y is drawn the formulation of nursing problems in Mr.Y, namely acute pain associated with physiological injury agents (ischemia) evidenced by patients appearing to grimace complaining of pain, pulse frequency increases 122x / minute, breathing frequency increases 26x / minute, patients are restless, and seem difficult to sleep.

Appropriate intervention in overcoming pain is by doing pain management (D0077) is expected after intervention for 3x24 hours decreased pain (L08066) with criteria for the results of decreased pain complaints (5), decreased grimace (5), decreased restlessness (5), decreased sleep difficulty (5), improved pulse frequency (5), improved breathing patterns (5), ability to use non-pharmacological techniques. Interventions include 1) identification of location, characteristics, duration, frequency, quality, intensity of pain, 2) identification of pain scales, 3) observation of vital signs, 4) provision of non-pharmacological techniques to reduce pain. A non-pharmacological way to relieve pain is by *thermotherapy* (heat therapy).

Application of Thermotherapy Implementation in Acute Coronary Syndrome patients in ICU RSI Jemursari Surabaya

The application of *thermotherapy* is carried out by positioning the patient semi fowler to fowler, undressing the patient, placing a compress bag containing warm water with a temperature of 50 °C wrapped with a cloth to be attached to the posterior, and attaching a warm compress cloth to the patient's chest area / anterior for 15-20 minutes repeated 2x or per 12 hours.

The implementation is in line with research conducted by Hala, et al (2018) with the research title "*Effect of Local Heat Application on Physiological Status and Pain Intensity among Patients with Acute Coronary Syndrome*", namely applying thermotherapy heated to 50 ° C wrapped using a cotton cloth and placed on the front of the chest for 20 minutes every 12 hours for 24 hours will relieve pain

In the final evaluation, subjective data showed that the patient said he felt no pain. In objective data, it was found that the patient's general condition seemed calmer, breathing frequency 20x / minute while still using o2 nasal cannula 3 liters per minute and pulse frequency within normal limits of 80x / minute with a regular rhythm, patients can fall asleep comfortably.

The results of the evaluation are in accordance with the fulfillment of the outcome criteria applied by SLKI, (2017), namely after 3x24 hours of intervention, pain is expected to decrease with the result criteria of the result criteria: Complaints of decreased pain (5), Decreased grimace (5), decreased restlessness (5), decreased sleep difficulty (5), Pulse frequency improved (5), Improved breathing patterns (5).

According to researchers, in addition to the application of pharmacological interventions, non-pharmacological therapy is also applied in patients with acute coronary syndrome by conducting thermotherapy. It is proven that thermotherapy can provide comfort to Mr.Y so that it helps reduce the scale of moderate pain (6) to mild, even Mr.Y no longer feels pain.

LIMITATION

There is no limitation in this study.

CONCLUSION

Based on the analysis of nursing care that has been given to patients with acute coronary syndrome, it can be concluded that: 1) Nursing care for acute coronary syndrome patients with acute pain problems in ICU RSI Jemursari Surabaya can be done with the application of non-pharmacological therapy, namely Thermotherapy; and 2) The application of thermotherapy carried out by placing a compress bag containing warm water to be attached to the back that feels pain and attaching a warm compress cloth to the patient's chest area for 15-20 minutes repeated 2x or per 12 hours with a water temperature of 50 ° C can reduce acute pain problems in acute coronary syndrome patients in the ICU RSI Jemursari Surabaya.

For health services, this research can be applied in nursing services professionally in improving nursing care comprehensively, making thermotherapy one of the non-pharmacological therapies to overcome acute pain in patients affected by acute coronary syndrome in the ICU.

Thermotherapy can be used as an additional reference and scientific development, especially by students of University of Nahdlatul Ulama Surabaya, especially in the case of Acute Coronary Syndrome patients with acute pain nursing problems.

Thermotherapy can be used as an additional literature for the development of emergency and critical nursing science, especially in nursing care in patients with acute coronary syndrome with pain nursing problems.

AUTHOR CONTRIBUTION

Riris Dwi Handhayani: Literature review, conceptualization, methodology, carrying out the nursing process, and manuscript drafting.

Farida Umamah: Literature review, conceptualization, methodology, manuscript drafting, and supervise.

Nurul Kamariyah: Literature review, conceptualization, methodology, manuscript drafting, and supervise.

Siti Damawiyah: Literature review, conceptualization, methodology, manuscript drafting, and supervise.

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Riris Dwi Handhayani : None.

Farida Umamah : None.

Nurul Kamariyah : None.

Siti Damawiyah : None.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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