

Case Report

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Case Study: Application Of Slow Deep Breathing And Murottal Al-Qur'an Therapy To Reduce Chest Pain In Coronary Artery Disease (Cad) Patient

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ABSTRACT

Acute coronary syndrome (ACS) occurs due to sudden cessation of coronary blood flow so that blood flow to the myocardium is disrupted, which causes chest pain. Pain management can be done by providing slow deep breathing and murottal Al-Qur'an intervention. This study aimed to analyze the intervention of slow deep breathing and murottal Al-Qur'an in reducing chest pain in patients with acute coronary syndrome. This type of research was a case study in patients with acute coronary syndrome by exploring the problem of nursing care with a descriptive method through a nursing care approach. The chest pain scale was measured using a numerical rating scale (NRS) instrument. The pain measurement tool for the numerical questionnaire Rating Scale uses numbers from 0 to 10 to express patients' pain levels. The results showed that on the first day, there was no decrease in pain intensity. The pain score was on a scale of 6 before and after the intervention. On the second day, there was a decrease in pain from a scale of 6 to a scale of 5. The third day of the intervention showed a decrease in pain to a scale of 3. The intervention of slow deep breathing and murottal Al-Qur'an can potentially reduce the scale of chest pain in patients with acute coronary syndrome. Future research is expected to see the effectiveness of slow deep breathing and murottal Al-Qur'an in reducing chest pain in patients with acute coronary syndrome.

Introduction

Acute coronary syndrome, or ACS, is a term that describes the clinical spectrum or collection of disease features, which include unstable angina, non-ST elevation myocardial infarction/NSTEMI, and ST-segment elevation myocardial infarction (STEMI) (Miao & Miao, 2018). ACS is the leading cause of death in the world. According to WHO, 80% of global deaths from heart disease occur in the poor and middle class (Montalescot, 2007). The prevalence of ACS based on a doctor's diagnosis, according to Riskesdas data for 2018, is 0.5% or around 883,447 patients, while based on a doctor's diagnosis or symptoms, is 1.5% or up to 2,650,340 patients (Kementrian Kesehatan Republik Indonesia, 2018).

ACS occurs due to sudden cessation of coronary blood flow so that blood flow to the myocardium is disrupted. That is mainly caused by atherosclerosis. Atherosclerosis is characterized by the formation of atherosclerotic plaques due to endothelial dysfunction, which causes fissures, bleeding, and thrombosis (Chang et al., 2019). This situation causes a disturbance in the balance of oxygen supply and demand, thus triggering ischemia and myocardial infarction. Apart from atherosclerosis, many factors contribute to the occurrence of ACS, including ACS caused by two factors: factors that can and cannot be changed. Factors that cannot be changed are age, gender and family history. At the same time, the factors that can be changed are hyperlipidemia, hypertension, diabetes mellitus, lifestyle, smoking and psychological stress (LeMone, Burke, & Bauldoff, 2016).

These causal factors can lead to clinical manifestations of symptoms. The most common clinical presentation of ACS in patients is chest pain. In addition to chest pain, patients may complain of shortness of breath. Chest pain is one of the most frequently complained symptoms by patients with the acute coronary syndrome (Miao & Miao, 2018). Patients often complain of cardiogenic chest pain, such as being pressed by a heavy mass, squeezing after doing activities or feeling emotional stress (Melastuti & Ramadini, 2021). In research conducted by Gimpel, Fisher,

Khan, and McCormack (2019), with 183 respondents, 17% stated chest pain when not active and a third of respondents said chronic chest pain when moving. Ridwan et al. (2020) in their research stated that as many as 38% of respondents experienced symptoms of coronary heart disease, namely chest pain. So to prevent this, it is necessary to manage pain both pharmacologically and non-pharmacologically. The non-pharmacological therapies that are applied are slow deep breathing and murottal Al-Qur'an

Slow deep breathing can relax the muscles of the heart blood vessels so that it will increase blood flow and oxygen supply to areas experiencing spasms and ischemia. Then, it can stimulate the body to release endogenous opioids, namely endorphins and enkephalins, which these opioids function as (natural analgesics) to block receptors on nerve cells, thereby interfering with the transmission of pain signals and reducing pain frequency. Giving slow deep breathing makes the body relax so that the whole body is in a state of homeostasis or balance, in a calm state and makes the patient comfortable when the pain symptoms are reduced (Aswad, 2020).

Another intervention is murottal Al-Qur'an, a sound recording of the Al-Qur'an sung by a Qori' (reader of the Qur'an). The recitation of the Qur'an physically contains elements of the human voice. The human voice is a unique healing instrument and the most accessible tool. Sound activates natural endorphins, increases feelings of relaxation, and distracts from pain. A spiritual approach can help speed up the patient's recovery or healing. The results of this study show that listening to the verses of the Koran brings peace and reduces pain (Rahmayani, Rohmatin, & Wulandara, 2018). Rilla, Helwiyah and Aat's (2014) research results regarding effective therapy in reducing pain levels compared to music therapy in post-surgical patients. The result is that music therapy and murottal therapy reduce pain levels but do not significantly affect the stability of vital signs in postoperative patients. This study aimed to analyze the intervention of slow deep breathing and Al-Qur'an murottal therapy in reducing chest

pain in patients with coronary artery disease (CAD).

Method

This type of research is a case study in patients with acute coronary syndrome by exploring the problem of nursing care with a descriptive method. The approach used is through nursing assessment, diagnosis, nursing intervention, implementation and evaluation, which is a nursing care approach.

The chest pain scale was measured using a numerical rating scale (NRS) instrument. This pain measurement tool uses numbers 0 to 10 to express patients' pain levels. This scale is adequate for measuring pain and can be used before and after the intervention. No pain is indicated by the number 0, mild pain is indicated by the number 1 to 3, moderate pain is shown by the number 4 to 6, and severe pain is indicated by the number 7 to 10 (Karciglou, Topacoglu, Dikme, & Dikme, 2016).

Non-pharmacological therapy is carried out by providing slow deep breathing interventions and Murottal Al-Quran. Slow deep breathing is implemented once at each meeting, but this intervention can be done independently when patients feel pain. The Murottal Al Qur'an Surah given is Ar-Rahman according to the gift every day for 20 minutes.

This study was conducted by providing written informed consent to the patient and the patient's family. This study maintains honesty, patient and family privacy, expediency and anonymity.

Case

Mr R, 59 years old, came to RSUP Dr. Hasan Sadikin referral from RSUD dr. Slamet. The patient went to the hospital complaining of chest pain that had been felt for three days of SMRS. The medical diagnosis of the patient is Coronary artery disease non-ST-Elevation myocardial inferolateral wall Killip 1 + history of av block grade I + suspected hypertension heart disease. The patient said he had a history of heart disease since three years ago, hypertension and a history of smoking since he was young.

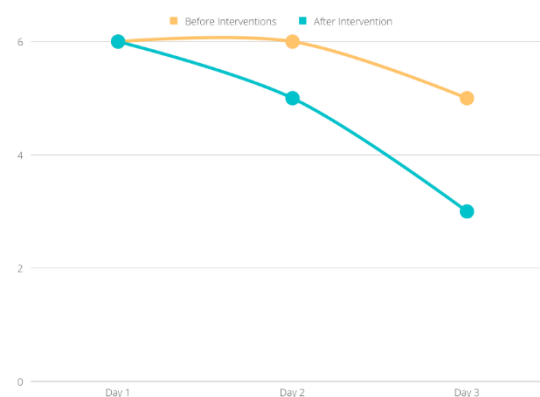
When the assessment was carried out, the client said the pain in the left chest was throbbing. The pain felt intermittent and felt for one minute and felt up to the back, and the pain was relieved when resting. Pain scale 6 (0-10).

Physical examination results BP: 167/106 mmHg, HR: 97 x/minute, RR: 29 x/minute, SPO2: 98%, temperature 36.6. JVP 5+ 2cmH2O, Ictus cordis 2 cm palpable at ICS VI, S1 S2 is regular, and there are no S3 S4 sounds or murmurs.

Lab data Hemoglobin 13.2 gr/dl, Hematocrit 38.7%, erythrocytes 4.75 million/uL, leukocytes 16.22 10^3 /uL, Sodium 131 mEq/L, troponin 0.32 ng/mL. Diagnostic examination results and chest examination showed cardiomegaly and no pneumonia. LM-2VD CAD angiography examination. Patients received aspilet therapy 1x80mg, clopidogrel 1x75mg, atorvastatin 1x40mg, callos 3x500g, KSR 1x12mg, ramipril 1x2.5mg, bisoprolol 1x1.25mg.

Results

The study results are shown in Graph 1. which indicates a decrease in pain scores for three days carried out from 1 November to 3 November 2022.



Graph 1. Pain Scale Reduction

Graph 1 shows decreased pain after slow deep breathing intervention and Al-Qur'an Murottal Therapy. On the first day, there was no decrease in pain intensity, and the pain score was on a scale of 6 before and after the intervention. On the second day, there was a decrease in pain

from a scale of 6 to a scale of 5. The third day of intervention showed decreased pain on a scale of 3.

The duration of the two interventions was not increased in practice and was only carried out for one session at each meeting with monitoring. However, if the patient feels chest pain, the patient can do it independently.

The patient also received pharmacological therapy. On the second day, there was a decrease in the pain scale, so the dose of aspilet was reduced to 1 x 50 mg. Aspilet administration is not stopped even though the pain scale has decreased because the aspilet also functions as an antiplatelet. Pharmacological therapy is to be seen in Table. 1.

Table 1. Giving Pharmacological Therapy to Patients

Days to-	Therapy	Dosage
1	Aspilet	1x80mg
	Bisoprolol	1x1,25 mg
	Clopidogrel	1x75mg
	Atorvastatin	1x40mg
	Callos	3x500g
	KSR	1x12mg
	Ramipril	1x2,5mg
2	Aspilet	1x50mg
	Bisoprolol	1x1,25 mg
	Clopidogrel	1x75mg
	Atorvastatin	1x40mg
	Callos	3x500g
	KSR	1x12mg
	Ramipril	1x2,5mg
3	Aspilet	1x50mg
	Bisoprolol	1x1,25 mg
	Clopidogrel	1x75mg
	Atorvastatin	1x40mg
	Callos	3x500g
	KSR	1x12mg
	Ramipril	1x2,5mg

Discussion

Pharmacological intervention in reducing the pain scale in the patient, in this case, is administering aspirin and bisoprolol. The mechanism of action of aspirin is because it has an acetyl group. This acetyl group plays a role by inhibiting its ability to permanently inactivate

cyclooxygenase (COX) activity, namely PGH1 synthase and PGH2 synthase, which includes COX-1 and COX-2. Both isoenzymes catalyze prostanoid biosynthesis (convert arachidonic acid to PGH2). PGH2 is the precursor of PGD2, PGE2, PGF2 α , PGI2, and TXA2 (Kour et al., 2006). This inhibition causes the inability to synthesize the formation of mediators in the process of causing pain, namely prostaglandins (Ernawati, 2012).

Aspirin has a significant antithrombotic effect by irreversibly acetylating the hydroxyl group of a single serine residue at position 529 in the COX-1 platelet synthase polypeptide chain, thereby reducing the synthesis of TXA2, which plays an essential role as a potent vasoconstrictor and platelet aggregator (Eikelboom et al., 2002).

Bisoprolol is a β -blocker that inhibits norepinephrine activity, increases the density of beta-1 receptors by reducing heart rate and oxygen demand, and prolongs diastole, resulting in better myocardial perfusion, which causes diminished pain (Taneva & Caparoska, 2016).

Slow Deep Breathing

Slow deep breathing is a form of intervention that is part of nursing care carried out by nurses by teaching patients how to do slow breathing by maximally holding on to the process of inspiration, deep breathing, and how to exhale slowly (Smeltzer & Bare, 2013). The purpose of slow deep breathing is to maintain gas exchange, increase alveolar ventilation, reduce both emotional and physical stress, and prevent lung atelectasis. The benefits that patients can feel after doing slow deep breathing can reduce the intensity and scale of pain as well as reduce feelings of anxiety (Utami, 2016).

Based on the results obtained, before the intervention, the patient's pain scale was six from 0 to 10. After the intervention, teaching the patient to do slow, deep breathing on the third day showed a decrease in the pain scale to a scale of 3.

The results of this study were supported by a survey conducted by Jarrah et al. (2022) which found that the results of data analysis for the control and intervention groups of patients

showed that there was a statistically significant reduction in pain levels for both groups ($P < 0.01$). However, the slow deep breathing intervention group had significantly lower pain levels than the control group. Slow deep breathing effectively reduces pain, minimizing the need for analgesics and associated side effects.

Wati and Prasetyo (2022) in his research, stated that after being given slow deep breathing relaxation interventions, patients felt a decrease in pain intensity. The drop occurred because the pain scale before the intervention showed moderate pain with a scale of 6 after the intervention became mild with a scale of 3. The slow deep breathing intervention effectively reduced the pain scale and was efficient because it could be done independently.

Gholamrezaei et al. (2022) in his research stated that compared to uncontrolled breathing, pain intensity was lower during slow deep breathing (Cohen's $d = 0.40$) and normal controlled breathing ($d = 0.47$). Slow deep breathing can reduce pain intensity. However, the effect is not specific to slow respiratory rates. It is not mediated by autonomic or emotional responses, suggesting another mechanism underlying the reduction in pain intensity is caused by distraction and feelings of relaxation (Gholamrezaei et al., 2022).

Murottal Al-Qur'an

Murottal Al-Qur'an therapy is carried out by listening to the sound recording of the Qur'an surah Ar Rahman through an electronic or radio device which is read by a qori'/reader of the Qur'an (Siswanti & Kulsum, 2017). The murottal Al-Qur'an reading has a constant, regular rhythm and does not change suddenly. Murottal Al-Qur'an has a short tempo with a low tone, so it has a relaxing effect and can reduce pain. The soothing effect of murottal Al-Qur'an caused a decrease in pain intensity in this study.

The research results of Priyanto, Kamal, Dahlia, and Anggraeni (2020) also stated results that were in line with psycho-religious therapy murottal Al-Qur'an effectively reduced the patient's chest pain scale. The study showed a significant difference in the level of chest pain

before and after the administration of psycho-religious therapy: murottal Al-Qur'an. These results are based on statistical tests using paired t-tests. The results showed a statistical p-value of 0.000 ($p < \alpha (0.05)$).

Another study by Milasari, Hamzah, and Solikin (2021) showed that Al-Qur'an therapy and music therapy affected patients' pain with coronary heart disease. The average with a mean result of 1.286 indicated that the reduction in pain in the murottal Al-Quran therapy group was more significant than that in the music therapy group. So it can be concluded that murottal Al-Quran therapy is more effective in reducing pain in patients with coronary heart disease compared to music therapy.

According to Alkahel (2011) the Koran is 65% of the Koran has a relaxing effect. This happens because the body's cells are activated when murottal therapy is carried out due to sound vibrations that are converted into waves captured by the body. In addition, it can reduce the stimulation of pain receptors and endogenous natural opioid analgesics that are released due to stimulation by the brain. These opioids can block pain nociceptors (Priyanto et al., 2020).

Surah Ar Rahman was chosen in this study because surah Ar-Rahman has a meaning about the mercy and nature of God's love for His servants and teaches about gratitude that must be done at all times to Allah SWT. Surah Ar Rahman also has a therapeutic effect on people who listen to it (Rilla et al., 2014).

Giving interventions murottal Al-Quran surah Ar Rahman will bring peace and tranquillity, feel the presence of Allah SWT, generate a sense of self-confidence in patients and optimism for hope for recovery so that the production of CRF (Corticotropin Releasing Factor) can decrease due to stimulation of the hypothalamus.

CRF will decrease the production of ACTH (Adreno Cortico Tropic Hormone) due to stimulation by the anterior pituitary gland so that it can reduce cortisol secretion and suppress the immune system. As a result, there is a decrease in anxiety and pain levels because the ACTH

hormone can stimulate the adrenal cortex (Milasari et al., 2021).

Conclusions

Based on the results obtained, the intervention of slow deep breathing and murottal Al-Qur'an can potentially reduce the chest pain scale in patients with the acute coronary syndrome. In addition, this intervention is easy to apply so that patients can do it independently and do not have side effects that can add to the patient's nursing problems. Future research is expected to see the effectiveness of slow deep breathing and murottal Al-Qur'an in reducing chest pain in patients with acute coronary syndrome.

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