

(RESEARCH ARTICLE)



Effect of acupressure therapy to reduce chest pain in NSTEMI patients

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Open Access Research Journal of Science and Technology, 2023, 08(02), 017–021

Publication history: Received on 21 June 2023; revised on 02 August 2023; accepted on 05 August 2023

Article DOI: <https://doi.org/10.53022/oarjst.2023.8.2.0042>

Abstract

Introduction: Acute coronary syndrome (ACS) describes the sudden ischemia of the myocardium due to loss of blood flow to the heart muscle, causing a cessation of oxygen supply to heart cells. Non-pharmacological management is needed to be applied instead of intervention or combination in reducing pain intensity. Acupressure is done by applying physical pressure at several points on the surface of the body that are places of energy circulation and balance in cases of pain symptoms.

Objective: To reduce chest pain in patients with acute coronary syndrome with NSTEMI by using acupressure therapy.

Methods: The method used in this study used case studies with pre and post intervention, patients were given acupressure therapy given at the location of the LI4 point located at the back of the right / left hand between the first and second metacarpal bones and almost along the radial bone. Performed for \pm 20 minutes in 10 seconds, pressure is applied according to the tolerance level acceptable to the patient and a rest period of 2 seconds.

Results: There was a decrease in pain intensity in patients after acupressure therapy.

Conclusion: Pressure therapy with appropriate methods and procedures can be an alternative to reduce chest pain in NSTEMI patients

Keywords: Acupressure; Chest Pain; NSTEMI; Coronary Syndrome; LI4

1. Introduction

Acute coronary syndrome or *Acute Coronary Syndrome* (ACS) describes the sudden ischemia of the myocardium due to loss of blood flow to the heart muscle, causing a cessation of oxygen supply to heart cells. Acute ischemia can lead to myocardial necrosis which can progress to Acute Myocardial Infarction. Necrosis or death of heart muscle cells is caused due to impaired blood flow to the heart. According to the World Health Organization (2019), acute coronary syndrome is the leading cause of death in the world. As many as 7,200,000 (12.2%) deaths occurred due to acute coronary syndrome (1). Basic Health Research Data (Riskesdas) in 2018 shows that in Indonesia the prevalence of coronary heart disease is 1.5% and in East Java it is 1.3% (2). Heart disease *Acute Coronary Syndrome* Clinically characterized by chest pain (angina) or chest pressure when on the move. The mechanism of chest pain in heart patients is caused by a blockage in the coronary arteries or a decrease in cardiac output, as a result of which the blood supply that carries oxygen and nutrients needed by the body for metabolism decreases. In patients with ACS NSTEMI, a common complaint that is often felt is pain, especially in the left chest area as a result of not optimal heart pump caused by blockage.

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The type of pain felt varies between acute pain or chronic pain in terms of how long the patient has been experiencing pain (3). Chest pain or discomfort in the chest (angina) is the main symptom and the most complained of by patients. Angina is chest discomfort caused by decreased coronary blood flow to the heart muscle. Pain and discomfort are the main symptoms of heart problems and are often described as: pressure, squeezing, burning, tight, or full, usually starting in the chest area, behind the breastbone, pain patterns usually radiate to the arms, shoulders, neck, jaw, or back, but sometimes complaints are similar to "indigestion" or gastrointestinal disorders, especially disorders of the stomach (4). Proper use of analgesics or in combination is the most effective treatment 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 (5). Fear of dependency and side effects may limit the client from discontinuing the use of analgetics. For example, the drug tramadol which is a synthetic opioid has side effects of nausea, vomiting, constipation, and confusion in the elderly.

Non-steroidal anti-inflammatory drugs (NSAIDs) can cause dyspepsia, gastric bleeding, peptic ulcer, abnormal bleeding, gastrointestinal damage, and acute renal nephritis so that non-pharmacological management is needed to be applied instead of intervention or combination in reducing pain intensity (6). Acupressure is one of the nonpharmacological treatments that can be used in reducing pain and can be done independently by nurses. Acupressure is one of the complementary therapies based on the theory of balance derived from the contents of the universe and its properties called Yin and Yang. The implementation of acupressure is done by applying physical pressure at several points on the surface of the body which is a place of energy circulation and balance in cases of pain symptoms. The advantages of acupressure techniques are safe, easy, practical, do not require large costs, do not cause side effects and can be done by anyone (7).

Pain is a sensation that is captured by the spinal cord and then accepted by the medulla oblongata and translated as an unpleasant sensation in the central nerve that can be explained through a theory of gate control. By applying physical pressure to the LI4 point on the surface of the body which is the place of energy circulation and balance in cases of pain symptoms can increase endorphin levels in the blood and systemic, but has a different capture area, so that the use of acupressure points is different according to the organ to be addressed and according to indications. Endorphin is a natural opiate of the body produced by the pituitary gland which is useful for reducing pain, affecting memory and mood which will then provide a feeling of relaxation (8) Based on the results of research conducted by Narimani et al, 2020 stated that acupressure given to the LI4 intervention group proved significant in reducing complaints of chest pain in patients with heart disease.

According to observations in Cempaka room 3 of regional hospital of Karanganyar Regency on October 31-November 12, 2022, there were 5 patients with complaints of chest pain on a scale of 0-6 (0-10) and pain assessment using the Mnemonic PQRST method. Management of patients treated in Cempaka room 3 regional hospital of Karanganyar Regency consists of early pharmacological management such as morphine, nitrate, aspirin drugs. In addition, nurses also perform nonpharmacological therapies such as deep breath relaxation techniques. The goal of acupressure is to reduce chest pain in patients with acute coronary syndrome with NSTEMI by using acupressure therapy. Based on the above phenomenon, researchers are interested in applying the results of research on the effect of acupressure therapy to reduce chest pain in NSTEMI patients in Cempaka room 3 of regional hospital of Karanganyar.

2. Method

In this case study, the author uses this descriptive method in the nature of pre and post experiments, where patients are given acupressure therapy at the location of the LI4 point located at the back of the right / left hand between the first and second metacarpal bones and almost along the radial bone. Performed for \pm 20 minutes in 10 seconds, pressure is applied according to the tolerance level acceptable to the patient and a rest period of 2 seconds. This case study was conducted on October 31-November 12, 2022 in Cempaka Room 3 of regional hospital of Karanganyar regency by taking the subjects of 3 patients with ACS medical diagnoses with NSTEMI with complaints of mild to moderate pain. Application instrument using mnemonic pain assessment PQRST. The focus of this study was to reduce chest pain in NSTEMI patients. The criteria for sample inclusion are no history of using acupressure for any purpose, no scars, scratches, defects in acupressure points, the ability to speak and understand language well, complaints of pain in the moderate pain range (0-6), body mass index (BMI) within normal limits, no history of heart surgery, psychological illness and addiction to alcohol or drugs. For exclusion criteria, patients refuse to be sampled, heat, redness, swelling and numbness at acupressure points, patients who have rib or vertebral fractures, burns and patients attached invasive equipment to acupressure points.

3. Case Report

3.1.1. Mrs. A's patient

A 64-year-old female patient was treated in Cempaka Room 3 of regional hospital of Karanganyar Regency on Monday, October 31, 2022 with complaints of hot chest pain radiating for 3 days and increasing pain. The medical diagnosis established is NSTEMI. The patient is in a state of composmentis with GCS E4V5M6. The patient had no previous history of heart disease.

After a pain assessment with mnemonic PQRST obtained the results of P: during activity, Q: like burning, R: right left chest, S: 6 (moderate pain), T: continuously. The patient appears to grimace in pain, the patient appears short of breath and is attached to a 4 lpm nasal oxygen cannula. Patients said they did not know about nonpharmacological therapies to relieve pain.

3.1.2. Patient Mr. P

A 65-year-old male patient was treated in Cempaka Room 3 of regional hospital of Karanganyar Regency on Thursday, November 3, 2022 with complaints of stabbed chest pain for 4 days and increasing pain. The medical diagnosis established is NSTEMI. The patient is in a state of composmentis with GCS E4V5M6.

After a pain assessment with mnemonic PQRST obtained the results of P: during activity, Q: like pricking, R: left chest, S: 4 (moderate pain), T: disappearing arising. The patient appears to be holding a chest that feels painful, the patient appears short of breath and is attached to a 3 lpm nasal oxygen cannula. Patients say they do not know how to relieve pain using nonpharmacological therapies.

3.1.3. Mrs. W's patient

A 67-year-old female patient was treated in Cempaka Room 3 Of Regional Hospital Of Karanganyar Regency on Tuesday, November 8, 2022 with complaints of chest pain feeling squeezed and tight. The patient said he had taken pain medication but the pain felt did not go away. The medical diagnosis established is NSTEMI. The patient is in a state of composmentis with GCS E4V5M6. The patient had no previous history of heart disease.

After a pain assessment with mnemonic PQRST obtained the results of P: during activity, Q: such as tightness and squeezing, R: left chest, S: 5 (moderate pain), T: continuously. The patient appears to grimace in pain, the patient appears short of breath and is attached to a 4 lpm nasal oxygen cannula. Patients said they had never had any iminformation on how to reduce pain non-pharmacologically.

4. Results and discussion

After reviewing and collecting data on patients in Cempaka Room 3 of regional hospital of karanganyar regency, 3 patients were obtained in accordance with the criteria for inclusion and exclusion of the study. Patients with a diagnosis of NSTEMI type ACS, experiencing chest pain, and patients with composmentis consciousness. Patients given acupressure therapy are given at the location of the LI4 point located at the back of the right/left hand between the first and second metacarpal bones and almost along the radial bone. Performed for \pm 20 minutes in 10 seconds, pressure is applied according to the tolerance level acceptable to the patient and a rest period of 2 seconds. Acupressure therapy is given 30 minutes before getting pharmacological therapy.

After reviewing and collecting data on patients in Cempaka Room 3 of REGIONAL HOSPITAL OF Karanganyar Regency, 3 patients were obtained in accordance with the criteria for inclusion and exclusion of the study. Patients with a diagnosis of NSTEMI type ACS, experiencing chest pain, and patients with composmentis consciousness. Patients given acupressure therapy are given at the location of the LI4 point located at the back of the right/left hand between the first and second metacarpal bones and almost along the radial bone. Performed for \pm 20 minutes in 10 seconds, pressure is applied according to the tolerance level acceptable to the patient and a rest period of 2 seconds.

Table 1 Progress of Decreasing the Patient's Chest Pain Scale

Patient	Day To	Before	After
Patient I	1	Scale 6	Scale 5
	2	Scale 5	Scale 4
	3	Scale 4	Scale 3
Patient II	1	Scale 4	Scale 3
	2	Scale 4	Scale 3
	3	Scale 3	Scale 2
Patient III	1	Scale 5	Scale 4
	2	Scale 3	Scale 2
	3	Scale 2	Scale 1

The results of the application of acupressure therapy in patient I, with a medical diagnosis of ACS with NSTEMI before acupressure therapy on the first day had a pain scale of 6 after acupressure therapy the scale of pain became a scale of 5. On the second day, before acupressure therapy scale 5, after acupressure therapy scale 4. On the third day, before acupressure therapy scale 4, after acupressure therapy scale 3.

In patient II, with medical diagnosis of ACS with NSTEMI on the first day before acupressure therapy scale chest pain patient scale 4, after therapy scale chest pain patient becomes scale 3. On the second day, before acupressure therapy, the scale of chest pain felt by the patient was the same as the previous scale, namely scale 4, after acupressure therapy, the patient's chest pain scale became a scale of 3. On the third day, before acupressure therapy the patient's pain scale is scale 3, after acupressure therapy pain scale 2.

At Patient III, with a medical diagnosis of ACS with NSTEMI on the first day before acupressure therapy on the first day had a pain scale of 5 after acupressure therapy the scale of pain became a scale of 4. On the second day, before acupressure therapy scale 3, after acupressure therapy scale 2. On the third day, before acupressure therapy scale 2, after acupressure therapy scale 1.

Based on the table above, it can be concluded that there is a decrease in pain scale from the first day to the third day. In accordance with the results of research conducted by Narimani et al, 2020 stated that acupressure therapy was proven to be significant in reducing complaints of chest pain in patients with heart disease. The results of a case study conducted at Regional Hospital Of Kabupaten Karanganyar found that after acupressure therapy intervention was carried out at the location of the LI4 point located at the back of the right / left hand between the first and second metacarpal bones and almost as long as the radial bone, carried out for \pm 20 minutes in 10 seconds given pressure according to the level of tolerance acceptable to the patient and a rest period of 2 seconds for 3 consecutive days, So the results of measuring the patient's chest pain scale have decreased.

5. Conclusion

The effect of acupressure therapy to reduce chest pain in NSTEMI patients was given at the location of the LI4 point located at the back of the right / left hand between the first and second metacarpal bones and almost along the radial bone, performed for \pm 20 minutes in 10 seconds given pressure according to the level of tolerance acceptable by the patient and a rest period of 2 seconds for 3 consecutive days obtained a decrease in the chest pain scale. This is supported by another study conducted by Kambu et al, 2020 that the application of acupressure therapy provides benefits to reduce chest pain, so as to reduce the chances of dependence and the impact of treatment side effects and have an impact on reducing patient care days.

Compliance with ethical standards

Disclosure of conflict of interest

The author has no conflict of interest in this research.

Statement of ethical approval

Prospective Participants are invited to participate in this research. All participants received an explanation regarding the purpose of this study, namely to examine effect of acupressure therapy to reduce chest pain in nstemi patients . Informed consent was obtained from each participant before the study. Participants are allowed to withdraw from this study at any time.

Statement of informed consent

Prospective Participants were invited and oriented on the purpose of this study, namely to examine effect of acupressure therapy to reduce chest pain in nstemi patients. Informed consent was obtained before the study and the participants were allowed to withdraw at any time.

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