

Managing Pain in Acute Myocardial Infarction Patients

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Abstract

Pain has major effect on patient's quality of life and health outcome. Nurses play a crucial role in managing pain and educate patients and their family members regarding these interventions. This paper intends to present a mini critical review of different interventions to manage pain among AMI patients. An electronic searching was conducted in the following databases: Google Scholar, Research Gate, and PubMed. The current review showed that the use of morphine as pain-killer in AMI patients was not associated with any in-hospital cardiovascular complications. There's no any analgesic effect of oxygen supplementation in AMI patients. Male nurses had a higher level of awareness regarding pain management. It is recommended continuing use opioid to treat chest pain in patients with AMI. Nurses should not use Oxygen as analgesic in AMI patients. Bachelor's degree nurses, first work experience and officially employed need to increase their awareness and knowledge regarding chest pain management in AMI patients. This review paper provides nurses with efficient knowledge and strategies to relief pain in AMI patients.

Keywords: Acute Myocardial Infarction; Pain Management, Opioids, Nursing Role

Introduction

The current international association for the study of pain (IASP) defined the pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage" [1].

Acute Myocardial Infarction (AMI) is defined as "irreversible of the heart muscle (myocardium) death and infarction caused by ischemia, resulting from lack of oxygen delivery to myocardial tissue" [2].

In AMI patients, it's recommended to use opioids (e.g. morphine) to relief pain, anxiety, and breathlessness. Pain leads to increase activation of sympathetic nervous system, resulting in vasoconstriction and increase cardiac workload, this explain the use of opioid in AMI patients, using of morphine in both healthy individuals and ST-elevation myocardial infarction patients (STEMI) could lead to drug-drug interaction with anti-platelet aggregation drugs (prasugrel and ticagrelor), morphine leads to delay inhibition of platelet reactivity of anti-platelet drugs [3].

One of the most common priority treatments in AMI patients is using oxygen to relieve chest pain, there are potential complications related to hyperxemia has been investigated. Patients with AMI represent visceral pain sensation mediated by chemo sensitive nociceptors in the heart muscle. Current studies recommended using oxygen as analgesic and manage pain in AMI patients, because oxygen improve oxygenation and decrease the effects of chemical and mechanical response of ischemia. Also, oxygen effects on opiates and sedatives administration in AMI patients [4].

Cocaine is known cause of chest pain in patients with myocardial infarction; causes of cocaine induced Myocardial infarction (CIMI) include vasospasm, platelet activation with thrombus formation and increase adrenergic response leading to increase myocardial oxygen demand. Routine strategy for management of patients with CIMI is using tissue plasminogen activator (TPA) [5].

Patients with cardiovascular disease and who have developed COVID-19 have a higher risk of mortality than patients who have not. During the COVID-19 outbreak it's challenging for healthcare provider to distinguish between a true STMI and COVID-19 associated myocarditis [6].

Nurses play an important role in management and control chest pain in AMI patients and their knowledge and perception about pain management can affect the final treatment outcomes. Also, there are many factors (e.g. Nurses' age, type of employment, and work experience) among nurses have great impact on the efficacy of pain management [7,8].

Patients with cardiovascular disease can control their pain and signs and symptoms by improving self-efficacy, also its play an important role in facilitating behavior change and promoting health outcomes, self efficacy can be measured by informing and education the patients about the disease and potential treatments. Educations of the patients have a positive impact on overall physical and psychological condition of the patients and improve the quality of life [9-20].

Significance of the Study

AMI is one of the major causes of death and disability around the world, severe pain is common among MI patients; it's considered as one of the most common priority for health care provider, it can be managed by certain pharmacological and non-pharmacological modalities which effect on patient's health status outcome.

Aim of the Study

This paper intends to present a mini critical review of: Different interventions to manage pain among AMI patients, use opioids as recommended drug of choice to relief pain in AMI patients, combination use of analgesics and moderate-flow oxygen supplementation on patients with AMI and the effect of nursing education and peer education on cardiac self-efficacy in patients with AMI.

Methods

Search methods

A literature search used keywords including: Acute myocardial infarction; pain management, opioids, nursing role entered into electronic search engine including: Google Scholar, Research Gate, and Pub Med.

A number of highly relevant papers relevant to the aims of the review were identified. Inclusion criteria were: (a) studies published in English, (b) discussed specific strategies for managing pain in AMI, (c) studies review the role of opioids in managing pain, and nursing role to relief pain, and (d) studies published in 2015 and more.

Search outcome

Searching of the literature resulted in 100 titles for review. The final evaluation resulted in 10 studies, excluding studies consisting only of abstract, review studies and irrelevant studies.

Result and Discussion

Non-pharmacological interventions are important in relieving pain among AMI patients; Sleep has an important impact on cardiovascular function in AMI patients and sleep deprivation can lead to intensive anxiety, irritability, and anger that increase heart rate and myocardial oxygen need and chest pain. Healthcare provider should pay serious attention on quality of sleep in AMI patients, sleeping disorder can be managed by many pharmacological and non-pharmacological interventions, Non-pharmacological interventions can be used because it's safe and have no side-effects. Acupressure is identified as a therapy with the principle of healing to deal with sleep changes, and it can be applied in simple, cheap, and safe manner because it is not an invasive action and does not require any equipment. Manual stimulation at the acupressure point is proven increasing serotonin and endorphin production and contributing to increased serum cortisol regulation. Endorphin is a natural opiate produced in the body, which triggers a calming and stimulating response in the body, has a positive effect on emotions, reduces anxiety, causes relaxation, improves sleep quality and normalizes body function, whereas serotonin has the function of regulating mood and sleep [21].

The use of morphine in pre-hospital setting was not associated with increased rates of in-hospital complications, including one-year death and stent thrombosis [3].

There's no any analgesic effect of oxygen supplementation when compared with ambient air in AMI, and does not relieve chest pain and does not change oxygen saturation in patients undergoing treatment with Percutaneous Coronary Intervention (PCI) [4].

It's recommended to diagnose patient for ST elevation (including COVID-19 associated myocarditis) prior admission the patient and choose the strategy for reperfusion [6].

Patients presenting with AMI and using cocaine appears to affect decision making by providers, patients with CIMI are more likely to be readmitted to the hospital within 30 days of incidence with major adverse cardiovascular events [5].

There's increasing pattern of efficiency and quality in nursing services. Considering the findings on pain management in AMI patients. Also the pain management strategies performed by nurses should be applied in several implementation processes. Male nurses had a higher level of awareness regarding pain management, in contrast with Bachelor's degree nurses, first work experience and officially employed. [7,22-35].

Acupressure has a significant effect on the increase of sleep quality and the decrease of pulse rate in patients with AMI [21].

Since there's a shortage of nurses and they do not have enough time to communicate and educate patients in the hospitals, peer education can be useful instead of nursing education [9,36-45].

Recommendations and Implications for Nursing Practice

It still recommended continuing use opioid (morphine) to treat chest pain in patients with AMI [3]. Another study confirmed that using morphine during initial management of chest pain in patients with AMI was not associated with significant increase in cardiovascular complications and death at 1 year [46].

Nurses should not use Oxygen as analgesic in AMI patients [4]. It may be necessary to educate other team members about the efficacy of non-pharmacological methods so that these techniques can be integrated more efficiently into the pain management plan.

Nurses who had Bachelor's degree, nurses first work experience, and officially employed need to increase their awareness regarding chest pain management in AMI patients [47-54].

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