

Acute pain in myocardial infarction: analysis of concept

Dor aguda no infarto agudo do miocárdio: análise do conceito

Dolor agudo en el infarto de miocardio: análisis del concepto



Sônia Maria Josino dos Santos^a
Thelma Leite de Araújo^b
Tahissa Frota Cavalcante^c
Nelson Miguel Galindo Neto^d

ABSTRACT

Objective: to analyze the concept “sharp pain” in the context of acute myocardial infarction.

Methods: conceptual analysis method proposed by Walker and Avant. This makes it possible to clarify the concept of attributes. We conducted an integrative review to assist the search of studies published in 2006 and 2012, using the descriptors ‘Acute Pain’ and ‘myocardial infarction’, through consultation to Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus and Public / Publish Medline (PubMed) data.

Results: A sample of 29 studies was selected in which the background identified was: reduction of myocardial perfusion and / or death of myocardial tissue; attributes: quality, location, time, duration and irradiation; and consequent: report of pain, dyspnea, high heart rate, nausea, vomiting, high blood pressure, high respiratory rate, sleep disturbance, diaphoresis, fatigue, paleness, weakness, anxiety and fear.

Conclusion: The findings have clarified the attributes of the concept sharp pain in myocardial infarction.

Keywords: Sharp pain. Myocardial infarction Nurse Concept formation.

RESUMO

Objetivo: analisar o conceito “dor aguda” no contexto do infarto agudo do miocárdio.

Métodos: seguiu-se o Método de análise conceitual proposto por Walker e Avant. Este possibilita clarificar os atributos do conceito. Realizou-se uma revisão integrativa para auxiliar a busca dos estudos publicados de 2006 e 2012, utilizando-se os descritores “Dor Aguda” e “Infarto do Miocárdio”, por meio de consulta às bases de dados Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus e Public/Publish Medline (PubMed).

Resultados: selecionou-se uma amostra de 29 estudos, nos quais foram identificados os antecedentes: redução da perfusão miocárdica e/ou morte do tecido miocárdico; atributos: qualidade, localização, tempo, duração e irradiação; e consequentes: relato de dor, dispnéia, frequência cardíaca elevada, náusea, vômito, pressão sanguínea elevada, frequência respiratória elevada, distúrbio do sono, diaforese, fadiga, palidez, fraqueza, ansiedade e medo.

Conclusão: os achados permitiram clarificar os atributos do conceito dor aguda no infarto do miocárdio.

Palavras-chave: Dor aguda. Infarto do miocárdio. Enfermagem. Formação de conceito.

RESUMEN

Objetivo: analizar el concepto de “dolor agudo” en el contexto del infarto agudo del miocardio.

Métodos: seguimos el método de análisis conceptual propuesto por Walker y Avant. Este permite aclarar los atributos del concepto. Efectuamos una revisión integradora para ayudar en la búsqueda de los estudios publicados entre los años 2007 y 2009, utilizando los descriptores ‘Dolor Agudo’ e ‘Infarto del Miocardio’, por medio de consultas a las bases de datos Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus y Public/Publish Medline (PubMed).

Resultados: se ha seleccionado una muestra de 29 estudios, donde se han identificado los antecedentes: reducción de la perfusión miocárdica y/o muerte del tejido miocárdico; atributos: calidad, localización, tiempo y duración, e irradicación; y consiguientes: relato del dolor, disnea, frecuencia cardíaca alta, náusea, vómito, presión arterial alta, frecuencia respiratoria alta, desórdenes del sueño, diaforesis, fatiga, palidez, debilidad, ansiedad y miedo.

Conclusión: los resultados permitieron la aclaración del concepto de dolor agudo en el infarto del miocardio.

Palabras clave: Dolor agudo. Infarto del miocardio. Enfermería. Formación de concepto.

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^a Universidade Federal de Pernambuco (UFPE), Centro Acadêmico de Vitória (UFPE/CAV), Núcleo de Enfermagem, Vitória de Santo Antão, Pernambuco, Brasil.

^b Universidade Federal do Ceará (UFC), Departamento de Enfermagem, Fortaleza, Ceará, Brasil.

^c Universidade da Integração Internacional da Lusofonia Afro-brasileira (UNILAB), Fortaleza, Ceará, Brasil.

^d Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco (IFPE), Campus Pesqueira. Bacharelado em Enfermagem. Pesqueira, Pernambuco, Brasil.

■ INTRODUCTION

Pain is defined as an unpleasant sensory and emotional subjective experience associated with actual or potential injuries⁽¹⁾ and represent one of the major causes of human suffering. Acute pain is that which is manifested during a short period, associated to lesions with tissue or organs, influenced by sensory, socio-affective and cultural aspects⁽²⁻³⁾.

Among pains of higher prevalence, there is acute chest pain, which is one of the major emergency services demands. It is a symptom caused by various potentially fatal diseases and wide differential diagnosis. Related ischemic syndromes related to cardiovascular diseases⁽²⁻³⁾.

Atherosclerotic coronary disease is the most common cause of acute chest pain consequent to myocardial ischemia⁽⁴⁾. Other causes include aortic valve disease, cardiomyopathies and spasms of the coronary arteries⁽⁵⁻⁶⁾. In this scenario of acute chest pain, an important condition to be considered is pain related to acute myocardial infarction (AMI), triggered by necrosis of the heart muscle caused by decreased blood flow to the heart⁽³⁾. In this injury, acute chest pain is a major symptom and often does not have its cause diagnosed. This stems from inexperience and insufficient knowledge in pain affected patient management, and prioritization in favor of those who are polytraumatized, present digestive hemorrhage, etc., in the emergency room.

The complexity and multidimensional nature make it impossible to develop a proper definition for each type of pain and this takes place before the onset of pain unites with a set of emotional, motivational and cultural factors⁽⁵⁾. These factors, paired with the flaws of the screening system, prevent adequate research and a diagnosis definition for patients with chest pain. Screening in emergency rooms is usually performed by nurses⁽⁷⁾. However, many nurses do not know the clinical indicators used to systematically assess pain, underestimating the frequency of pain occurrences and ignoring the devastating effect it has on the individual⁽⁸⁾. As a result, the pain remains undertreated and underreported.

In this context, experts from different fields carry out numerous attempts to conceptualize, qualify and quantify pain⁽⁸⁾. Therefore, knowledge of the essential critical attributes that shape the concept acute pain in acute myocardial infarction is indispensable to improve the evaluation and, consequently, the nursing care. Therefore, it is necessary to seek literary references to define and name its characteristics, contribute to the assessment, characterization and treatment of its effects. In this sense, concept analysis is used to clarify and determine the attributes and, from

there, emphasize the importance of proper use within the scenario of interest⁽⁹⁾.

Thus, to certify the origin of ischemic pain and the relationship with acute coronary syndromes, it is imperative to know the aspects related to the location, irradiation, type (or quality) of pain, from the moment the symptom appears, as well as time and duration of each episode, triggers and relief conditions.

Faced with this reality, the belief is that this conceptual analysis will contribute to promoting the development of knowledge, improving and legitimizing elements that comprise the concept acute pain, translating as an essential tool for the improvement of clinical practice and operational nursing assistance of patients with acute pain at the time of myocardial infarction.

Therefore, it is important to seek literary evidence to identify the possible precedents (predictors), critical and Subsequent attributes of acute pain in patients with acute myocardial infarction. This led to the formulation of the following question: How do the authors characterize acute pain in the context of an acute myocardial infarction? Thus, the objective of this study was to analyze the concept acute pain in the context of acute myocardial infarction.

■ METHOD

This is an analysis of the concept acute pain, which relates to the first chapter of the thesis⁽¹⁰⁾. The steps used followed the methodological reference of Walker and Avant's concept analysis, as follows: choice of concept; conceptual analysis objective establishment; identification of possible uses of the concept; identification of the critical factors, and background and consequence identification⁽¹¹⁾, understanding that these allow the analysis of the concept acute pain in patients with myocardial infarction, object of this study.

The performance of the steps through a literature review to aid the search for studies and enable the theoretical structuring and construction of knowledge and evidences of concept acute pain were as follows: identification of the research question and purpose of the study, literary search, data evaluation, data analysis and presentation. The integrative review gathers and summarizes research findings on a delimited subject in a systematic and organized way, contributing to knowledge enhancement of the subject investigated⁽¹²⁾, which justifies this method choice.

To select the articles, *on-line* access to Cumulative Index to Nursing and Allied Health Literature (CINAHL), SCOPUS and Public / Publish Medline (PubMed) was used, as well as descriptors from Descriptors of Health Sciences (DeCS),

Virtual Health Library, and the Medical Subject Headings (MeSH) of the National Library of Medicine: Acute pain and Myocardial infarction. The search through studies published from 2006 to 2012 was conducted in May and June of 2013.

The inclusion criteria were: full articles available electronically, which approach the concept to be analyzed, required to be either in the Portuguese, English or Spanish language. Letters to the editor were used as an exclusion criteria.

In face of the reference adopted for the identification of the critical factors, patient history and consequences of acute pain in the context of acute myocardial infarction, the following questions were used: What are the characteristics presented by the authors to define the concept of acute pain? What events or factors contribute to the imminence of the concept of acute pain in individuals with acute myocardial infarction? What events result from acute

pain in individuals with acute myocardial infarction? What factors contribute to relieve acute pain in individuals with acute myocardial infarction?

Figure 1 shows the process of finding items in the selected databases.

Literature recommends a thorough analysis of the selected studies to assess methodological quality. This step was performed according to evidence strength classification for research evaluation by Melnyk, Fineuot-Overholt⁽¹³⁾, presented in Chart 1.

The fact that there was respect for ethical aspects related to copyrights of the evidence available on the subject investigated is noteworthy.

■ RESULTS AND DISCUSSION

The characterization of the studies showed that they originated mainly from North America (54.8%) and Europe

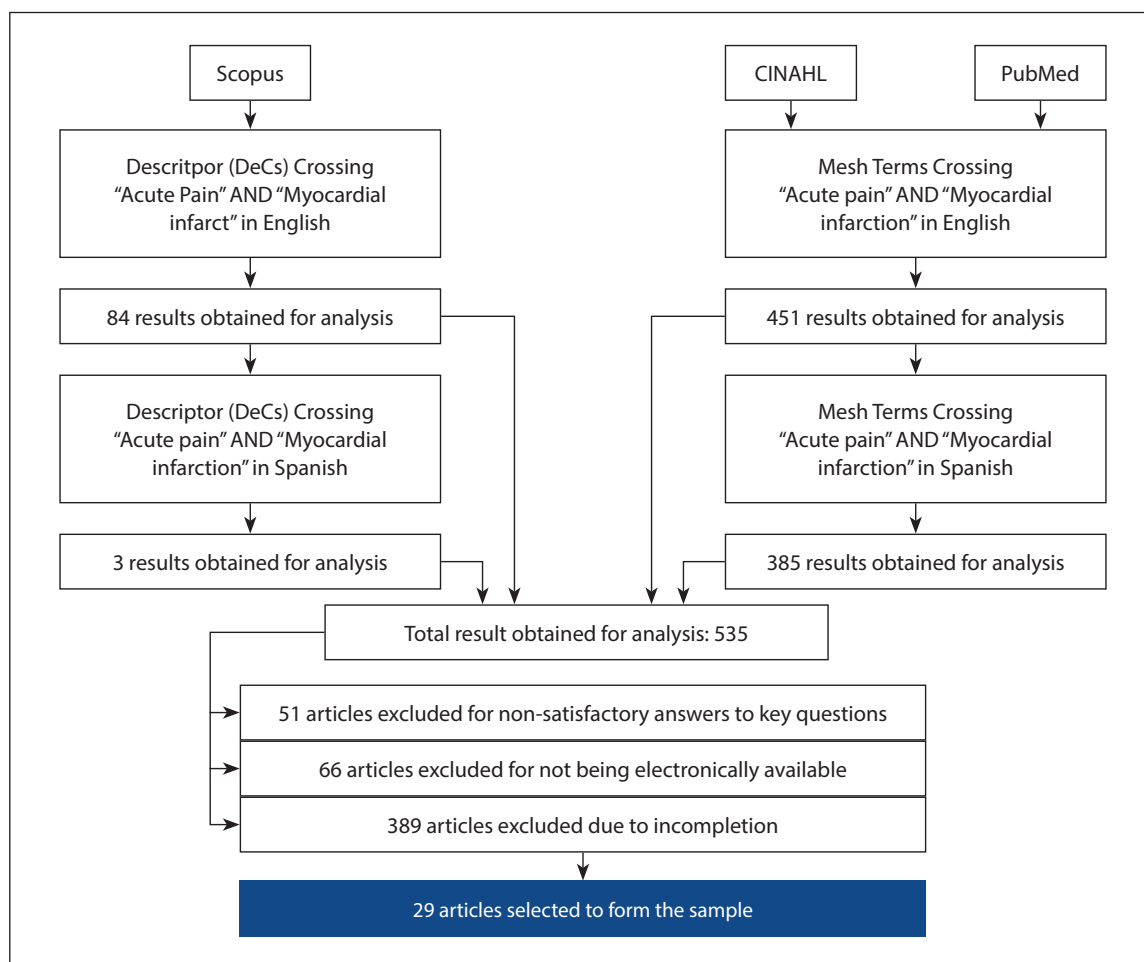


Figure 1 – Search process of studies and final selection

Source: Survey data, 2013.


Evidence Level	Evidence Strength
Level 1: evidence from systematic review or meta-analysis of all relevant randomized controlled clinical trials or from clinical guidelines based on systematic reviews of randomized controlled clinical trials;	Stronger  Weaker
Level 2: evidence from at least one clearly designed randomized controlled clinical trial;	
Level 3: evidence from well-designed clinical trials without randomization;	
Level 4: evidence from cohort, and well-designed case-control studies;	
Level 5: evidence from systematic review of descriptive and qualitative studies;	
Level 6: evidence derived from a single descriptive or qualitative study;	
Level 7: evidence from opinion of authorities and / or report of expert committees.	

Chart 1 – Evidence level rating for assessment of the studies

Source: Survey data, 2013.

(45.2%). Physicians (58.6%) and nurses (41.4%) performed most studies. Regarding the year of publication, 65.5% were published from 2008 to 2012, in this period there was a notable increase of publications related to the theme, followed in years 2006 to 2008 (34.5%). The lack of studies on acute pain in patients with myocardial infarction in South America is apparent, which is worrying, since there is a high prevalence of cases of the disease, specifically in Brazil. Studies on acute pain in myocardial infarction performed in the hospital setting predominated. Another study presented similar results⁽⁵⁾, which related this evidence to the seriousness and the emergency character of acute cardiovascular problems, as well as the failures of primary care in the control of risk factors.

Most studies involved adult population (86.2%), which is supported by other research that reveals acute coronary syndromes are prevalent in people aged between 30-50 years⁽⁴⁾.

Descriptive or qualitative studies (24.1%) stood out, followed by clinical trials without randomization and well-designed cohort or case-control studies with 20.7% each. Evidence from systematic review/meta-analysis and well-designed randomized clinical trial studies amounted to, respectively, 13.8% each. With regard to evidence levels of the analyzed publications, it was observed that there was a predominance of designed studies with evidence levels III and IV, followed by evidence studies of levels I and II. These findings reflect what is known about the investigated theme and points to a gap related to research with stronger clinical evidence levels that can incorporate the results in practice.

In this context, it is important to develop studies that generate better evidence to support the nursing care of patients with acute pain in myocardial infarction. It is important to emphasize that the publications with lower

levels of evidence were adopted, as they helped provide relevant conceptual elements for concept acute pain analysis and its defining characteristics in patients with acute myocardial infarction.

Identification of possible concept uses

The literature review provided subsidies to identify that concept acute pain is widely used in healthcare, with greater evidence in nursing and medicine, and in the context of cardiovascular disease, specifically in coronary syndromes.

Most of the studies show that the sharp pain in myocardial infarction lasts 15 to 30 minutes⁽¹⁴⁻²⁴⁾, followed by those that state the pain lasts up to 20 minutes⁽²⁵⁻²⁸⁾.

As for the onset time of the pain, studies^(19-21,29-32) report that it is sudden. Regarding the quality of pain, studies describe it as constrictive and oppressive^(16-21,33-37), as a feeling of having a crushed chest⁽²¹⁻²³⁾, typically ischemic⁽³⁸⁻⁴⁰⁾; di-lacerating and grinding⁽³⁰⁻³²⁾.

In most publications^(14-18,22-23,25-26,33-39,41-42), acute pain in myocardial infarction is located in the retrosternal region. Pain is frequently referred to as being in the retrosternal region and is presented through distressed precordial pain, irradiated to the left superior member, with great intensity and duration that shows no improvement and no relief with rest or sublingual nitrates.

The critical attributes of sharp pain in myocardial infarction found in this study are similar to the evidence found elsewhere⁽⁴⁾, in which the majority of patients with acute pain in coronary syndromes had compressive, sudden retrosternal pain, with radiation to the neck, left arm, back, epigastric region and abdomen with a duration of more than 20 minutes⁽⁴³⁾. It was observed that all studies refer to the absence of relief factors for acute pain in myocardial

Acute pain in acute myocardial infarction	Attributes	<p>Quality: constrictive, oppressive; pressure; grip and weight; crushing feeling; typically ischemic; dilacerating and grinding.</p> <p>Location: retrosternal region; substernal; thoracic; left side of the chest; center of the sternum in the middle of the chest; right chest.</p> <p>Time and duration: sudden onset; lasting; with a duration of 15 to 30 minutes; recurrent and intermittent.</p> <p>Irradiation: neck; left shoulder; jaw; interscapular region; right and left arm; back; stomach; abdomen; epigastrium.</p>
	Background	Stent occlusion; obstruction of blood flow to the myocardium; coronary artery thrombosis; reduction in coronary perfusion; emotional distress; diminished myocardial perfusion; prolonged myocardial ischemia; death of myocardial tissue.
	Consequences	Reports of pain; dyspnea; high respiratory rate; nausea; vomiting; high blood pressure; elevated heart rate; sleep disturbance; diaphoresis; pallor; fatigue; weakness; anxiety; fear.

Chart 2 – Distribution of essential attributes, background and consequences shown in literature for the concept sharp pain in acute myocardial infarction.

Source: Survey data, 2013.

infarction. The lack of relief from chest pain with rest or nitrates suggests the cause of the pain and real possibility of an imminent myocardial infarction^(4,43).

The results revealed that the acute pain in myocardial infarction often lasts 15 to 30 minutes, irradiating to superior members and neck, and is generally followed by other associated symptoms (dyspnea, nausea, vomiting) resembling results of other studies^(3-5,43).

Critical or essential attributes of the concept Acute pain

After analyzing the concept acute pain in acute myocardial infarction, background identification, critical and consequent attributes were performed, presented hereunder in Chart 2.

From the background, attributes and consequences identified, the concept sharp pain in Acute myocardial infarction was better defined, improving its comprehension. This definition is presented below:

Retrosternal thoracic pain on the left, constrictive, oppressive, crushing, typically ischemic, sudden onset, intermittent, radiating to the neck, left shoulder, jaw, interscapular region, left arm, back, epigastrium. It is triggered by the reduction of myocardial perfusion and/or death of myocardial tissue. The pain can last from 15 to 30 minutes and set off increase in blood pressure, cardiac and respiratory frequency, besides diaphoresis, dyspnea, nausea, vomiting, anxiety, sleep disorders, fear, fatigue, pallor and weakness.

The pain causes discomfort, physiological and psychological changes and is a limiting factor for the patient. Hence the importance of identifying the characteristics that involve the concept acute pain, so that the professionals can identify it early, perform control and evaluation systematically and adopt an individualized care plan.⁽⁴⁴⁾

CONCLUSION

The conceptual analysis, performed according to the Walker and Avant model, has highlighted the characteristics of acute pain in patients with Acute myocardial infarction and, from there, it was possible to observe that the concept acute pain in this clinical situation involves the presence of the following attributes: quality (constrictive, oppressive, pressure, tightness and weight, feeling of typical ischemia, rushing, dilaceration and grinding); location (retrosternal region, substernal, thoracic, on the left side of the chest, center of sternum and middle of the chest, right chest); time and duration (sudden onset, prolonged, lasting 15 to 30 minutes, recurrent and intermittent) and irradiation (neck, left shoulder, jaw, interscapular region, right and left arm, back, stomach, abdomen, epigastrium, brachial pulse and left radial). As for the pain history, the following was identified: *stent* occlusion; obstruction of blood flow to the myocardium, coronary artery thrombosis, reduced coronary perfusion, emotional stress, decreased myocardial perfusion, prolonged myocardial ischemia and death of the myocardial tissue, consequently, there are reports

of pain, dyspnea, high heart rate, nausea, vomiting, high blood pressure, high respiratory rate, sleep disturbance, diaphoresis, fatigue, pallor, weakness, anxiety and fear.

The large amount of foreign publications highlighted the integrative review, justified by the frequent involvement of AMI in many countries besides Brazil should be considered as a limitation to the present study. This profile of publications may have influenced the conclusion and limited the generalization of the data to the Brazilian population, being recommended, therefore, that further research in other databases is carried out.

Despite this limitation, the study brought contributions given the evidence presented that characterize the background, critical attributes and consequences of the concept sharp pain in acute myocardial infarction. Such information becomes relevant when considering that knowledge of these characteristics will subsidize the association of pain to cardiac impairment. Thus, the professionals responsible for health promotion at various levels of care complexity, even when not experts in heart diseases or not accustomed to acting in scenarios where coronary diseases are commonly treated, may carry out a more effective decision making process in the care of patients affected by AMI.

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■ **Author's address:**

Sônia Maria Josino dos Santos
Av. Presidente Afonso Pena, 1312, Bessa
58035-030 João Pessoa – PB
E-mail: smjosino@gmail.com

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