

Evaluation of the perception of chronic ischemic pain in humans with peripheral arterial disease

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The perception of pain is multidimensional, subjective, and unique to each individual and can be influenced by several dimensions of pain. The objective of this study was to evaluate the perception of chronic ischemic pain using the descriptors of pain and to rate the main descriptors of chronic pain to people with peripheral arterial disease (PAD). The study was conducted in two hospitals in Brazil and consisted of two phases. In phase I, 100 participants with a diagnosis of PAD and chronic pain evaluated 50 descriptors of pain using the Multidimensional Pain Evaluation Scale by the psychophysical method of category estimation using a numerical scale with 11 points. In phase II, 30 participants judged the 10 first descriptors selected in phase I by the psychophysical method of magnitude estimation. The average intensity of chronic ischemic pain was 5.59 ± 3.16 . The descriptors of chronic pain with higher scores obtained by the method of category estimation were unpleasant, followed by disturbing, strong, concern, tiring, boring, terrible, painful, sickening, and uncomfortable. By the method of magnitude estimation, the descriptors of pain showing sensitive, affective, and cognitive dimensions were identified by the descriptors terrible, follow by painful, uncomfortable, concern, tiring, sickening, strong, disturbing, boring, and unpleasant. This study showed that the chronic ischemic pain by PAD is associated with multidimensional components of pain. (J Vasc Nurs 2014;32:82-87)

Peripheral arterial disease (PAD) comprises atherosclerosis of the abdominal aorta, iliac, and lower extremity arteries.¹ PAD affects about 5.8% of the North American population over the age of 40 and this number has increased exponentially in recent decades. In the United States, the ethnic group with the highest prevalence of PAD is non-Hispanic black people.^{2,3} In a study conducted in Brazil, 34.3% of patients with coronary artery disease referred for angiography also had PAD.⁴ When the disease becomes chronic, the lower limbs are the most affected and symptoms arise depending on the degree of involvement, particularly intermittent claudication (IC), which

is characterized by pain sensation, cramps, fatigue, and walking difficulties.^{5,6}

Pain also has an enormous impact on activities of daily living and on the quality of life of patients with chronic pain; they must adjust to restrictions on their activities. In a study conducted in the United States of 460 patients with PAD, 32% had IC, 19% had leg pain on exertion and at rest, 9% had constant exertional leg pain, 20% had atypical exertional leg pain, and 20% had no exertional leg pain.⁷ Pain negatively affecting daily activities, such as sleeping, getting up, physical exercise, walking, sexual relations, driving a vehicle, working outside the home, and missed travelling. Most of the subjects are retired, unemployed, or work only part time.^{8,9} The impact of chronic pain on quality of life has been demonstrated in those with PAD, particularly in relation to physical, environmental, psychological, and social domains.⁸

According to the International Association for the Study of Pain, "pain is an unpleasant sensory and emotional experience caused by actual or potential tissue damage or described in terms of such damage."¹⁰ Ischemic pain is associated with decreased or complete cessation of blood flow rather than direct damage to tissues or neuropathic processes.¹¹ The phenomenon of pain is subjective and multidimensional, because it is influenced by cultural, situational, motivational, and psychological factors, as well as external variables, which makes it difficult to quantitatively and qualitatively assess pain. Inadequate evaluation and underestimation of pain and inadequate pain management then becomes an issue. Consequently, to manage each case appropriately, patients should be cared for by an interdisciplinary team.¹²⁻¹⁴

Recently, a Brazilian group developed a Multidimensional Pain Evaluation Scale (MPES) in Brazilian Portuguese using the psychophysical methods of category scaling, magnitude estimation, and cross-modality matching to line length.¹² This scale

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consists of descriptors and their definitions for the characterization of acute and chronic pain (119 descriptors for each) and evaluates the perception of pain on an 11-point numeric scale, where 0 corresponds with “no pain” and 10 with “the worst pain possible.”¹² The MPES captures the sensitive, affective, and cognitive dimensions of pain and has been used in several studies.^{15,16} For magnitude estimation, which evaluates subjective stimuli, in this case pain stimuli, the subject is presented with a list of stimuli that, when judged, produce a response proportional to the intensity of the stimulus presented by the examiner.¹⁵

Ischemic pain in PAD causes patients to suffer. Thus, it is important to use one-dimensional and multidimensional instruments that are able to adequately measure and evaluate pain to guide pain management. The use of these instruments will improve planning for pain management, considering the particularities of each individual, and therefore improve the quality of life of affected patients.

Taken together, these studies led us to question how patients with PAD perceive the painful phenomenon. Thus, the objective of the present study was to evaluate the perception of chronic ischemic pain in adults in Brazil using descriptors and to rate the main descriptors related to this type of pain.

METHODS

An exploratory, descriptive study using non-probabilistic sampling was conducted at two university hospitals that attend the population of the Brazilian public health system. The study was conducted with a convenience sample; the participants were selected by analysis of patient records, identifying those with a medical diagnosis of PAD. Then, participants were approached before a previously scheduled medical appointment. Criteria for inclusion of participants in the study were (i) chronic pain (ie, continuous pain for >3 months),¹⁷ (ii) confirmed diagnosis of PAD (Fontaine II-IV), (iii) ability to understand the tasks requested and report the answers in Brazilian Portuguese, and (iv) sufficient physical conditions to write or to speak (the questions of the MPES instrument were read to the illiterate participants and, then, they reported the level of pain in a scale). Criteria for exclusion of participants were (i) acute pain (i.e., pain for <3 months) and (ii) diabetes mellitus. The study was approved by the local Ethics Committee (Permit Number 10595/2007). Patients received detailed information about the study and signed an informed consent form. Participation was entirely voluntary and participants received no remuneration. Sensory pain of participants with PAD was evaluated by the MPES instrument, attributing a score of 0 to 10 to the pain perceived in the last 24 hours.¹² The study was divided into two phases.

Phase 1

The objective of phase 1 was to evaluate the perception of chronic ischemic pain using the descriptors of pain.

Participants. This phase lasted 6 months and involved a convenience sample of 100 participants with PAD who were submitted to the psychophysical method of category estimation.¹⁸

Material. The first page of the paper pad contained specific instructions regarding the psychophysical method used and the following pages contained the 11-point numeric rating scale for the evaluation of pain intensity and the MPES with 50 descriptors to measure chronic pain in patients with PAD. Participants used a pen to pick a point in the numeric scale that corresponded with the pain perceived at that moment.

Procedures. Each participant viewed an 11-point numeric rating scale with two anchor points of zero (no pain) and 10 (worst pain possible) and intermediary pain scores of 1 to 9 points. In this evaluation, participants had to pick a score between 0 (zero) and 10, corresponding with the intensity of the pain perceived in the last 24 hours. For category scaling, the participant was to attribute a score to each of the 50 descriptors, based on the definition of each score. For example, the participant read the descriptor “unpleasant” and its definition, and then used the 11-point numeric rating scale to judge the pain perceived. The same procedure was repeated for the other pain descriptors. The results obtained with this method were analyzed by calculating the mean value and standard deviation.

Phase 2

The objective of this phase was to rate the main descriptors of chronic ischemic pain identified in Phase 1.

Participants. This phase involved a convenience sample of 30 participants who were submitted to the psychophysical method of magnitude estimation. Following the method used, the sample size should be three times larger than the number of attributes (pain descriptors) to be evaluated.¹⁸

Material. The first page of the paper pad contained specific instructions regarding the psychophysical method used and the following pages contained the 10 most commonly reported descriptors selected in the previous phase. Participants used a pen to attribute values to each one of the descriptors selected from Phase 1.

Procedures. Phase 2 was initiated after the conclusion of Phase 1 and lasted 2 months. In this phase, the 10 most cited descriptors for chronic pain were used. For magnitude estimation, the task of the participant was to attribute a value that is proportional to each of the 10 descriptors of chronic pain selected in the previous experiment, taking into account perceived pain. A reference score of 100 was previously attributed to the reference descriptor (unpleasant), that is, the descriptor with the highest score in Phase I. Then, the participant was asked to attribute a score to the remaining descriptors that was proportional to this reference descriptor. Thus, the attribution of a value of 50 to a descriptor would correspond to half the pain perceived according to the reference descriptor. Accordingly, a value of 200 corresponds with twice the pain perceived according to the reference descriptor. The geometric mean value and standard deviation of each of the 10 most commonly reported descriptors of chronic pain selected in Phase 1 were calculated for analysis of the results.¹⁸

RESULTS

One hundred subjects participated in phase 1 of the study. The mean age was 64.83 ± 12.14 years; 67% of the participants

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