73 - INTER-RATER RELIABILITY FOR DETERMINING THE THRESHOLD OF PAIN BY DOLORIMETER OF PRESSURE

DANIELA SIVIERO
LUANA GIACOMOLLI BOCALON
SIMONE SUELLEN STELTER
Universidade Estadual do Oeste do Paraná (UNIOESTE)/Cascavel/PR/Brasil
danny.si@hotmail.com

INTRODUCTION

Pain is defined by the International Society for the Study of Pain (IASP) as a sensory experience, emotional, nasty, related to tissue injury is a complex phenomenon, and individual variable that can be influenced by several factors, which may be a sign of the body that something is not going well. This is a subjective manifestation, involving physical mechanisms, psychic and cultural (IASP, 2010).

The physiological pain is one that induces protective responses such as withdrawal reflex (or flight reaction), with the aim of stopping exposure to noxious stimulus. This signal is typical of acute pain produced by intense stimuli to the skin surface. Visceral pain and deep somatic pain stimuli are caused by stimuli unavoidable and present specific adaptive responses, usually subacute and may be accompanied by autonomic responses or specific behavioral (FANTONI; MASTROCINQUE, 2002; HELLEBREKERS, 2002). The pain can be harmful due to the intense catabolism that triggers being minimized with the use of adequate analgesia. If the causative factor of pain is not controlled and, consequently its duration is extended, in some cases may progress to chronic pain (KELLY; AHMAD; BRULL, 2001).

The control and pain relief are required for manifestation of well-being and quality of life of individual (FONTES; JAQUES, 2007) and due to its multidimensionality, different instruments have been used to evaluate it and sensitive and reliable measures are necessary for the diagnosis and appropriate treatment (DOCTOR; SLATER; ATKINSON, 1995).

The pain intensity is a dimension often evaluated and may be verified by methods reported pain perception such as scales pain, and provocative tests such as manual palpation and pressure algometer (POLETTO et al., 2004).

Regarding the dolorimeter of pressure, also called a pressure algometer or algometer fisher is an apparatus designed to measure the pain threshold, by physical stimuli (nociceptors pressure) (PIOVESAN et al. 2001), applying a pressure on any part of the body, the device shows how much pressure is required to cause pain. And, this threshold is defined as the minimum pressure which induce pain. It is a device easy to use and can be found two types: analog and digital. In both, there is a round tip of which 1 cm diameter is placed at the point tested. Applies direct pressure to begin pain, measured in kilogram-force (kgf) or pounds per square centimeter and every second is applied 1kgf (POLETTO et al., 2004).

Despite the pressure algometer be an assessment tool easy to handle, it is necessary that its use is properly so they do not influence the results of the research. Moreover, there is a lack in the literature that reports the inter-rater reliability in the measurement of pain with the application of pressure algometer. Thus, this study is justified because not a single evaluator will always deal with the patient and / or volunteer research. Therefore, it is extremely important to know how many evaluators applying the same assessment tool, can influence the search results.

Thus, the aim of this study was to evaluate the inter-rater reliability for determining the threshold of pain by dolorimeter of pressure.

MATERIALS AND METHODS

The sample group consisted of 20 healthy volunteers, young adults of both genders, with 16 women (80%) and 4 males (20%), aged between 20 to 30 years, students of the institution, the University state of Paraná (UNIOESTE), campus Cascavel.

Procedures

At first contact, the volunteers underwent a screening, they were evaluated by the criteria of inclusion and exclusion, and the following: inclusion, academic institution itselfc. Since the exclusion, does not appear on one of the days of the assessment, submit hypoesthesia or anesthesia in the upper limbs, and present a health problem that generates some kind of pain.

After this screening, it was explained to each volunteer research participant, about the intentions and the same procedures and was asked about interest in participating in this study. Being accepted the invitation, the volunteers passed the evaluation.

Evaluation Protocol

For the assessment of pain pressure was used dolorimeter of pressure (Kratos ®), one device being capable of producing up to 50 Kgf. (CHESTERTON et al. 2003).

During the evaluation the dolorimeter of pressure was placed perpendicularly on the thenar region of the C6 dermatome both the left hand as the right hand, and was carried downward pressure with a uniform velocity and constant. For this procedure, the volunteers were instructed to say "stop" when the sensation of pressure become a sensation of pain, in addition, they were blindfolded, lest they be tempted to say "stop" before the moment they really feel pain.

Moments Assessment

The evaluation took place for three consecutive days, and each evaluator applied dolorimeter of pressure on a given day, having a total of three evaluators, in other words, the research had only a group of 20 volunteers, but each volunteer underwent three assessments, and each assessment was on a different day, totaling three consecutive days of evaluation applied by an evaluator different on each day. Therefore, we analyzed data from three assessments to compare and conclude whether or not there was a difference between the evaluators.

Statistical Analysis

Statistical analysis used the SPSS software version 15.0. To evaluate the reliability index was used interclass correlation (ICC) and the strength of correlation evaluated by the following criteria: 0 – 0,25 little or no; 0,26 - 0,49 low; 0,50 - 0.69 moderate; 0,70 – 0,89 high; 0,90 – 1,00 very high (MENADUE et al., 2006). The level of significance was set at α <0.05.

RESULTS

Table 1: Indices interclass correlation (ICC) for each crossing data, as well as the strength of the correlation, the confidence interval of 95% (95%-CI), the "p-value" and α Cronbach `s.

CROSSING	α Cronbach`s	ICC	FORCE	95%-IC	p-value
1 x 2	0,305	0,305*	Low	0,315-0,632	0,002
1 x 3	0,443	0,443*	Low	0,052-0,706	0,000
2 x 3	0,802	0,802*	High	0,625-0,895	0,005

* Significant difference inter-rate.

Regarding the results observed in Table 1, when comparing the results inter-rater observed significant difference in all evaluations, but the correlations ranged from low to high force. That means for conducting a scientific study is not reliable to use multiple evaluators to measure pain in the same individual.

DISCUSSION

In its diagnostic applicability of the dolorimeter of pressure is used as a quantitative method to measure the intensity of pain and even to locate tender points. In experimental studies, is used to assess the immediate results on painful points after completion of treatment. And still can be used to measure the effect of analgesics or other drugs that may influence the control central nociceptive such as antidepressants (PIOVESAN et al., 2001).

In this study we evaluated the inter-rater reliability to determine the pain threshold by dolorimeter of pressure, and observed that comparing the results of the three evaluators obtain significant difference in all evaluations and that the correlations ranged from a low high.

In the study of Nussbaum and Downes (1998), which evaluated the pressure pain thresholds in the biceps muscle, testing the reliability of repeated measures using the algometer pressure in healthy subjects in three consecutive days, also investigated the reliability of these thresholds recorded between examiners, and the number of steps necessary to obtain a better estimate of these values. They concluded that the measures were reliable in each assessment within the same day, and daily for three consecutive days and also observed that intra-rater assessment was more reliable than the evaluation inter-rater.

Although our study did not assess intra-rater, in other words, having only performed inter-rater reliability, the results of the previous study corroborate those of the present study therefore demonstrate that most of the measurements made, and compared inter-raters showed a correlation that ranged from low to high, and that there was a significant difference between raters, suggesting that the technique used to measure the pain is not able to reproduce reliably evaluations, demonstrating the importance of a single evaluator perform pain assessment using the algometer in the same volunteer throughout the research period.

Besides this study, like other Hou et al. (2002), Ishitani et al. (2005), Ozcan et al. (2004) and Solomon et al. (2003), reported that the same evaluator must perform the same measurements of the dolorimeter to reduce a possible variation inter-examiner.

However, even though a simple technique has some limitations. Most notable are the intra-individual and inter-individual. These changes can be justified by anxiety and even the nervous tension experienced by individuals during the exam. Allied to these contingencies bumped in variability nociceptive intrinsic and temporary physiological of each individual (PIOVESAN et al., 2001).

According Marques (2004), dolorimeter has a diameter for application area somewhat small, formed by a rough tip, so it may cause an uncomfortable feeling when applied pressure, being confused with this feeling painful, which may interfere with results, and anticipate the painful spot. Furthermore, the pain can be interpreted only in the context emotional. In this study, evaluations were performed on three different days, although consecutive, by different evaluators. Thus, it may be that the mood of the individuals who participated in the survey were better or worse in a given day, being more sensitive to pain, for example, and the other day with another evaluator, his mood was better interfering in their perception of pain, could alter the outcome of the research.

However, because many studies using pressure algometer as a way to evaluate pain, and have a shortage literature on the use, it is suggested that further studies are conducted, so that searches are more reliable. Besides contributing to the health professionals in relation to therapeutic resources that can be used to assess an individual.

CONCLUSION

We conclude that there was a significant difference between the evaluators, but the reliability index ranged from low to high. Thus, evaluation of pain threshold for dolorimeter of pressure is more reliable when applied by a single evaluator.

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Endereço: Rua Vicente Machado, nº 2196
Bairro: Country
e-mail: danny.si@hotmail.com

INTER-RATER RELIABILITY FOR DETERMINING THE THRESHOLD OF PAIN BY DOLORMETER OF PRESSURE

ABSTRACT

Pain is a subjective manifestation, may be a sign of the body that something is wrong. Different instruments have been used to evaluate it, and sensitive and reliable measures are needed for proper diagnosis and treatment. One of the tools used is dolorimeter pressure. The objective of this study was to evaluate the inter-rater reliability for determining the threshold of pain by pressure algometer. The sample group consisted of 20 healthy volunteers, young adults of both genders, students of the institution, the University state of Paraná (UNIOESTE), campus Cascavel. For the evaluation of pressure sore was used pressure algometer (Kratos ®), and an apparatus capable of producing up to 50 Kgf, being administered by different raters for three consecutive days. Regarding the results, compared inter-rater significant difference in all evaluations, but the correlations ranged from low to high power. It is concluded that the evaluation of the pain threshold algometer pressure is most reliable when applied by a single evaluator.

KEY WORDS: Pain Measurement, Pain Threshold, Pain.

FIABILITÉ INTER-ÉVALUATEURS POUR DÉTERMINER LE SEUIL DE LA DOULEUR PAR DOLORMETER PRESSION

RÉSUMÉ

La douleur est une manifestation subjective, peut-être un signe du corps que quelque chose ne va pas. Différents instruments ont été utilisés pour l'évaluer, et des mesures sensibles et fiables sont nécessaires pour le diagnostic et le traitement appropriés. L'un des outils utilisés est la pression dolorimètre. L'objectif de cette étude était d'évaluer la fiabilité inter-évaluateurs pour déterminer le seuil de la douleur par algomètre pression. L'échantillon se composait de 20 volontaires en bonne santé, les jeunes adultes des deux sexes, les étudiants de l'Université d'État de Paraná Ouest (UNIOESTE), campus Cascavel. Pour l'évaluation des escarre a été utilisé algomètre pression (Kratos ®), un dispositif étant capable de produire jusqu'à 50 Kgf, administré par des évaluateurs différents pendant trois jours consécutifs. En ce qui concerne les résultats, par rapport inter-évaluateurs de différence significative dans toutes les évaluations, mais les corrélations variait de faible à haute puissance. Il est conclu que l'évaluation de la pression algomètre douleur seuil est plus fiable lorsqu'il est appliqué par un seul évaluateur.

MOTS CLÉS: Mesure de la douleur: Le seuil de douleur; Douleur.

INTERAMERICANO DE CALIFICADORES FIABILIDAD PARA DETERMINAR EL UMBRAL DE DOLOR POR DOLORMETER PRESIÓN

RESUMEN

El dolor es una manifestación subjetiva, puede ser una señal del cuerpo que algo está mal. Los diferentes instrumentos se han utilizado para evaluar y medidas sensibles y fiables son necesarios para el diagnóstico y tratamiento adecuados. Una de las herramientas utilizadas es la presión dolorimeter. El objetivo de este estudio fue evaluar la confiabilidad entre evaluadores para determinar el umbral de dolor por algómetro presión. La muestra consistió en 20 voluntarios sanos, los adultos jóvenes de ambos sexos, estudiantes de la Universidad Estatal del Oeste de Paraná (UNIOESTE), campus Cascavel. Para la evaluación de la úlcera por presión se utilizó algómetro de presión (Kratos ®), un dispositivo que es capaz de producir hasta 50 Kgf, siendo administrado por diferentes calificadores durante tres días consecutivos. Respecto a los resultados, en comparación entre los calificadores diferencia significativa en todas las evaluaciones, pero las correlaciones fueron entre bajos y de alta potencia. Se concluye que la evaluación de la presión umbral de dolor algómetro es más fiable cuando se aplica por un solo evaluador.

PALABRAS CLAVE: Dimensión del dolor; Umbral del Dolor; dolor

CONFIABILIDADE INTER-AVALIADOR PARA DETERMINAÇÃO DO LIMIAR DE DOR PELO DOLORÍMETRO DE PRESSÃO

RESUMO

A dor é uma manifestação subjetiva, podendo ser um sinal do organismo de que algo está errado. Diferentes instrumentos têm sido usados para avaliá-la, e medidas sensíveis e confiáveis são necessárias para diagnóstico e terapêutica adequada. Um dos instrumentos utilizado é o dolorímetro de pressão. Assim, o objetivo deste estudo foi avaliar a confiabilidade inter-avaliador para determinação do limiar de dor pelo dolorímetro de pressão. O grupo amostral foi composto por 20 voluntários saudáveis, adultos jovens de ambos os gêneros, alunos da Universidade Estadual do Oeste do Paraná (UNIOESTE), campus Cascavel. Para a avaliação da dor à pressão foi utilizado o dolorímetro de pressão (Kratos®), sendo um aparelho com capacidade de produzir até 50 Kgf, sendo aplicado por diferentes avaliadores durante três dias consecutivos. Em relação aos resultados, na comparação inter-avaliadores observamos diferença significativa em todas as avaliações, porém o índice de correlação variou de baixa a alta força. Conclui-se que a avaliação do limiar de dor pelo dolorímetro de pressão é mais fidedigna quando aplicado por um único avaliador.

PALAVRAS CHAVES: Medição da dor; Limiar da dor; Dor.