7 - ASSESSMENT OF PAIN AND FUNCTION IN PATIENTS WITH CHRONIC LOW BACK PAIN SUBJECT THE ELECTROSTIMULATION WITH BERNARD'S DIADYNAMIC CURRENT ASSOCIATED OR NOT THE IONTOPHORESIS.

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INTRODUCTION

Low back pain is one of the most common musculoskeletal changes in industrialized societies, affecting 70% to 80% of the adult population at some point in life, with predilection for young adults, being economically active, one of the most common reasons for disability retirement total or partial (ANDRADE, Araujo, Vilar, 2005).

This pain presents as causes conditions such as: congenital, degenerative, inflammatory, infectious, and mechanical-postural tumor. The mechanical-postural back pain, also known as nonspecific low back pain, is, however, much of the localized pains column referred to by the population. It usually occurs an imbalance between functional load, which would be the effort required to work and activities of daily living and functional capacity, which is the potential for implementing these activities (ANDRADE, Araujo, Vilar, 2005).

Low Back Pain can be acute (less than 6 weeks of development), subacute (6-12 weeks of development) or chronic (12 or more weeks of development) (GONZALEZ-HIDALGO, 2006).

The rehabilitation of the patient and risk factors of spinal disorders, physiotherapy and drug therapy are the mainstays for the treatment of back pain. In this context, various physical therapy modalities may be useful to diminish the symptoms of these patients, and among them stands out electrotherapy (HELFENSTEIN JUNIOR; GOLDENFUM; SIENA, 2010).

Iontophoresis is a noninvasive technique that uses electrical current to provide a controlled manner to increase the transfer of a variety of transdermal drugs. The pioneer in the description of the method was Pivati, in 1747, however, its use in the administration of drugs became popular in the early twentieth century, by Le Duc, which showed that ions were transferred to the skin by the action of continuous electrical current and proved that such transfer was oriented pole, ie, dependent on the polarity of the ion and the electrode was placed under which (OLIVEIRA; GUARATINI; CASTRO, 2005).

The solution of sodium salicylate is described in the literature for their specific effects esclerolíticos, anti-inflammatory and decongestant, and analgesic properties of the salicylic radical. For this reason, iontophoretic has been used in the treatment of muscle and joint pain in acute and chronic conditions (ROSSONI; NAKAYAMA; BERTOLINI, 2009).

According Guirro and Guirro (2002), the diadynamic Bernard (CBD) have been developed in France in mid-1950 by Pierre Bernard. Current are semi-sinusoidal pulse and low frequency. There are six varieties of these currents: 1) single-phase current wave, 2) current diphasic, 3) current short periods, 4) current long periods, 5) syncopated rhythm, 6) single phase modulated (LEON; SOLANA, Garcia, 1998) . They can even double the rate of tissue resorption due to its ability to cause hyperemia (CARVALHO, 2005).

Despite the present CBD galvanic effects essential for iontophoresis, there are no studies demonstrating the effectiveness of these currents for this purpose. Thus, the objective of this study was to analyze the effects on pain and function, of Bernard diadynamic associated or not with sodium salicylate iontophoresis 3% in patients with chronic low back pain.

MATERIALS AND METHODS

The present study was characterized as a randomized clinical trial, exploratory cross-sectional sample group comprised 21 patients aged 35 to 65 years, of both sexes, sedentary, with a clinical diagnosis of chronic low back pain, specific and nonspecific, which were referred to Rehabilitation Physical Therapy Clinic at the State University of West Paraná (unions), Campus of Cascavel.

First, the patients underwent a screening, they were evaluated for inclusion and exclusion criteria, and the inclusion: report of persistent low back pain for more than three months, clinical diagnosis of specific or nonspecific low back pain, sedentary individuals, subjects whose medical and physical characteristics consistent with the categories 1 and 2 of the evaluation and treatment guidelines proposed by the American College of Physicians and the American Pain Society (CHOU et al., 2007). The non-inclusion and exclusion criteria were: low back pain whose clinical history suggested classification in category 3, the evaluation and treatment guidelines proposed by the American College of Physicians and the American Pain Society, history of acute or subacute low back pain, more than a lack treatment and / or evaluation; musculoskeletal injuries in other joints and rheumatic diseases diagnosed clinically, use of drugs affecting the central nervous system or the balance, such as sedatives or tranquilizers, patients with pulmonary diseases and other neurological or that could compromise cognition , performance of any other method of physical therapy concomitantly, patients with a history of back surgery, pregnancy.

Later, it was explained to each volunteer on the intents and procedures of the research, which also signed a consent form approved by the ethics committee in research under case number 418/2009.

For treatment, patients were randomly divided into two groups: one group (G1), composed of 10 patients (mean 54.4 years) received a single application of diadynamic Bernard (CBD) and the other group (G2), composed of 11 patients (mean 48.7 years), received the CBD associated with iontophoresis (GI) using sodium salicylate 3%. To perform the therapy, the patient was positioned prone on a stretcher, with bare lower back, which was cleaned with 70% alcohol, applied with cotton. The electrodes were positioned in parallel, taped, and the negative electrode placed at the site of greatest pain and positive above this, the group of iontophoresis, sodium salicylate was added to 3% to the negative electrode, while the positive electrode was added water. The device used was the Standard Diadinâmicas KW ® brand, and the currents used were: DF (3 minutes), CP (3 minutes) and LP (4 minutes), totaling 10 minutes by treatment, which was held for five consecutive days. The intensities were established according to the sensitivity of the patient should be referred to by him as a sensation noticeable but not uncomfortable.

MOMENTS OF ASSESSMENT

The volunteers participated in the survey for 3 weeks, in the first week carried out the screening and were subjected to the first evaluation (AV1). After they remained seven days without any form of treatment (control period), then passed through the second evaluation (AV2), preceding the beginning of therapy. At the end of the fifth therapy, ie, the end of the second week, were

re-evaluated (AV3), which was repeated in two follow-up periods (AV4 and AV5) after 3 and 8 days, respectively, from the end of therapy.

For pain assessment, we used the Visual Analog Scale of Pain (VAS) (Serrano, 2002), which consists of a straight line of 10 cm, not numbered, indicating at one end marked "no pain", and another, "worst pain imaginable." On this scale, the patient was questioned the level of intensity of pain at the time of evaluation. In addition to the times listed above, this assessment was also performed before and after each therapy session, to complete the cycle of five consecutive sessions.

In addition to this, was used to assess pain a dolorimeter of pressure (Chesterton et al., 2003) (Kratos ®) applied at the point of greatest pain for the individual. This type of evaluation occurred at the same moments of evaluation evade. To assess function, we used the Oswestry Disability Index Modified (IIOM) - version 2.0 (Fairbank; PYSENT, 2000), which is a questionnaire composed of 10 objective questions where each question has six response options, reflecting the impact low back pain in daily activities and social individual.

Another form of evaluation was the McGill questionnaire (PEPPER, TEIXEIRA, 1997), since it is considered one of the best tools to assess the dimensions of sensory-discriminative, affective-motivational and cognitive-evaluative pain. The evaluation of the McGill questionnaire and Oswestry took place over all assessments, from AV1 to AV5.

STATISTICAL ANALYSIS

Data were expressed as mean and standard deviation, and the intragroup analysis, to VAS daily dolorimeter of pressure, Oswestry and McGill questionnaire, we used repeated measures ANOVA with Tukey post-test, and analyze a group with others, in different stages of evaluation, we used unpaired t test. To perform the analysis of daily VAS scales we used paired t-test and unpaired for intra-and intergroup comparisons, respectively, in all cases was used as a significance level of 5%.

RESULTS

The results showed that the evaluation of pain VAS scales held by the five evaluations (Table 1) and also in daily evaluations (Table 2), there was a significant difference, ie, $p < 0.05$ in both groups, so his pain improved in both patients who were treated with CBD and those who were treated with CBD associated with iontophoresis. However, the pressure dolorimeter no significant difference in either group (Table 1 and 2), only difference for G2 indicating decreased pain threshold.

In the evaluation function by Oswestry questionnaire, there was no significant difference in the group treated with CBD alone, however, treatment with CDB associated with iontophoresis, there was a significant difference, with improved function in patients treated with iontophoresis (Table 1). However, no significant difference in the groups with the use of the CBD with or without iontophoresis, in relation to the McGill pain questionnaire (Table 1).

Table 1. Results VAS, the Dolormeter of Pressure and the Oswestry questionnaire and McGill, the five assessments.

		Groups	EV 1	EV 2	EV 3	EV 4	EV 5
VAS		G1	5,71±2,92	4,97±3,99	3,09±2,93*	2,71±2,85*	3,03±3,14*
		G2	4,48±2,33	3,86±2,16	3,32±2,47	2,87±1,75	2,29±1,85*
Dolormeter Pressure		G1	5645±2316	5687±2171	5576±1684	5926±2282	6261±2152
		G2	8351±2226	8105±2632	7070±2012	7170±1211	6663±1323
Oswestry		G1	35,09±16,70	35,14±17,98	34,09±16,57	30,49±13,72	32,18±15,91
		G2	36,42±12,04	32,29±12,07	28,96±13,63*	29,59±13,44*	27,96±14,27*
McGill	Descriptor	G1	18,36±2,87	17,73±2,53	18,09±3,96	17,36±4,13	17,91±3,96
		G2	17,90±2,56	18,60±2,07	18,50±2,60	19,00±1,70	18,88±2,10
	Index	G1	39,73±9,71	41,45±13,65	37,09±14,96	36,45±18,53	35,09±15,07
		G2	**37,60±9,69**	**36,50±10,84**	**37,50±12,28**	**34,50±10,01**	**34,25±8,45**

*Significant difference compared to AV1. Scale in centimeters to evade and in grams for dolorimeter pressure.

Table 2. Results of daily evaluations, performed before and after treatment, by VAS and Dolormeter of Pressure.

	Groups	Before	After
VAS	G1	2,87	2,01*
	G2	3,29	1,83*
Dolormeter Pressure	G1	5618	5886
	G2	7442	7025*

*Significant difference when comparing with the time before treatment.

Comparisons between the groups, to evade (start-end, daily), Oswestry and McGill, no significant differences ($p > 0.05$). Just for the dolorimeter pressure difference was observed in the AV1 ($p = 0.0135$) and AV2 ($p = 0.0326$) and also in the daily treatment comparisons ($p = 0.0001$ and $p = 0.0012$), showing that pressure values for G2 were supported in a lower threshold in the course of evaluations.

DISCUSSION

The pain, of course, is the symptom that worries the patients. According to World Health Organization (WHO), she is one of the most common reasons for the individual to seek help. Besides the discomfort and suffering caused by pain, there is also the influence of loss of job performance, which has a considerable impact on the quality of life (OLIVEIRA, 2002). Thus, identifying ways that promote analgesia, even temporarily, can be very useful as an adjunct therapy, and electrotherapy as one of possible ways to alleviate this pain.

Thus, this study aimed to analyze the effects of diadynamic Bernard, with or without sodium salicylate iontophoresis on individuals with chronic back pain. The evaluation sought to achieve both subjective aspects of treatment (escapees), as ways of trying to produce objectivity (dolorimeter pressure and McGill Pain Questionnaire) in a highly subjective symptom. In addition, we sought to evaluate the functionality that also interfered with the pain. The results were contradictory, since there was a reduction of pain, both appointed by EVAD scales and daily start and end, for the two treatment groups, indicating that during the control period, no change of pain, there was only reduced intensity after treatment there. However, for the dolorimeter pressure

there was no such benefits even when compared between groups, there was a worsening in the group treated with iontophoresis, with decreased pain threshold.

To improve function, according to the Oswestry questionnaire, occurred with the group treated with CBD associated with iontophoresis, since for this group, again we observed no effect during the control period, but improved from the moment treatment was carried out. However, when patients were assessed by the McGill questionnaire, which is considered a universal instrument, able to standardize the language of pain, there was no significant difference, indicating the absence of therapeutic effects. The fact that it happened, it may be due to people who answered the questionnaire were of low education or due to difficulties in interpretation and concentration. However, the study Teixera and Pepper (1997), it was found that the McGill pain questionnaire was adequate, as was observed low level of difficulty to complete the inventory and was considered useful to explain the pain.

For dolorimeter pressure, there was no difference between the five evaluations, however, the comparison between the two groups were worse for the group treated with iontophoresis, which can be explained by the small number of participants, leading to an analysis of the results not satisfactory in relation to three weeks. However, it should also be taken into consideration, that although the rate of Oswestry have shown improvement for the group of iontophoresis and not for diadinâmicas pure, the EVAD scales showed the diadinâmicas improvements already in the 3rd assessment, a fact that occurred to the G2 only the 5th assessment.

The literature is poor regarding the use of diadinâmicas and sodium salicylate iontophoresis in patients with chronic low back pain, compared with the study of Carvalho et al. (2005), found that both techniques were effective for the treatment of low back pain, and that the isolated CBD proved to be superior for this purpose. In this study the two forms were effective, and to evade the diadinâmicas iontophoresis had no earlier than the results observed for iontophoresis, however, the daily progress, in proportion to iontophoresis performance was more pronounced, although there are significant differences. However, it should be noted that Carvalho et al. (2005) used for research and hydrocortisone 1% were current forms of DF and LP, unlike the present study, using sodium salicylate 3%, the current DF, CP, LP and for the assessment functional Disability index questionnaire Modified Oswestry.

However, there is little research literature about the diadynamic Bernard, this way, if this study makes a comparison with the study by Rossoni, Nakayama and Bertolini (2009), in which he noted that the CBD, associated or not with iontophoresis with sodium salicylate 3% were effective in reducing pain in patients with temporomandibular dysfunction, and used the following instruments for data collection: McGill pain Questionnaire and evade. Thus, there is some similarity with the results of this study, for here the CBD associated or not with sodium salicylate iontophoresis 3% were effective to reduce pain according to Evade and also to improve function of patients according to Oswestry questionnaire, but this was only effective with the CBD associated with iontophoresis.

However, due to the scarce literature on CBD associated or not with iontophoresis and the instruments used, it is suggested that further studies be conducted in this area, bringing an approximation of the available machines in the context of teaching and learning. Besides contributing to the health professionals in relation to therapeutic resources to employ. Note also how limiting the lack of a control group, and blinded evaluators, which could improve the quality of research, which are also suggestions for future studies.

CONCLUSION

We conclude this work in accordance with the assessment of pain, the Evade, it was shown that by means of two techniques of treatment, ie, the CBD with or without iontophoresis, was an improvement in pain. In relation to the evaluation function, the Oswestry questionnaire, had an improved function of these patients through the use of CBD associated with iontophoresis. However, evaluation of dolorimeter pressure and the McGill Pain Questionnaire, neither form of treatment was effective in reducing pain.

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ABSTRACT

Low back pain is caused by conditions such as: congenital, degenerative, inflammatory, infectious, tumor and mechanical postural. The physical therapy modalities may be useful in this situation, highlighting the electrotherapy and the use of the same seeking of iontophoresis application. Thus, the aim of this study was to analyze the effects on pain and function, of Bernard´s Diadynamic current associated or not the iontophoresis with sodium salicylate 3% in patients with chronic low back pain. The sample comprised 21 patients who were randomly divided into two groups: one received the application Bernard's Diadynamic Current, composed of 10 patients (G1) and another was associated with iontophoresis, composed of 11 patients (G2). It was used as an instrument of evaluation, the Visual Analog Scale of Pain (VAS), the Dolorimeter of Pressure, and the Oswestry questionnaire and McGill. Comparing the results with the use of VAS, the treatment was effective in two ways used, as compared to the Oswestry questionnaire, the treatment was beneficial only with the Bernard's Diadynamic Current associated with iontophoresis. However, the use of the Dolorimeter of Pressure as the McGill questionnaire, there was no significant difference between the two forms of treatment. It follows, then, that the Bernard´s Diadynamic current associated with iontophoresis, are effective in improving function in patients with low back pain, this being assessed by the Oswestry questionnaire. For the treatment of pain, assessed by VAS, both Bernard´s Diadynamic current isolated as the Bernard´s Diadynamic current associated with iontophoresis are effective in patients with chronic low back pain.

KEY WORDS: Physical Therapy Modalities, low back pain, iontophoresis.

ÉVALUATION DE LA DOULEUR ET FONCTION DANS PATIENTS SOUFFRANT DE DOULEURS LOMBAIRES CHRONIQUES AVEC LE SUJET ÉLECTROSTIMULATION DIADYNAMIQUES BERNARD, AVEC OU SANS L'IONOPHORÈSE.

RÉSUMÉ

La lombalgie est causée par des conditions telles que: congénitale, dégénérative, tumeur inflammatoire, infectieuse, et mécanique-posturale. Les modalités de thérapie physique peut être utile pour un tel cadre, notamment l'électrothérapie et l'utilisation du même ordre d'application iontophorétique. Ainsi, l'objectif de cette étude était d'analyser les effets sur la douleur et la fonction, de Bernard diadynamiques associée ou non à iontophorèse au salicylate de sodium à 3% chez les patients avec des douleurs lombaires chroniques. L'échantillon comprenait 21 patients qui ont été répartis aléatoirement en deux groupes: l'un a reçu la demande diadynamiques Bernard (CDB), composé de 10 patients (G1) et une autre a été associé à l'ionophorèse, comprenant 11 patients (G2) . Il a été utilisé comme un instrument d'évaluation, l'échelle visuelle analogique de la douleur (évadés), la pression Dolormeter, et des questionnaires McGill et Oswestry. En comparant les résultats avec l'utilisation d'esquive, le traitement a été efficace dans les deux moyens utilisés par rapport au questionnaire Oswestry, le traitement a été bénéfique uniquement à la CDB liés à l'ionophorèse. Cependant, l'utilisation de la pression dolorimètre dispositif beaucoup plus que le questionnaire de McGill, il n'y avait pas de différence significative entre les deux formes de traitement. Il s'ensuit donc que la CDB liés à l'ionophorèse, sont efficaces pour améliorer la fonction chez les patients avec des douleurs au bas du dos, ce qui est évalué par le questionnaire d'Oswestry. Pour le traitement de la douleur, évaluée par éluder, tant isolés que la CDB CDB liés à l'ionophorèse sont efficaces chez les patients avec des douleurs lombaires chroniques.

MOTS CLÉS: Méthodes de physiothérapie, douleurs dorsales, l'ionophorèse.

EVALUACIÓN DEL DOLOR Y FUNCIÓN EN PACIENTES CON DOLOR CRÓNICO CON EL TEMA DE ELECTROESTIMULACIÓN DIADINÁMICAS BERNARD, CON O SIN LA IONTOFORESIS.

RESUMEN

El dolor lumbar es causado por condiciones tales como: congénitas, degenerativas, inflamatorias, infecciosas, tumorales y mecánica posturales. Las modalidades de Terapia Física puede ser útil en esta situación, destacando el uso de la electroterapia y el uso del mismo la aplicación de iontoforesis. Por lo tanto, el objetivo de este estudio fue analizar los efectos sobre el dolor y la función, de corrientes diadinámicas Bernard (CDB) asociada o no a la iontoforesis con salicilato de sodio al 3% en pacientes con dolor lumbar crónico. La muestra está compuesta por 21 pacientes que fueron divididos aleatoriamente en dos grupos: uno recibió sólo la corriente diadinámicas Bernard (CDB), compuesta por 10 pacientes (G1) y otro se asoció con la iontoforesis, compuesto por 11 pacientes (G2). Fue utilizado como un instrumento de evaluación, la Escala Analógica Visual del Dolor (EVAD), la Dolorímetro de presión, y el cuestionario de Oswestry y McGill. Al comparar los resultados con el uso de la EVAD, el tratamiento fue efectivo en dos formas que se usan, en comparación con el cuestionario de Oswestry, el tratamiento es beneficioso sólo para el CDB relacionados con la iontoforesis. Sin embargo, con el uso de la dolorímetro de presión, como el uso de cuestionario de McGill, no hubo diferencias significativas entre las dos formas de tratamiento. Se deduce, entonces, que el CDB relacionados con la iontoforesis, son eficaces para mejorar la función en pacientes con dolor lumbar crónico, esta siendo evaluada por el cuestionario de Oswestry. Para el tratamiento del dolor, evaluada por la EVAD, tanto ás CDB aislados como el CDB relacionados con la iontoforesis son eficaces en pacientes con dolor lumbar crónico.

PALABRAS CLAVE: Modalidades de Terapia Física, Dolor de la Región Lumbar , iontoforesis.

AVALIAÇÃO DA DOR E FUNÇÃO EM PACIENTES COM LOMBALGIA CRÔNICA SUBMETIDOS À ELETROESTIMULAÇÃO COM CORRENTE DIADINÂMICA DE BERNARD ASSOCIADA OU NÃO À IONTOFORESE.

RESUMO

A dor lombar tem como causas algumas condições como: congênitas, degenerativas, inflamatórias, infecciosas, tumorais e mecânico-posturais. As modalidades fisioterapêuticas podem ser úteis para tal quadro, destacando-se a eletroterapia e o uso da mesma visando aplicação de iontoforese. Com isso, o objetivo deste estudo foi analisar os efeitos, sobre a dor e função, das correntes Diadinâmicas de Bernard associadas ou não a iontoforese com salicilato de sódio 3% em pacientes com dor lombar crônica. A amostra foi composta por 21 pacientes, os quais foram divididos aleatoriamente em 2 grupos: um recebeu aplicação da Corrente Diadinâmica de Bernard (CDB), composto por 10 pacientes (G1) e outro foi associado à iontoforese, composto por 11 pacientes (G2). Utilizou-se, como instrumento de avaliação, a Escala Visual Analógica de Dor (EVAD), o Dolorímetro de Pressão, e os questionários de Oswestry e Mcgill. Comparando-se os resultados, com a utilização da EVAD, o tratamento foi eficaz nas duas maneiras utilizadas, já em relação ao questionário de Oswestry o tratamento foi benéfico apenas com a CDB associada à iontoforese. Entretanto, na utilização tanto do aparelho dolorímetro de pressão quanto do questionário de McGill, não houve diferença significativa em relação às duas formas de tratamento. Conclui-se, então, que as CDB associadas à iontoforese, são eficazes para melhorar a função dos pacientes com dor lombar, isso sendo avaliado pelo questionário de Oswestry. Já para o tratamento da dor, avaliado pela EVAD, tanto as CDB isoladas como as CDB associadas à iontoforese são eficazes em pacientes com dor lombar crônica.

PALAVRAS-CHAVES: Modalidades de Fisioterapia, dor lombar, iontoforese.