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**ABSTRACT**

**Introduction:** Back pain, in particular, has reached epidemic levels in the population. Back pain may be related to sciatica, which can also be from a herniated disc. A herniated disc occurs when the nucleus of the intervertebral disc migrate your site in the center to the periphery of the disc toward the spinal canal or in the spaces where nerve roots exit, leading to compression of nerve roots, lumbar localized pains occur so with or without irradiation.

**Materials and methods:** we used to search bibliographic databases if the articles indexed in the last ten years (from 1994 to 2010). The data set used for the creation of literature review: LILACS (Latin American and Caribbean Health Sciences Literature), SciELO (Scientific Electronic Library Online) and Biren (Regional Library of Medicine). The terms were analyzed separately and at intersections.

**Results:** techniques for evaluating the overall rating to pain, functional disability, and patient perception of treatment efficacy. How to find, it was observed that joint manipulation brings positive results related to pain.

**Objective:** The objective of this review was to gather, analyze responses and describes the effectiveness of osteopathic techniques in patient with pain in the lumbar region.

**Conclusion:** We conclude that after this study found that osteopathic treatment has a significant importance in the reduction of pain caused by disc protrusion, allowing patients to improve their quality of life. Thus considering the practice of osteopathic techniques effectively.

**Keywords:** Low back pain, back pain, sciatica, low back pain, Osteopathy

**Introduction**

The medical and osteopathic practice is an art or an ability as an use of definitive methods and rules. One of the osteopathic therapy goals is to recover the physiologic movement in areas there are restricted or dysfunctional<sup>23</sup>. The daily habits of posture on work and on free time many times are moderated factors, non aggressive, although persistent, that can lead to a somatic dysfunction an to consequences to health in general<sup>23</sup>.

The Lumbago or lumbar pain (LP) is the second major reason of medical appointments, generating high expenses with treatments and work absence. About 60-85% of population will fell LP at least one time in life, and 6-10% of them will evolve to acute

lumbar pain (ALP) and develop chronic lumbar pain (CLP). A recent research show that from patients that experienced LP for more than 30 days, 40% continue to feel some symptomatology for 1 to 5 years after it.

The prevalence of people with lumbar pain is extremely elevated. The causes of symptoms are several. What justifies the difficulty in etiologic diagnostic. Lumbago are frequently in adult and old ages, and rare in infant and adolescence. The knowledge of vertebral column physiology and anatomy are very important to understand the etiopathogeny of lumbar pain<sup>1</sup>.

Apart from the vertebrae's and muscles the vertebral column depends of the intervertebral discs function to sustain and movement. The load that the lumbar segment supports is related to the alignment of whole column. With aging, lost of articulation mobility, muscular power and atrophy of abdominal muscles can occur, as well as iliopsoas and lumbar paravertebral muscles predominance over anterior-lateral abdomen muscles. This will cause structuring of lumbar column components in hyperlordosis position, leading to a lumbosacral hyperextension<sup>1</sup>.

The painful lumbar syndrome, continue being a public health problem, although the humanity suffer with it from hundred years. The lumbar pain constitutes a big cause of morbidity and disability, losing just for headache on painful disturbs scale that affects the human being. Despite the progress of ergonomics applied to vertebral column e the use of sophisticated methods of diagnosis on 1970, 1980 and 1990 decades, the lumbagos and lombosciatalgia had a 14 times increase over the population growth<sup>2</sup>.

Studies indicate that the symptoms of disc herniation are associated with the mechanic compression factor over the nerve root, made by the intervertebral disc fragment of the herniated intervertebral disc and by the biological and biochemistry activity of the intervertebral disc components that gets in contact with the nervous tissue.

Once established the diagnosis of disc herniation the treatment should be premature. Most part of the disc hernia evolves to healing in 8-12 weeks without any relation with a radiologic improvement<sup>5</sup>.

Pain and lumbar dysfunction treatment involves a multidisciplinary team, including a medical doctor, an osteopath and a psychologist, with a general proposal of control the pain and promote the wellness and return to the functional activities of the patient. The osteopath affords diverse therapeutic resources that can improve and promote the symptomatology relief of pain in these patients. However, recent randomized studies shown greater efficacy of manual therapy<sup>3, 9, 10</sup>. Manual therapy can be divided into high velocity and low amplitude manipulation (HVLAM), also called of *Thrust* and low velocity and high amplitude mobilizations (LVHAM)<sup>3, 11</sup>.

We noted osteopathy, a manual treatment method that consists in an system with it own evaluation and treating method as well as methodology and physiology, which aim a better articular repositioning e reflex muscular through manual and structural techniques<sup>7</sup>. In this way the objective of the literary review propose itself to gather and describe results and information's about concepts, methods, osteopathic treatments of lombosciatalgia from herniated disc, which examines the best combination on the affected patients symptoms.

## **METHODS AND MATERIALS**

To the development of this study was included research papers indexed on twenty-one past years (from 1994 to 2015). Data were used data to constitute the literary review: LILACS (Latino-American and do Caribbean health sciences literature), SCIELO (scientific Electronic Library Online) and BIREME (Regional medicine library), Medline (*Medical Literature, Analysis and Retrieval System Online*), PudMed (U.S. National Library of Medicine). The criteria to articles selection that composed the review was: The studies should present on title

or abstract the key words; lumbar pain. Lumbago, sciatica, osteopathy, disc herniation, individually and crossed.

Was considered only study's in English and Portuguese language, which includes treatments or experimental researches, in addition, the use of bibliographic reference of books of anatomy and osteopathy. The research papers obtained in this electronic research was analyzed in independent mode to select the study's with major scientific evidence, appreciating randomized control clinical trials and non-controlled, based the disc herniation treatment techniques in osteopathy.

## **PAIN**

Through all human history pain is one of the greatest mans worries, constituting the reason of medicine exists. <sup>2</sup> The pain signals are transmitted from the sensitive elements of the different tissues to the superior centers through externalreceptive ways<sup>13</sup>.

All sensations are modulated by central nervous system before it achieves conscious levels. Pain is an abstract term that refers to what people identifies. International Association for the Study of Pain propose a definition: Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (merskey, 1990)<sup>21</sup>.

Inn most cases this sensations are related with nociceptors activation and pain sensation, but the difference in subjective responses reflects the strength, and severity of nociceptors activation as well as individual psychological and emotional responses of a person to that information<sup>14</sup>. The approach of painful event that considers the patient verbal discrimination, aloud an investigation of several pain aspects. The emotional-affective is represented by the emotional and autonomic reactions that pain can causes. The cognitive dimension is the one that translate the person capacity in perceive and evaluate the subjective importance of experience of the pain, compare to previous experiences<sup>20</sup>.

The information from nociceptive afferent nerves and transmitted paragraph spinal cord where subsequently influences the reflex activity or is passed on through specific pathways to higher brain centers. The nociceptive afferents enter the spinal cord through the dorsal root and make synaptic connections with other neurons located dorsal horn of the gray substance of the spinal cord<sup>14</sup>.

## **MANIPULATION ASSOCIATED WITH DIFERENT INTERVENTIONS**

It was found 5 papers that studied the medication and the vertebral manipulation in patients with LP. Hancock *et al.*<sup>23</sup> did a experience with 240 subjects with ALP (6 weeks) randomized in 4 groups: 1) manipulation + medications 2) sham manipulations + medications 3) manipulation+ sham medications; 4) sham manipulation + sham medications. The authors concluded that no combined therapeutic have decreased the patient recovery time and the major part of patients did not accepted the high velocity and low amplitude vertebral manipulation, in this way they have opted for vertebral manipulations.

An similar study with 104 patients was done by Juni, *et al*<sup>27</sup> and showed that high velocity vertebral manipulation was applied in 80% of sessions, but did not decreased the medication consumption of patients with ALP in 2 weeks and 6 moths later. The therapists of both studies were free to choose which technics they would use (*thrust* or mobilization) in each patient according to the clinic of him in the day of session.

Santilli *et al.*<sup>34</sup> worked with 2 subjects group with ALP or with irradiated pain from disc protrusion: One group of soft tissue manipulation and another with sham group. The authors perceived that the manipulated group has decreased the medications consumption to control the pain. The same group had pain relief of local pains and irradiated pain in less days. The pain level of sham group was significantly lower since 30° day.

Padayachy *et al.*<sup>25</sup> analyzed the cortisol behavior in subjects with ALP and observed that lumbar manipulation was effective in decrease the inflammation, reducing the cortisol rates 5 minutes after rest. This can explain the decrease of medications in the ALP population that received vertebral manipulation.

## EVALUATION FORMS

Was observed a great variety of evaluation tools in about the vertebral manipulation in patients with ALP, among which: global perception of improvement<sup>23</sup>, range of motion of lumbar-pelvic articulation, orthopedic tests, cortisol levels<sup>25</sup>, cardiac frequency variability (CFV)<sup>26</sup>

There is a consensus about evaluation tools used in literature to measure the effectiveness of manipulative techniques. In general the most used instruments in studies gathered in our revision was the pain scales and questionnaire about functional incapacity.

The most used tools to quantify the intensity of ALP was the Numeric Pain Rating Scale, NPRS)<sup>19, 24, 27-30</sup> or the Visual Analogic Scale, VAS)<sup>10, 23, 31-34</sup>. Either NPRS as VAS are number scales of 11 points that goes of 0 (no pain) to 10 (major pain).

The debility questionnaire most used was Oswestry (ODI)<sup>19, 24, 28-30</sup>. This instrument have 10 questions with 6 alternatives each. The first questions refers to pain intensity and the 9 others refers to diary life activities. The grade goes from 0 (zero) to 100 (one hundred), zero represents incapacity absence and one hundred serious incapacity<sup>35</sup>.

Another tool to evaluate the functional incapacity that suffers from lumbar pain is the *Rolland Morris Disability Questionnaire* (RMDQ)<sup>23, 27, 32, 33</sup>. This questionnaire in formed of 24 questions of self-responses in form of yes or no. The results can go from 0 to 24, where 0 is a person with no complaints and 24 serious incapacity<sup>36</sup>.



## **OSTEOPATHIC DISFUNCTIONS: HERNIATED DISC**

Traditionally the osteopaths act overall in articular fixation areas and is observed that clinically this areas are asymptomatic while areas with compensatory hyper mobility are those where pain is originated <sup>13</sup>.

This explains why when an articulation is fixed, its physiologic mobility is limited and is indispensable that the adjacent area compensates this lack of mobility by a hyper function reaction<sup>13</sup>. Frequently we think about a nerve pain, that we can not manipulate the hyper function segment, but we can manipulate the adjacent articular fixation that are cause of hyper mobility <sup>13</sup>.

A wright therapeutic approach of an ALP with combined conservative treatment , ergonomic orientation and physical therapy is capable of influence in its evolution, avoiding chronicity. The manipulation must be done by specialized professional and must have a mobilizations and manipulations<sup>5</sup>.

The dysfunction correction interrupts a vicious cycle and aloud a total or partial regression of pathologic process<sup>13</sup>. The therapeutic indication is the same used for lumbago from a herniated disc: in the nerve irritation phase the treatment must be conservator and in compression phase the chirurgic treatment is indicated<sup>15</sup>.

The diverse techniques objectives is to reduces the gamma system discharge, responsible for the intrafusal chronic contraction, with the objective of restore the articular mobility<sup>13</sup>. The functional techniques: Hoover, Johnston, Jones and Sutherland. In this techniques is important to maintain the segment slowly and passively in neutral position in the end of treatment to cease the gamma hyper activity of neural-muscular fuse <sup>13</sup>.

Soft tissues techniques: The rhythmic and forced muscle stretching is transmitted to neural-muscular fuse, the nervous system is obligated, as a protection to decrease the gamma

activity<sup>13</sup>. Muscle energy techniques: We obtain identical results using the antagonist muscles isometric contraction and by the reciprocal inhibition of sherington<sup>13</sup>.

Thrust technique: High velocity thrust(HVT), combined techniques. The thrust stretches the articular capsules (Ruffini corpuscles) and mono-articular muscles (golgi tendinous corpuscles) making an afferent reflex to the spinal medulla that in response inhibit the alpha and gamma motor neurons<sup>13</sup>.

After the manipulation occurs an massive stimulation of nervous coarse fibers, and as the articular facets are separated the patient feel less pain and a better mobility<sup>13</sup>.

### **MANIPULATION RESULTS IN SCIATICA BY DISC HERNIATION**

The referred pains have best results to treatments with manipulation than nervous compression syndrome<sup>13</sup>. The local lumbar pains and sciatica have a better result than distal sciatica to manipulation<sup>13</sup>. The surgery or neurologic deficit is not absolutely contraindications to osteopathic manipulations<sup>13</sup>.

In eventual relation of herniated disc reduction with vertebral manipulation the results are not significant, although some positive points. The action against strength seems to be contrarious, more constant<sup>13</sup>.

An osteopath must be capable of use functional techniques, as strain/conter-strain, muscle energy or thrust<sup>13</sup>. The technique is just an instrument, is not the fact of use osteopathic techniques that makes an osteopath, is his concepts, fundamentals and osteopathic diagnosis<sup>13</sup>.

There is no point in treat the lesion element position, the important is to restore the articular function and give comfort to patient <sup>13</sup>. The most important moment is diagnosis is maybe the observations of the patient with intent of detect dysfunctions: the body shows what is bothering it if the osteopath looks with attention.

In fact is rare to found objective imbalances on radiography and while it is not corrected by the tensions of Dura mater and internal ear, it will not let to correct the pelvis dysfunctions<sup>13</sup>.

## CONCLUSION

Was concluded after this study that is possible verify the precedence of lumbar pain prevenient of herniated disc. That the osteopathic treatment have a significant role in decrease of pain caused by herniated disc, this aloud the patient improvement of life quality. In this way the choose of treatment depends of a sensate evaluation of each patient and the osteopathic techniques can annul the surgical need, that must be done when is no other option. Yet is observed the absences of globalized studies and few scientific data about osteopathy in lumbar pains.

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