

The Impact Of Non-Steroidal Anti-Inflammatories Therapy Applied To Degenerative Diseases Of The Lumbar Spine

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ABSTRACT The lumbar pain caused by degenerative diseases is an extremely common cause of morbidity and incapacity, that determines the patient to address to qualified medical staff. Our study is meant to perform a quantifiable evaluation of lumbo-sacral muscle ligament syndromes and a recuperating programme that consists of stages as well; moreover, the efficiency of this treatment programme is proved, as it prevents the installation of recidives and/or complications, that appear on a frequent basis and determine functional implications that are often important. The study has integrated the patients into a sustained physical programme, in stages, in 3 phases, after 1 month and 306 months respectively, by applying anti-inflammatory medicines +/- decontracturant, sustained thermo-kineto-massoterapic. The obtained results underline the ascending and remanent improvement of clinical parameters, from one stage to another, until the third phase of the treatment takes place, to partially complete functional recuperation of diseases (over 90% as opposed to the initial stage). Therefore we can say that, in the case of patients that present lumbar pain, nonsteroidal anti-inflammatory medicines can lower the severity of the pain, and in the case of patients who present difficulty in turning back in their activity, the clinicians should address personal and psychosocial occupational barriers. Moreover, multidisciplinary programmes may facilitate a shorter incapacity period, at the same time with the lowering of the pain and the improvement of functional performances.

KEY WORDS degenerative diseases, lumbar pain, non-steroidal anti-inflammatories

Introduction

The degenerative process at the level of the spine represents a physiological stage of growing old, the pains at the level of the neck or back pains are the most common problems expressed by the patients.

This may start at any moment at the level of spine articulations, and in time, it may provoke secondary modifications in the case of other articulations too. For example, an intervertebral disk may be affected in the first place. The disk becomes narrower, the normal circulation of this segment is modified as in the case of adjacent articulations ("osteoarthritis" or "common degenerative diseases") are affected by abnormal pressures and forces, that leads to the apparition of degenerative arthritis.

The symptoms caused by degenerative diseases of the spine are variable according to the specific pathology of every patient. The pain, localized at the back or at the neck , at the feet or arms, is a common observation. Moreover, the neurologic symptoms produced when the compression of spine nervs takes place or even the spinal cord itseld may be noticed. This may usually provoke sensory symptoms (such as numbness, tingling, pain, etc.), as well as motion symptoms (weakness or paralysis, muscular weakness, abnormal reflexes etc.). Again, every patient and every

pathology is different. Generally, degenerative lesions that affect the lumbar spine will lead to the apparition of lumbar pains and at the level of the foot, while cervical spine lesions, will lead to the apparition of symptomatology at the level of the neck and arm. The confusing problem, for the patient and for the doctor has been represented by the discovery of the causes, of potential pain sources, taking into consideration the fact that the pain may derive from bones, articulations, ligaments, muscles, nervs and intervertebral disks, as well as from paravertebral tissues.

The painful limitation of mobility, is actually, the quantifiable clinical-functional expression of the pain, under all its aspects, and of the reflex paravertebral muscular contraction, that will be analysed further. The conclusion over the evolution of cardinal-symptom of these syndroms, the lumbosacral pain, is that this, and through it, the entire derived clinical picture, are efficiently monitored, by anti-inflammatory treatment of necessity sustained by kinetotherapy.

Material and method

During a first stage of our research, we have established the study group by selecting the cases that presented a clinical diagnosis of low back pain accompanied or not by the radiculopathy by

lumbar disk hernia or by other degenerative clinical entities. From the total of 649 patients selected from the registers of Orthopaedic-Traumatology cabinets, and of Medical Recuperation from Emergency County Hospital of Craiova with this diagnosis, during January 2004 – September 2007, 409 have fulfilled the criteria to be included in the study. The 409 cases have been framed as it follows. :

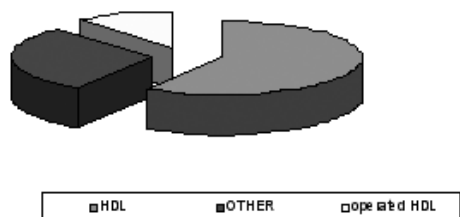


Fig. No. 1 - Classification of the cases presented by the studied group

- 241 with lower back pain by disk hernia with or without neurological affectation;
- 120 with lower back pain by other degenerative clinical entities ;
- 48 have suffered a surgery for the abolition of lumbar disk hernia.

All patients that have been included in this research have benefited from the investigation with magnetic resonance T1 and T2 that has confirmed the clinical diagnosis and has established the level of the lesion.

Inclusion criteria:

- Lumbar pain with or without radiculopathy of disk etiology;
- Lumbar pain with or without radiculopathy following laminectomy;
- Age over 18;
- The possibility to evaluate the patient at least twice a year, for a year;
- The agreement of the patient to be investigated by using magnetic resonance
- No incompatibility background with . IRM: (pacemaker, claustrofobia);
- The data collection has been made according to the principles of medical ethics

The selected patients have been examined and investigated from a paraclinical-clinical point of view in order to establish a sure diagnosis.

Tab. No. 1 – Cases classification according to sex

Sex	Percentage
Women	52.3%
Men	47.7%

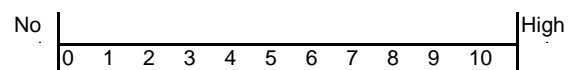
Tab. No. 2 – Cases classification according to origin background

Environment	Percentage
Urban	56.2%
Rural	43.8%

Pain quantification methods

a. The Visual Scale and The Graphic Scale

The visual scale is represented by a line, usually 100 mm long, with heads that are considered to be extreme („no pain” and „ high pain”); the rest of the line is empty. The patient is asked to make a sign on the line to indicate the intensity of his pain (at the present moment, over the last week, or over the last two weeks, etc). The distance between origin and sign is measured in order to obtain the score of the patient.



b. The Verbal Scale

The verbal scale is represented by a list of adjectives, that describe different levels of pain intensity. A verbal scale for pain includes adjectives that reflect the extremes (eg. „no pain” and „high pain”) as well as sufficient adjectives to capture gradations between extreme points. The verbal scales are most frequently 5 or 5 points scales. The patient is asked to select into a questionnaire or to verbally declare the adjective that best describes the level of pain. Behaviour scales, the different levels of pain are described by sentences, including behaviour parameters.

c. The Ssubscale of the Body Pain:

How much physical pain have you been feeling during the last 4 weeks? (please tick off an item):

- None
- Very weak
- Weak
- Moderate
- High
- Very high

d. McGill Pain Questionnaires :

How strong is the pain? People agree that the following 5 words represent different intensities of pain:

- Weak
- Uncomfortable
- Stressful
- Horrible
- Terrible

Which word d best describes the pain right now ? (When is it the most intense ? When is it the weakest ?

e. The Behaviour Scale

Please select the sentence that best describes your pain level (today, over the last week, over the last 2 weeks, etc.):

- No pain
- A pain at the present moment, that can be easily ignored
- A pain at the present moment, that cannot be ignored, that interferes with daily activities
- A pain at the present moment, that cannot be ignored, that interferes with concentration
- A pain at the present moment, that cannot be ignored, that interferes with all requests, except for the care for basic necessities, such as going to the bathroom or eating
- A pain at the present moment, that cannot be ignored, the necessary rest in bed

Source: Nat Elin Pract Rheumatol@2007 Nature Publishing Group

f. Numerical Scale

The numerical scale refers to questions addressed to patients in order for them to demonstrate their pain intensity by selecting a number on a scale from 0 to 10 (scale 0-11), 0-20 (scale 0-21) or 0-100 (scale 0-101) by filling in a questionnaire or a verbal declaration of a numerical level. For eg:

„Please indicate on the line below a number comprised between 0 and 100 that best describes the pain. Zero (0) means „no pain” and one hundred (100) means „very high pain”. Please write a single number. A box or an empty line guarantees an appropriate number.

A small variation of the numerical scale is a scale box, where every number (eg. 0 – 10) is written into a box and the patients are asked:

„If zero (0) means „no pain” and ten (10) means „very high pain” on a 0 to 10 scale, which is your pain level? Tick off with an „x” that number”.

0	1	2	3	4	5	6	7	8	9	10
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Source: Nat Elin Pract Rheumatol@2007 Nature Publishing Group

Results and discussions

The obtained data have been statistically processed with the help of the Pentium 233 Mhz computer and with the help of licensed softwares from the Pharmacology of UMF Craiova. We have described the graphical representation of distribution frequency of different types of variables and we have calculated the statistical indicators of the following parameters, such as the

average and the average squared deviation, the dispersal and the variation index.

The average and squared average deviation, represented as m_x respectively A^2 , are calculated according to the following formulas:

The dispersal in a statistic indicator of data dissemination into a statistical series. Basically, a

$$m_x = \frac{\sum x}{n} \quad A^2 = (x - m_x)^2$$

$$s = \sqrt{D} = \frac{\sqrt{\sum (x - m_x)^2}}{\sqrt{n-1}} \quad coef. var. = \frac{s}{m_x}$$

high value of dispersal, Indicates a high degree of data dissemination. It is calculated as it follows:

$$D = \frac{\sum (x - m_x)^2}{n - 1}$$

In order to better exemplify data dissemination other measures are defined, as standard deviation and the variation index. Basically, a statistical series is more disseminated if the standard deviation is higher, respectively if the variation index is higher; in the case of 2 statistical series, with approximately equal averages, the more disseminated is the one that presents a higher standard deviation, respectively with the higher variation index.

Most episodes with lower back pain (LBP) are easily remitted: after a week, less than half of the patients present pain and after eight weeks, their proportion is lower, under 10%. Unfortunately, the recidive rate is 75% during the last 12 months. LBP is apparently equally divided between men and women. In the case of men, the most frequent cases are represented by heavy objects lifting efforts by nonphysiological spine movement, and not hips and knee movement (the most dangerous movement being the one of coming back from flexion and rotation of the spine); sometimes, LBP appears as a result of falling, local traumas, in the case of the persons who spend their time sitting on a chair (drivers, office workers) or in the case of the persons whose work implies vibrating machinery. Women are more predisposed to LBP during pregnancy period (most frequently the third pregnancy semester), without being influenced by the height of the mother, her weight, or sports habits of the mother. Moreover, once the osteoporosis develops, as well as the apparition of tossed vertebrae, LBP is again frequent. The most frequent areas affected are L4-L5 and L5-S1, these levels being responsible for 80-90% form the total movement amplitude of lumbar flexion-extension.



Fig. No. 4 – Graphic representation of studied cases

For every studied case, we have written on paper the age, the origin background, the diagnosis, symptomatology elements, applied treatments, details that have been synthesized into a table below, on the basis of which we have managed to attain statistical studies over the effect of the treatment with non-steroidal anti-inflammatories in degenerative diseases of lumbar spine.

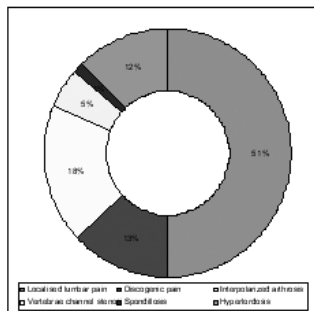


Fig.Nr.5– Cases with localized lumbar pain

Tab. No. 3 – Cases with localized lumbar pain

Localized lumbar pain	Discogenic Pain	Intervertebral Arthrosis	Vertebral canal stenosis	Spondilolistesis	Hyperlordosis
361	95	130	38	10	88

By analysing the registered cases of the patients with localized lumbar pain (361 cases) we have noticed the predominance of strictly degenerative lesions, interapophysary arthrosis (130 cases, representing 36%) to the detriment of rare entities such as spondilolistesis – 10 cases, representing 2%. There is a tendency regarding the growth of presentations for generated neurological phenomena generated by the vertebrae canal stenosis – 38 cases, 10%. Obviously, as it was expected, the lumbar disk hernia patients are well presented– 95 cases, 26%.

Although the number of patients who have undergone surgery for lumbar disk hernia has been small, still the statistics are significant, offering us the opportunity to make very important clinical, paraclinical and prognosis appreciations.

There are predominant degenerative lesions of the intervertebral disk L3-L4, L4-L5, L5-S1. Moreover, we have focused on the association of

various lumbar degenerative diseases in the case of the same patient.

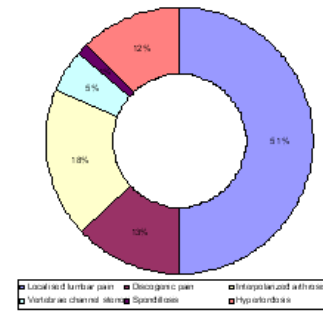


Fig. No. 6 –HDL operated cases

Tab. No. 4– HDL operated cases

Operated HDL	Radiculitis S1	Radiculitis L5	Radiculitis L4
48	5	23	20

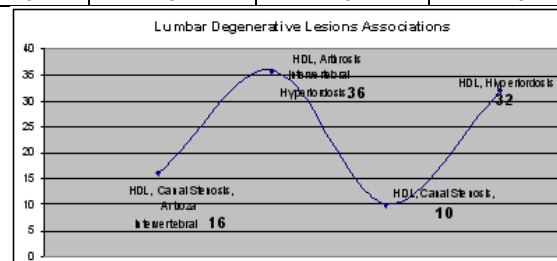


Fig. No. 7 – Lumbar Degenerative Lesions Associatons

Tab. No. 5 – Lumbar Degenerative Lesions Associatons

HDL, Canal Stenosis, Intervertebral Arthrosis	HDL, Intervertebral Arthrosis, Hyperlordosis	HDL, Canal Stenosis	HDL, Hyperlordosis
16	36	10	32

The main associations that have been noticed in the case of the studied cases are graphically represented within the above table and graphic. The statistical-mathematical analysis of the associations regarding degenerative diseases of lumbar spine underline an obvious predominance of hyperlordosis association, of intervertebral arthrosis with disk hernia(32 cases). Vertebral canal stenosis complicated by the hernia of the intervertebral disk has registered a more reduced incidence – only 10 cases.

We may conclude that, generally, the degenerative pathology of the lumbar spine is multifactorial dependent, the proof being represented by the multitude of pathological entities interconnected that can be found to the same patient.

By analysing the graphic representation and the above table we notice general signs and symptoms – lumbar pain, paresthesias, radicular irradiation – found to all studied cases in a very large

proportion. Functional impotence, on the other hand is characteristic to advanced evolutionary phases, being rarely met to the patients of our study.

Tab.No.6 – The incidence of the symptoms according to the diagnosis of studied cases

	Lumbar pain	Paresthesia	Radicular Irradiation	Functional impotence
HDL, Canal Stenosis, Intervertebral Arthrosis	16	16	16	16
HDL, Intervertebral Arthrosis, Hyperlordosis	36	36	36	0
HDL, Canal Stenosis	10	10	10	10
HDL, Hyperlordosis	32	32	32	0
HDL	195	195	195	22
Spondilolistesis	10	10	10	0
Intervertebral Arthrosis	78	0	0	0
Canal Stenosis	12	12	12	0
Hyperlordosis	20	0	0	0

There must be taken into account the grown incidences of clinical signs and symptoms in the case of patients with lumbar disc hernia association, intervertebral arthrosis, hyperlordosis but also disc hernia cases or intervertebral arthrosis, as the only degenerative association.

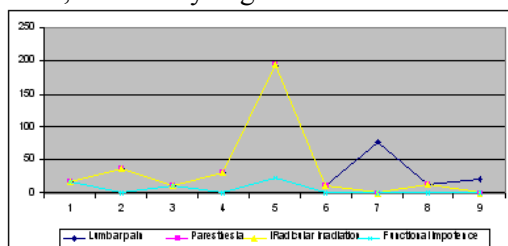


Fig. No. 8 – Graphic representation of the incidence of symptoms according to the diagnosis of studied cases

The initial treatment has been represented by combined administration of Diclofenac/Aflamyl (1tbx3/day) – antialgic-anti-inflammatory, associated with Clorzoxazone (2tbx3/day) – decontractant, for 3 weeks. The medical treatment has been sustained by a complex physical recuperator that consists of thermotherapy, followed by electroanalgesia (CDD+ interferential waves), kinetotherapy of paravertebral assuption and abdominal tonifying and massage.

After a month, the patients have been retested with the same evaluation form, and has been applied the second treatment phase, that consists of Diclofenac (1tbx3/day) for two weeks, sustained by a thermal – kinetho- massoterpaic programme. In order to notice the remanence of the treatment applied for this type of diseases, we

have reevaluated the cases for 3-6 months after the initiation of the recuperatory treatment, with the opportunity of new accutisations, to lower levels than the first ones. Following the 3d stage evaluation, there has been applied only the physical therapeutic tripod, thermo-kinetho-massoterpaic, without medical treatment, for 2 weeks.

The anti-inflammatory decontractant and initial treatment, thermo-electro-kinetho-massoterpaic sustained, has been applied on a daily basis, for 3 weeks. The results obtained after the initial treatment have been good:

- Lumbo sacral pain and the pain that has been referred to have vanished in proportion of 70,6%
- Pain at palpation and muscle contraction have completely vanished
- Painful limitation of the mobility has been ameliorated in proportion of aprox. 70% on all movement axes
- The medium clinical score has been lowered to only 1, 35 points, and gravity class division has been significantly modified, registering a complete recuperation in 67,6% from cases and low forms of suffering in 23,5% from cases.

Conclusions

In order to calculate the intensity of pain – one of the most important variables of pain – verbal scale and the numerical scale seem to be preferred instead of the traditional visual scale. There is no best tool, and valid tools are available for patients of all ages and mental abilities. The clinician must be aware of the tool/tools properties that the patient intends to use, including its level of imprecision:

- Pain evaluation must be part of doctor's daily activity .
- In the case of patients with sciatica, the pain in lumbar region and the pain in the inferior region represent two different dimensions that should be evaluated separately.
- The pain is not synonymous with the functioning and the quality of life and other instruments that cover these important dimensions should be recommended to clinical patients.
- In order to calculate the intensity of pain, the verbal scale and the numerical scale are preferred to visual scale; there is not a single best tool and there exists a tool for each of them.

- The tools should be chosen according to the scope of the study, the population should be evaluated when research takes place.

The obtained results guarantee the ascending and remanent improvement of clinical parameters, form one stage to another, until the third phase of te programme, to quasicomplete functional recuperation of diseases (over 90% as opposed to the initial study). Our study has focused on a quantifiable evaluation of lumbo-sacral muscle ligaments syndroms and a recupeartion programme on stages; moreover, the efficiency of this treatment programme that prevents the installation of recidives and/or complications - that appear frequently and present functional implications that are oftem important - is proved .

As a result of personal observations, we recommend:

- In the case of patients with lumbar pain, nonsteroidal anti-inflammatories may lower the severity of the pain;
- In the case of patients that present difficulty in turning back during their activity, the clinicians should address psychosocial personal and occupational barriers;
- In the case of patients with lumbar chronic pain, multidisciplinary programmes may facilitate the shortening of incapacity periods at the same time with the lowering of pain and improvement of functional performances;
- In order to lower the incidence of complications and the incapacity period of time, the clinicians must encourage the patients with lumbar pain to remain active granting them conservative treatment;
- In order to facilitate the rerunning of the activity there must be encouraged the collaboration with the patient and his antourage but also with the persons representing the health insurance company.

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