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Effects of physical therapy in patients with sciatica

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ABSTRACT.
The aim of this study was to evaluate the clinical outcome of patients with sciatica treated in the Clinical Rehabilitation Hospital of Eforie Nord in the interval of time March 2012-July 2012. The study has been done on a group of 27 patients from which 18 (67%) were male and 9 (33%) were female with an age range of 28-67 years (mean age 48.8 years). The goals of rehabilitation include pain relief, increased mobility for dorsal and lumbar spine and prevention of relapses.

Keywords: physical therapy, sciatica, lumbar pain, VAS

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Introduction

Sciatica is a symptom of an underlying medical condition. Causes may include a herniated lumbar disc, a lumbar discopathy causing compression of nerve roots, lumbar spinal stenosis, spondylolisthesis and increased pressure on back from obesity. Sciatica describes leg pain, numbness or weakness that starts in the low back and travels down the sciatic nerve in the leg causing sciatica pain. Other signs of the condition, including numbness, a "pins and needles" sensation and burning or tingling down your leg. An estimated 80 to 90 percent of people with sciatica get better without the need for surgery, according to the American Academy of Orthopedic Surgeons. Non-surgical treatments, including anti-inflammatories medications and physical therapy, help to ease the pain and discomfort from sciatica and prevent a recurrence of symptoms [1]. Exercise strengthens muscles supporting your back, improves flexibility and reduces inflammation, pain and stress on your back [2].

Material and Methods

In this prospective study, we studied 27 patients treated in Clinical Rehabilitation Hospital Eforie Nord between march – July 2012 diagnosed with sciatica. The physical therapy program was applied daily for 11 days. Patients with sciatica due to herniated lumbar intervertebral disc were excluded.

The anamnesis followed some demographic characteristics as:

- Age and gender
- Environment and residence
- Occupation
- Moment of diagnosis
- Oldness of the disorder

All patients underwent complete physical examination and we assessed the following items: lumbar pain, radicular pain, lumbar spine mobility.

For assessment of pain we used visual analogue scale (VAS) before and at the end of the rehabilitation program. The standard visual analog scale is a 10 cm scale with a border on each side. To the left of the "0" mark appears the indication "No pain at all", and to the right of the "10" mark "Pain as bad as it could be" The patient is asked to choose one of six descriptors – no pain, mild pain, moderate pain, severe pain, very severe pain and worst pain possible – that best represents the level of pain intensity he or she is experiencing during the last week before admission.

Treatment methodology used for the patients in the study group:

a) nonsteroidal anti-inflammatory drugs, antalgic drugs

b) general thermotherapy (mud), low and medium frequency currents, ultrasound therapy, antalgic and decontractant massage [3]

c) individualized kinetotherapy program taking into consideration lumbar spine mobility deficits; therapeutic exercises for strengthening the specific muscles needed to support and neutralize the spine (core muscle groups, including the abdominal wall and lumbar musculature), low back stabilization exercises, Williams flexion exercises and back school [4]

Results and Discussions

The structure of the studied group in terms of gender shows a prevalence of this affection of male - 18 cases opposed to 9 female cases (Figure 1).

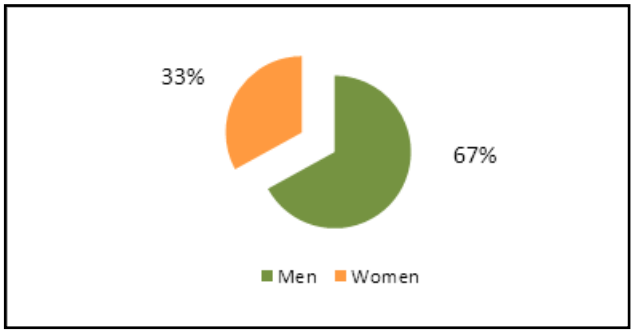

Figure 1 – Distribution upon gender

From a total number of 27 patients, 15 of them live in countryside (56%), while 12 patients live in urban area (44%). We can see a quite equal distribution of the patients in both groups (Figure 2).

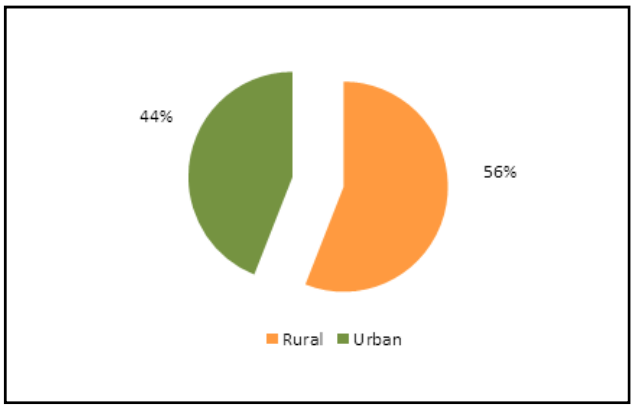

Figure 2 – Social environment

For the 27 patients within the studied group the most frequent etiology of lumbosacral radiculopathy is nerve root compression caused by lumbar discopathy – 15 cases (56%), followed by spodylosis – 9 cases (33%), lumbar spinal stenosis – 2 cases (7%) and one case by spondylolisthesis (Figure 3).

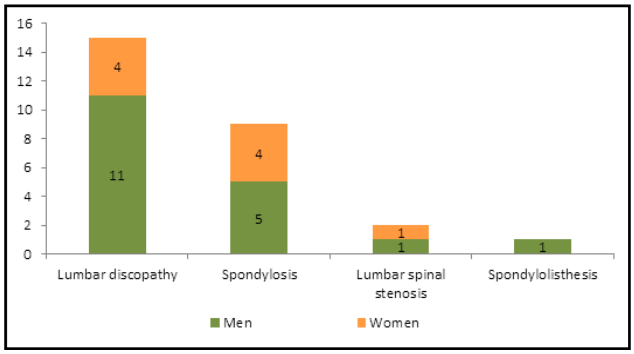

Figure 3 – The distribution of cases according to sex and different conditions causing sciatica

When we analyzed the patients according to occupational status we found that the majority of them were professionally active as follows:

1. Of the total of 27 cases, 19 (71%) are professionally active of which 14 patients have occupations involving frequent lifting and postural stress and 5 patients have occupations without risk factors

2. 8 (29%) cases are retired of which 6 patients belong to active population (Table I)

Table I The distribution of cases according to occupational status

	Nr. cases	Percent
Professionally active with risk factors	14	52%
Professionally active without risk factors	5	19%
Retired – still active	6	22%
Retired – sedentary occupations	2	7%
TOTAL	27	100%

The age distribution of patients diagnosed with lumbar discopathy - at the moment of the diagnosis - shows a maximum of frequency at the level of the third and fourth decades 26% (n=4), followed in a descending order by patients of the fifth decade 20 % (n=3) and 14% (n=2) were patients under 30 years old or over 60 years old. In case of patients diagnosed with lumbar spondylosis most of them were aged between 31 and 40 years 44% (n=4), followed by patients of the fourth decade 34% (n=3) and two patients were under 30 years old. The two patients diagnosed with lumbar spinal stenosis were aged between 51 and 60 years. The patient diagnosed with spondylolisthesis is under 30 years old (Figure 4).

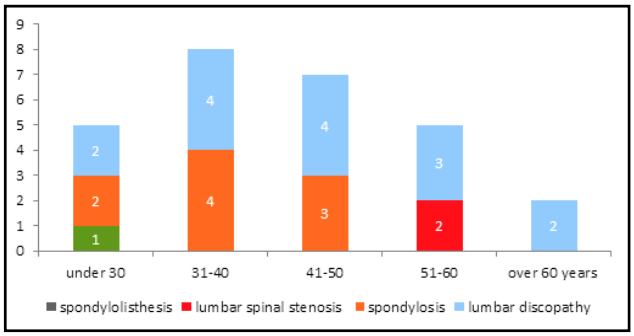

Figure 4 – The onset of the disease depending of age

We tried to determine whether there is a correlation between the severity of symptoms and elapsed between the time of the onset of the disease and time of admission. In patients with lumbar discopathy most cases have a disease evolution between one and five years (46%) and only two cases have a disease evolution under one year (Figure 5).

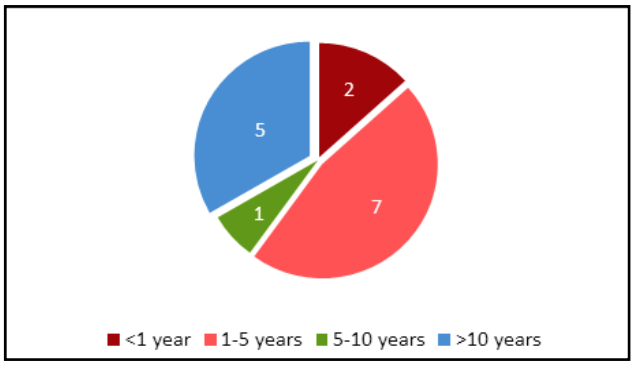

Figure 5 – Disease evolution of patients with lumbar discopathy by the time of admission

Most patients diagnosed with spodylosis have also a disease evolution between one and five years (67%) (Figure 6).

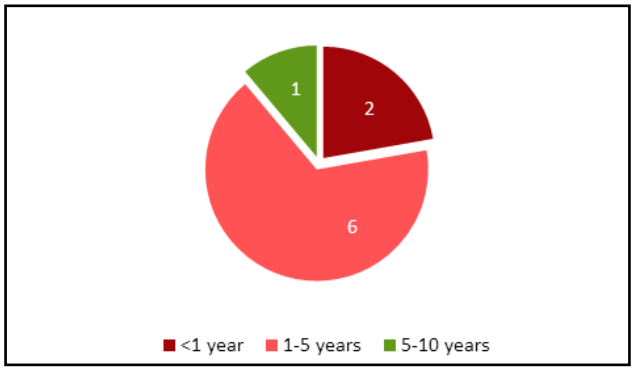

Figure 6 – Disease evolution of patients with spodylosis by the time of admission

For patients diagnosed with lumbar spinal stenosis disease started at age 54 for one patient and at age 55 for the other patient, both with an evolution of two years by the time of admission. For patient diagnosed with spondylolisthesis disease started at the age of 26 years with a 2-year trend.

Patients were classified as acute if duration of current sciatica episode was less than 2 weeks at the time of admission, subacute if duration was between 2 weeks and 3 months and chronic if duration was 3 months and more. Most patients were classified as subacute 41% (11 cases from the total of 27) and chronic 33% (9 cases) and only 26% (7 cases) were in an acute phase.

L5 radiculopathy is the most common radiculopathy affecting the lumbosacral spine. It often presents with back pain that radiates down the lateral aspect of the leg into the foot. In S1 radiculopathy, pain radiates down the posterior aspect of the leg into the foot from the back.

Depending on the type of lumbosacral radiculopathy we noticed that L5 radiculopathy is the most frequent (19 of 27 patients), followed by S1 radiculopathy with 7 cases and L4 radiculopathy with one case (Table II).

Table II The distribution of cases according to level of radiculopathies

	Nr. cases	Percent
L5 radiculopathy	19	70%
L4 radiculopathy	1	4%
S1 radiculopathy	7	26%
TOTAL	27	100%

The straight-leg raising test (Lasègue's sign), was performed in the study group patients. This test caused severe pain in the back and of the affected leg (a positive Lasègue's sign) for 10 patients diagnosed with lumbar discopathy, in case of 8 patients diagnosed with lumbar spondylosis and for the patient diagnosed with spondylolisthesis (Table III).

Table III – Distribution of cases in the studied group in terms of positive Lasègue's sign and medical condition

Diagnostic	Lasegue (+)	Lasegue (-)	Nr. cases
Lumbar discopathy	10	5	15
Lumbar spondylosis	8	1	9
Lumbar spinal stenosis	0	2	2
Spondylolisthesis	1	0	1
TOTAL	19	8	27

The patients underwent different types of physical therapy as follows: 20 patients received galvanic stimulation, 20 patients received interferential current, 18 patients received laser therapy, 17 patients received diadynamic current, 16 patients received ultrasound and 10 patients received magnetotherapy (Table IV). These types of electrotherapy were applied to patients combined according to the severity of pain.

Table IV Types of electrotherapy applied to the study group

	Nr. cases	Percent
Galvanic stimulation	20	74%
Interferential current	20	74%
Laser therapy	18	67%
Diadynamic current	17	63%
Ultrasound	16	59%
Magnetotherapy	10	37%
TOTAL	27	100%

The physical program consisted also of massage before kinetotherapy (antalgic and decontractant) for 19 patients, of kinetotherapy (individual or group therapy) for 15 patients and hydrokinetotherapy applied to 20 patients.

Depending on the scores given by the patients at the time of hospitalization for pain assessment (VAS) we noticed that most patients 63% (n = 17) were considered to have severe pain, followed by 18.5% (n = 5) who experienced moderate pain - from 4 to 5 on the VAS and only 15% (n = 4) of patients rated their pain intensity with 8 on the numerical rating scale (Figure 7).

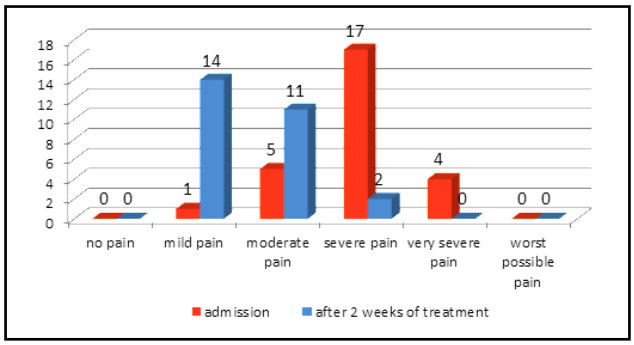

Figure 7 – Pain evolution (VAS) between time of admission and after 2 weeks of physical therapy

Conclusions

Sciatica is a symptom that affects both young and old segment of the population and is a very frequent cause for visits to the rehabilitations centers. Treatment methodology that consisted of a individually tailored physical program according to the degree of functional lumbar deficit and level of lumbar pain is the best approach. We noticed an improvement of the pain score for 70% of patients with a decrease of at least 2 points of VAS, articular mobility for lumbar spine showed an amelioration for 21 patients and the straight-leg raising test was negative for 12 patients (63%) at the end of 11 days of treatment. Although this study was performed on a limited number of patients, various conditions causing sciatica, large age differences between patients and different duration of sciatica episode, lead us to believe that physical therapy programs are the first choice in terms of effectiveness and speed in reducing the painful symptoms.

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