COMPARISON OF TWO TREATMENT MODALITIES FOR CHRONIC PAIN SYNDROME DUE TO SACROILIAC JOINT DYSFUNCTION

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Abstract

Sacroiliac joint dysfunction is widely considered as a potential source for pain in the lumbosacral region. Treatment modalities vary from electrotherapy (TENS, diadynamic, interferential currents), massage, manual therapy and exercises to joint fusion. The treatment of sacroiliac joint dysfunction presents a clinical challenge and a construction of optimized approach framework is still needed. The aim was to compare the effects of two physical therapy approaches in treating this condition. A total of 71 patients with chronic LBP due to sacroiliac joint dysfunction were treated in the period 2009 – 2012. The patients were divided in two groups (A – control n=30 and B experimental n=41), underwent treatment comprised of mobilizing and manipulative techniques and exercises. The results of this research showed reduction of pain, improvement in muscles strength and balance and lumbar and pelvic stability in both groups but more prominent in the experimental group.

Key words*: LBP, manipulative, mobilizing, massage, exercise, dysfunction, sacroiliac, joint*

Introduction

Dysfunction in the lumbosacral region is the leading cause of pain in the population younger than 45 years (J. Porterfield, 1991). Every year, 50% of the elderly in USA experience this pain at least for one day (V. Mooney 1997). It is believed that mechanical dysfunctions, not organic pathology, are the reason for 98% of this pain (J. Porterfield, 1991).The sacroiliac jointlies next to the bottom of the spine, below the lumbar spine and above the tailbone (coccyx). It connects the sacrum with the pelvis(iliac crest). For decades, the sacroiliac joint was suspected to be a common cause of low back and/or leg pain, although difficulty in proving it with standard diagnostic tests left many in the medical profession skeptical.

There are many different terms for sacroiliac joint problems, including SI joint dysfunction, SI joint syndrome, SI joint strain, and SI joint inflammation. Each of these terms refer to a condition that causes pain in the SI joints from a variety of causes. Any condition that alters the normal walking pattern places increased stress on the SI joints. This could include a leg length discrepancy (one leg longer than the other), or pain in the hip, knee, ankle, or foot. Patients with severe pain in the lower extremity often develop problems with either the lower back (lumbar spine) or SI joints. In most cases if the underlying problem is treated, the associated lumbar spine or SI joint dysfunction will also improve. While it is not clear how the pain is caused, it is thought that an alteration in the normal joint motion may be the culprit that causes sacroiliac pain. This source of pain can be caused by either: a) Too much movement (hypermobility or instability): The pain is typically felt in the lower back and/or hip and may radiate into groin area; or b) Too little movement (hypo mobility or fixation): The pain is typically felt on one side of the low back or buttocks, and can radiate down the leg.

The pain usually remains above the knee, but at times pain can extend to the ankle or foot. The pain is similar to sciatica, or pain that radiates down the sciatic nerve and is caused by a radiculopathy. Functional disorders with motor deficits of the sacroiliac joint is characterized by local and radiate pain and relevant reflex reactions of the various joints of the spine. They can cause secondary occurred scoliosis, blocks and various clinical syndromes - dysmenorrhea, decreased libido, poor erection or premature ejaculation, morbus Crohn, chronic adnexitis, etc. Treatment modalities vary from electrotherapy (TENS, diadynamic, interferential currents), massage, manual therapy and exercises to joint fusion. It is important to recognize activities that aggravate symptoms, which may include bending, twisting, sitting, running and single leg stance activities. Once the initial pain is under better control, the goal is to correct the underlying functional biomechanical deficits and restore normal pain- free motion. Therapeutic exercise can be used to correct muscular imbalances in strength and flexibility and improve force transfer, decreasing stress on the pelvis and lumbar spine. Manual mobilization of the SI joint is often used to compliment a therapeutic exercise program aimed at helping to decrease pain and correct biomechanical dysfunction. These techniques are commonly used by osteopathic physicians, chiropractors and physical therapists who treat patients with low back pain. Other manual therapy techniques include myofascial release, muscle energy and trigger point release (Greis, Berk, Gellhorn, 2013).

Aim

This study aims to approbate the effect of two treatment modalities, for patients with chronic pain syndrome in the lumbosacral region due to sacroiliac joint dysfunction.

Material and methods

In the period 2009 – 2012 in the premises of the Recreation center of University "Goce Delcev" – Štip, we examined and treated 71 patients with chronic LBP pain. All patients underwent a two weeks therapeutic course in which they had ten procedures. The patients were divided in two groups (A – control n=30 and B - experimental n=41). The gender distribution and average age of the two groups is shown in Table 1.

Table 1. Gender distribution of the two groups

	Group A (n=30)	GroupB (n=41)
Male	22	18
Female	8	23
Joints	51	66
Average age	39	41

All patients were evaluated with a comprehensive test battery at the beginning and end of treatment, which includes: Tests for the evaluation of the intensity and localization of pain (Visual analogue scale of 0-10, Subjective evaluation of the degree of pain (SET) of Kostadinov (1978) classic test of d`Aubine, Test for localization of pain (LP) of Stoyanov (1978) modified by Kraydzhikova (1999) according to the pathokinesiologic analysis of SI joint), Diagnostic tests (Laguerre Test, Iliac Compression Test, Derbolowsky sign, Sacroiliac Mobilization Test), Manual muscle test (MMT), Tests for evaluation of static power endurance (Zhelev, Lianu, 2004).

Physical therapy program

The controlled group was treated with complex that included: classic therapeutic massage, exercises for mobility and stability of the lumbar and pelvic region, Experimental group's complex included: transversal massage (according to Cyriax for m. Piriformis) and manipulative massage (Terrierfor lumbar region). Followed by manual treatment of the trigger points, post isometric relaxation, mobilization of the sacroiliac joint, exercises for mobility and stability of the lumbar and pelvic region with the use of fitness ball. Mobilization of the sacroiliac joints includes ventral-caudal and/or dorsal dragging the ilium, crossed hands technique of Stoddard - ventral glide of the sacrum. Post isometric relaxation, exercises resembling every day activities and walking were common for all patients.

Results

Figure1 shows almost complete disappearance of symptomatic signs of sacroiliac dysfunction. Laguerre test, Derbolowsky sign, Sacroiliac mobilization test and Iliac compression test, and the initial and final measurements noticed almost identical results. The two groups began treatment with A = 51 and B = 66, points, while Laguerre test and Iliac compression test ends with A = 1 and B = 0, which is improving with A = 50, B = 66.

In Sacroiliac mobilization test results are A = 0 and B = 0 respectively, the improvement is A = 51, B = 66. Derbolowsky sign results were A = 18, B = 23 and at the end A = 4 and B = 1. The good results show the positive effect of the manual joint mobilization and other means that complement its effect.

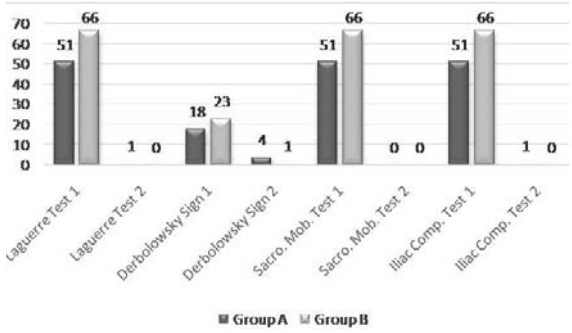

Figure 1. Number of diagnosed dysfunction sacroiliac joints per group

Application of means for restoring the normal joint mechanics interrupt the pathological aferentation of the affected area by normalization of trophicity. Thus, through the restoration of articular game responds favorably to the symptoms of pain(Table. 2, figure 2). Reduction of pain was registered at both of groups, but more significant in the experimental group: VAS (+1,03), SEP (+0,74) and LP (+0.6). Residual pain that we see at the end of the treatment course is weak and inconsistent and rarely requires medication.

Table 2. Comparison of the results of tests for the assessment of pain: VAS – Visual analogue scale, SEP - Subjective evaluation of the degree of pain, LP - localization of pain

Тест	Group	N	X1	X2	X2-X1	±S (X2-X1)	t	Df	p
VAS	A	30	8.06	1.36	6,70	1,93	18.98	29	0,00
	B	41	8,97	1.24	7.73	1.26	39.12	40	0,00
SEP	A	30	2,13	4,10	1,96	0,96	-11,17	29	0,00
	B	41	2,09	4,80	2.70	1.03	16.82	40	0,00
LP	A	30	2,50	4,33	1.83	1.08	9.25	29	0,00
	B	41	2,29	4,73	2.43	0.89	17.43	40	0,00

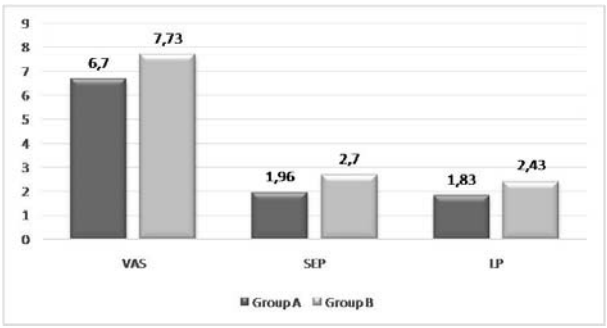

Figure 2. Comparison of the differences of the test results for the assessment of pain

The results of MMT show reduced muscle strength in the muscles forming the lumbar muscle corset before the procedures (Tables 3, figure3).At the end of treatment muscle strength increased in all test movements in both groups.

Table 3. Comparison of the results of the manual muscle testing

Test	Group	N	X1	X2	X2-X1	±S (X2-X1)	t	Df	p
MMT left hip extensors	A	30	3.16	4.36	1.20	0.61	10.77	29	0,00
	B	41	3.21	4.78	1.56	0.54	18.17	40	0,00
MMT right hip extensors	A	30	3,23	4.23	1.00	0.58	9.32	29	0.00
	B	41	3.26	4.82	1.56	0.63	15.75	40	0.00
MMT muscles of the back	A	30	3,83	4,63	0,80	0,66	6,59	29	0,00
	B	41	3,65	4.90	1.24	0.62	12.77	40	0,00
MMT abdominal muscles	A	30	3,63	4.40	0.76	0.72	5.76	29	0,00
	B	41	3,68	4.90	1.21	0.57	13.68	40	0,00

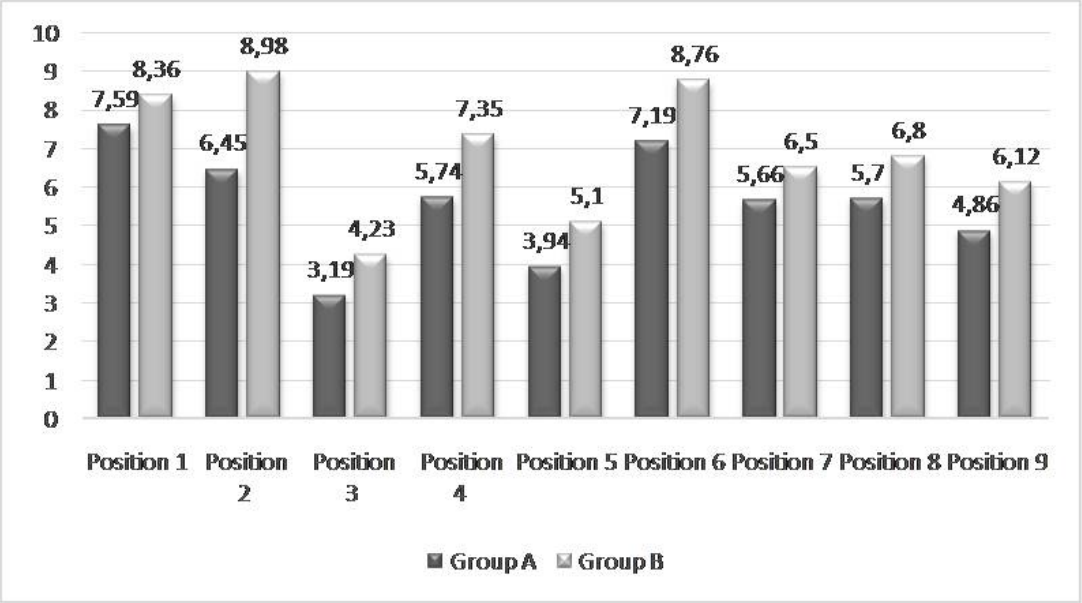

Figure 4. Comparison of the gained difference of the static endurance test (in seconds)

Difference is favorable for the Group B: Left hip ext. (+0.36), right hip ext. (+0.56), muscles of the back (+0.44) and abdominals (+0.45).

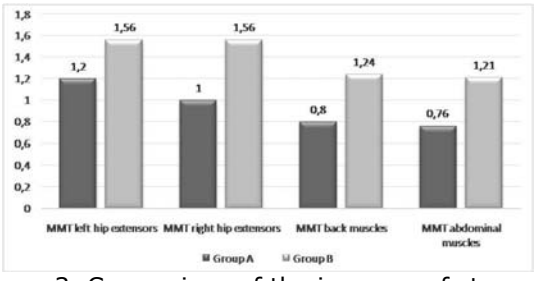

Figure 3. Comparison of the increase of strength

The test for static muscle endurance consists of nine positions in which the patient is placed and the time is measured that can be achieved without disturbing the position. Figure 4 shows the difference between first and second examination for each position in seconds. The initial values for static strength endurance of the muscles that form the lumbar muscle corset. Initial results for both groups of third position (A =11.63sec, B=11.63sec.), fifth (A = 11.23sec, B=11.24sec.), eighth(A =6.16sec, B=6.01sec.) and ninth(A =6.83sec, B=6.70sec. and B =6.73sec), are lowest since they cause pain.

Increase in static muscle endurance was registered at both groups, more prominent in the experimental with an average increase for all position of 6.91 seconds against 5.59 seconds in the controlled.

Conclusion

The application of our comprehensive methodology that includes mobilizing massage, soft tissue manipulation and trigger point release combined with post isometric relaxation improves the balance between the static and dynamic muscles of the lumbosacral region. As a result overall joint mechanics is improved which reflects in the reduction of pain. Application of exercises with fitness ball helps sustain the effects of the passive means by increasing strength and muscle endurance as well as normalizing the proprioceptive function of the involved structures. Favorable results for the experimental group allows us to recommend the presented treatment approach. Treatment modalities for sacroiliac joint dysfunction and other similar musculoskeletal conditions should contain means that would address the sport pathology as well as the impaired mechanics and it's reflections on the patient as a whole.

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USPOREDBA DVIJU METODA LIJEČENJA KRONIČNOG SINDROMA BOLI ZBOG SAKROILIJAČNE DISFUNKCIJE ZGLOBOVA

Sažetak

Sakroilijačnia disfunkcija zgloba naširoko se smatra kao potencijalni izvor boli u lumbosacral regiji. Modaliteti liječenja variraju od elektroterapije (TENS, diadynamic, interferencijska struja), masaže, manualne terapije i vježbi za fuziju zgloba. Liječenje sakroilijačne disfunkcije zgloba predstavlja klinički izazov i izgradnja optimiziranog pristupng okvira još je uvijek potrebna. Cilj je bio usporediti učinke dvaju pristupa fizikalnoj terapiji u liječenju ovog stanja. Ukupno 71 bolesnik s kroničnim LBP zbog sakroilijačne disfunkcije zgloba je tretiran u razdoblju 2009-2012. Pacijenti su bili podijeljeni u dvije skupine (A-kontrolu, n = 30 i B-eksperimentalnu, n = 41), s tretmanom koji se sastojao od mobiliziranja i manipulativne tehnike i vježbi. Rezultati ovog istraživanja pokazali su smanjenje boli, poboljšanje u snazi mišića, ravnoteži, kao i lumbalnoj i prsnoj stabilnosti u obje skupine, ali izraženije u eksperimentalnoj skupini.

Ključne riječi*: LBP, manipulativna tehnika, mobiliziranje, masaže, vježbe, disfunkcije, sacroiliac, zglob*

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