

Rehabilitation – an addition to standard chiropractic management for chronic low back pain

Brad Wildberg, DC, RCRD*

A case of chronic vertebrogenic low back pain of biomechanical origin characterized by intermittent radiculitis and trunk muscle insufficiency is presented. Initial allopathic and chiropractic management provided only palliative relief. A three-month program of in-office rehabilitation including progressive/resistance exercise was administered in conjunction with spinal manipulation. This program proved effective in reducing the patient's low back pain and dependency on passive care.

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KEY WORDS : chronic low back pain, rehabilitation, chiropractic, manipulation.

Cet article présente un cas de lombalgie vertébrogénique chronique d'origine biomécanique caractérisé par une radiculite intermittente et une insuffisance musculaire du tronc. Les traitements allopathiques et chiropratiques initiaux n'ont procuré qu'un soulagement palliatif. Un programme de trois mois de rééducation en cabinet comprenant des exercices progressifs contre résistance fut administré en conjonction avec des manipulations vertébrales. Ce programme s'est révélé efficace dans la réduction de la lombalgie du patient et de sa dépendance aux soins passifs.

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MOTS CLÉS : lombalgie chronique, rééducation, chiropractie, manipulation.

Introduction

Spinal manipulation has been shown to be an effective management tool in the treatment of acute low back pain.^{1,2} However, most patients do not seek this type of treatment for their condition.³ They often depend on other measures, such as bed rest or medication, to solve their problem.⁴ Unfortunately, 30% of these patients will become chronic resulting in 90% of the cost of lower back pain.⁵ In those cases, where re-occurrence or persistence of lower back pain occurs, decreased strength and lack of flexibility are implicated in its development.⁶ This suggests that a comprehensive rehabilitative program including: exercising for spinal mobility, trunk strength, endurance, coordina-

tion, and cardiovascular fitness can significantly reduce the risk of functional loss.⁷ Integration of these active rehabilitation principles within the chiropractic office have been advocated by several authors.^{8,9,10}

The following case demonstrates the value of trunk muscle evaluation and treatment in the conservative chiropractic management of chronic low back pain.

Case report

A 49-year-old, female Caucasian presented with a complaint of "right hip" pain radiating down the back of her thigh on an intermittent basis. She reported that on the same day while going down a stair, she suddenly felt the "hip" and thigh pain. The pain was further described as an "ache", which was worse in the morning and more intense while lying on the right side. She stated the pain made it difficult

* Allied Health of Wisconsin, S.C., 811 West Broadway, Medford, Wisconsin 54451, (715) 748-2334.
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to turn over in bed but was relieved by sitting and relaxing for one-half hour in the morning.

The patient was not currently taking any medications. She slept on her side on an innerspring mattress using a fiber-fill pillow. No other physician had been seen for this episode but a history of similar episodes of back and hip pain over the previous two years was indicated. The previous episodes were treated by a local medical physician who prescribed muscle relaxants and bed rest, which gave limited relief of the pain. Other past medical history was unremarkable.

Orthopedic/neurological examination revealed a positive right Kemps, Ely's, Spinous Percussion, and Bilateral Leg Raise tests with pain noted in the region of the fifth lumbar vertebra on the right radiating to the right sacroiliac joint. Lumbar ranges of motion were moderately reduced with pain noted at the fifth lumbar vertebra on flexion, right rotation, and left lateral flexion.

AP and lateral lumbosacral x-rays revealed a measured five millimeter right short leg, a mild left lumbar scoliosis of 6 degrees, right disc wedging at the fourth lumbar vertebra with spinous rotation to the right. Significant facet imbrication was noted between the fifth lumbar vertebra and the sacrum with decreased vertical disc height between the first and second lumbar vertebra with associated anterior end-plate osteophyte formation. A working diagnosis of lumbar subluxation/strain with disc syndrome and intermittent sciatic neuralgia was given. Conservative chiropractic management was implemented including spinal manipulative therapy, trigger point techniques, vibration,

interferential electrical muscle stimulation, ice/heat, and instructions in activities of daily living and home exercise.¹¹

Her initial symptoms improved within 12 treatments and the magnitude and duration of her pain subsided. However, she seemed very sensitive to an exacerbation of symptoms with only a mild increase in activity causing her to depend on monthly palliative chiropractic treatment to relieve her back discomfort. The patient agreed to a trial of in-office rehabilitation using progressive/resistance exercise following basic protocols as recommended by the Chiropractic Rehabilitation Association Guides.¹²

The patient was given a cardiac screening questionnaire¹² (p. 11) and an EKG screening¹² (p. 11) which showed no contraindications for weight training. Lumbar ranges of motion and straight leg raise were normal and the Oswestry Disability Questionnaire¹² (p. 65) was given with a score of 12 noted. Isometric strength testing was performed using the Myforcetm computerized dynamometric testing device with torque curves. The test findings indicated an extension/flexion ratio of the thoraco-lumbar spine of .7 as compared to a normal ratio of 1.1 to 1.3 with a lateral bending ratio of .57 compared to a normal 1.0¹³ (see table 1). In addition, the patient's total strength rating was relatively low when compared to our observation of average readings of other patients using the testing device.

In-office rehabilitation was scheduled at three sessions per week for twelve weeks which included: a warm up on

* Myoforce tm - manufactured by Thought Technology Ltd, Montreal, Quebec, Canada

Table 1
Strength Test Findings Chart

Date	Extension	Flexion	Extension/ Flexion Ratio	Right Lateral Flexion	Left Lateral Flexion	Lateral Bending Ratio
1/11	5.32 kg	7.5 kg	.71	2.59 kg	4.55 kg	.57
3/02	6.11 kg	8.47 kg	.72	5.93 kg	7.23 kg	.82
4/01	22.78 kg	11.80 kg	1.93	8.22 kg	10.35 kg	.79

the Schwinn Airdyne stationary bicycle; stretching; progressive/resistance exercise using universal-type equipment with range limiters to include trunk flexion, extension, and rotation; and concluding with additional stretching. Weight training followed the Zinovieff, DeLorme-Watkins, and McQueen protocols¹⁴ with weight adjusted to tolerance starting from an initial base line of one repetition maximum. The Oswestry Disability Questionnaire was completed and muscle testing was performed three times during the course of the program. The Oswestry score of 12 improved to a near normal score of 4. Muscle testing showed an improvement of the extension/flexion ratio to 1.9. Improvement of lateral flexion ratio was also noted to a near-normal .79.¹⁵ Average strength readings of each motion increased from two to four times the initial testing results. Proper trunk muscle strength hierarchy was re-established with extension greater than flexion greater than lateral bending.¹⁵ (See table 1: 22.78 > 11.80 > 10.35, 8.22).

Upon release from the rehabilitation center, the patient was given a home program of spinal stabilization exercises to enhance the gains of trunk strength beyond the end of the exercise program.¹⁶ Continuing spinal manipulative therapy on a maintenance basis was recommended to address any joint dysfunction.¹⁵ Since completing this program, the patient has had fewer exacerbations of pain which were of lesser severity and duration. Over a nine month period, the patient experienced three minor exacerbations, all of which responded favorably to spinal manipulation alone. The patient reached an asymptomatic level and has chosen to return on an "as needed" basis for further care.

Discussion

It is believed that history, examination, and response to treatment were consistent with a diagnosis of chronic biomechanical lower back syndrome including symptomatology consistent with an intervertebral disc disorder.¹⁷ It is further believed that after sustaining her first episode of pain, her condition would have likely responded to a relatively short course of conservative chiropractic therapy and exercise stimulated muscle reconditioning if she had not undergone other treatment (i.e. pain pills and bed rest). Although these other treatments gave symptom relief, they actually may have contributed to the transfer from acute to chronic back pain.¹⁸

As was true with prior allopathic medical treatment, chiropractic palliative treatment gave some relief but was unable to fully resolve her condition once it became chronic. The addition of chiropractic spinal rehabilitation protocols using progressive/resistance exercise effectively addressed the trunk muscle deconditioning that had occurred which resulted in subsequent improvement in her health relative to her spinal complaint.

Conclusion

A case was presented in which chronic, reoccurring low back pain was the predominant complaint. Muscle strength imbalance of the trunk was identified and treated using controlled, progressive/resistance exercise. The patient's response was encouraging suggesting that such an exercise program is a useful tool for the chiropractic physician in the management of these often difficult cases.

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