

# Case Study

## Chiropractic Care of a Patient with Low Back Pain, Radiculopathy and Concomitant Depression: A Case Report

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### Abstract

**Objective:** To review the outcomes related to Diversified chiropractic adjustments on a 44 year old male patient with radicular low back pain complicated by depression.

**Clinical Features:** The patient is a 44 year old male with low back pain and accompanying radicular symptoms attributed to a fall 6 months prior to chiropractic care. He additionally suffered from unmanaged depression and congenital hemochromatosis.

**Intervention and Outcome:** The patient was treated 34 times over a 6-month duration with high velocity, low amplitude chiropractic adjustments combined with nutritional recommendations. Following the first six weeks of treatment, all lumbar radiculopathy symptomatology was resolved.

**Conclusion:** The case of a 44 year old man with a previous history of low back pain with accompanied radiculopathy and depression is presented. Dramatic improvement in low back pain and radicular symptomatology is observed with conservative chiropractic care.

**Key Terms:** Chiropractic, radiculopathy, subluxation, low back pain, depression, Diversified technique

### Introduction

It is reported that 70-85 percent of people have back pain at some point in their life and is the leading cause of activity limitations in people under the age of 45.<sup>1</sup> Additionally, it is the third most common cause of surgical procedures,<sup>1</sup> and contributes to three of the top 10 most costly conditions suffered by the US population.<sup>19</sup>

Standard Medical treatment includes one or more of the following; pharmaceutical therapy, facet joint injections, soft tissue injections, and trans-cutaneous electrical nerve stimulation<sup>2</sup>. Throughout the literature chiropractic has become an increasingly prominent alternative in the treatment of low back pain with accompanying radicular symptomatology.<sup>1-4</sup> Additionally, chiropractic in conjunction with therapeutic exercise has been shown to both improve outcomes as well as decrease the frequency of recurrence.<sup>3</sup>

### Case Report

#### History

The patient was a 44 year old father of three employed as a field sales representative for a cable company. He presented with a two year history of low back pain and hip pain. The patient related a slip and fall six months prior to an exacerbation in his low back and hip pain, during which he also sprained his right knee and suffered a meniscus injury. The knee injury was successfully treated with surgery. Weeks after the initiation of chiropractic care, the patient disclosed to the doctor that his most severe complaint was his struggle with depression. The patient stated he initially omitted this information in his intake history because he did not see a correlation or significance between depression and chiropractic care.

The patient had no previous medical records. He stated he had a problem with his iron levels when he was eighteen years old but had no follow up medical care. The patient also stated that

a doctor once recommended spinal surgery and that he was prescribed an antidepressant medication, but he could not remember any of the test results. He did not follow through with any recommendations. Additional previously untreated complaints disclosed by the patient included migraine headaches, radiating arm pain, and pain and numbness that radiates from his low back into his legs.

In addition to a high stress performance based sales job, the patient also had a poor diet and would frequently skip meals. He also reported difficulty with sleep patterns in which he was unable to sleep longer than two hours at a time before waking up, and had difficulty falling back to sleep. The patient stated he was unable to exercise due to knee pain and that he used to swim but has not in the last several months. The patient is a nonsmoker; his alcohol consumption includes three glasses of wine per week, and he denied the use of any medication. The patient stated he used ibuprofen for knee pain and takes a glucosamine supplement.

### *Examination*

Radiographic analysis of the cervical and lumbar spine was obtained. Lumbar views revealed a moderate left lumbar list, pelvic unleveling (1.5cm lower on the left when measured at the iliac crest), and mild to moderate spinous process rotation to the right on vertebral segments L3 and L4. The lateral lumbar view displayed a moderate to marked decreased disc height between L5/S1. Cervical views revealed anterior head translation, normal disc and joint spaces, and a normal cervical lordosis.

### *Intervention*

The goal of chiropractic care is to evaluate for and treat the presence of subluxation with the aim of reducing pain as well as restoring proper physiologic function and neurological integrity.<sup>4,5</sup> Diversified technique is a commonly used system of adjusting in the chiropractic profession. There is a large variation in this technique in both analysis and application. The application of the technique in this case study utilized coupled patterns of manual high velocity, low force chiropractic adjustments.

In this case, Diversified technique was applied most commonly to segments C5, C6, C7, L4, L5 and S1 throughout the six month course of the patient's treatment. The patient was seen three times per week for the first three months of chiropractic care, once a week for the next month, and once the following month for a total of 34 chiropractic visits. After the first 6 visits, the patient's low back pain and concurrent radicular symptomatology had resolved. He was able to work and walk from door to door without debilitating pain. It was at this point that the patient disclosed his struggle with depression.

Three months following the onset of chiropractic care the patient was sent to another chiropractic office in which nerve conduction studies were performed along with EMG and reflex evaluations. The results of this neurological study include reduced amplitude in the left peroneal motor nerve, and prolonged latency in the left peroneal and right tibial nerves. An examination revealed a diminished left Achilles

reflex (+1/+5). The impression suggested sub-acute left L5/S1 radiculopathy. After these test results were received, an additional exam was performed in which atrophy of the right lower extremity was observed with a quadriceps circumference of 1.5 inches smaller on the right compared to the left.

An MRI taken three months after the initiation of chiropractic care revealed posterior disc bulges present L2/3 through L4/5. Diminished disc space height and dehydration was apparent at L5/S1 disc with left foraminal narrowing. A series of lab tests were also requested at this time including; CBC with differential/platelet, metabolic panel, lipid panel, iron and TIBC, C-reactive protein, cardiac, thyroxine (T4) free, homocysteine plasma, vitamin D, TSH, LDH, T3 uptake, Triiodothyronine (T3), Transferrin, and serum ferritin. The results of the tests revealed high LDL levels, low iron binding capacity and UIBC, low vitamin D levels, low transferrin, and high serum ferritin levels. Thyroid stimulating hormone and high density lipoprotein levels were also near the lower acceptable limits.

In response to the results of the lab tests, nutritional recommendations were made to assist the patient in blood sugar regulation, anemia, essential fatty acid metabolism, and to support liver detoxification pathways. The patient was instructed to avoid any foods he was allergic to as well as to, dairy, gluten, tomatoes, corn, alcohol, caffeine, soy, peanuts, beef, pork, bacon, hot dogs, canned meat, sausage, shellfish, and cold cuts. The patient was instructed to drink 8-10 glasses of water daily. The following is a list of foods considered acceptable to eat; herbal teas, green tea, fruit juices with no added sugar, vegetable juice, rice, millet, quinoa, buckwheat, tapioca, fresh fruits and vegetables, beans, fish, olive oil, flax-seed oil, chicken, turkey, fish, and lamb.

Apex Energetics, a source of homeopathic and nutritional products, was recommended to the patient three months following the start of chiropractic care. The recommended products included the Clearvite 21 day supply to aid with liver detoxification. Clearvite 21 according to Apex Energetics is both a nutritional multivitamin and detoxification supplement.<sup>18</sup> It claims that "long-term practical experiences by outstanding clinicians and scientists have been employed to design Clearvite."<sup>18</sup> Glysen and Proglyco sp were also recommended to aid in blood sugar regulation along with Vitamin D 8000 IU, Adaptocrine, and Omega Co3 for adrenal support and essential fatty acid supplementation.

### *Outcome*

After five weeks of chiropractic care, the patient reported significant improvement of his low back pain and radicular symptoms. He stated he was able to walk from door to door at work without the previous debilitating pain. Physical exam findings revealed atrophy of the right lower extremity with a quadriceps 1.5 inches smaller in circumference than the left. EMG/NCV revealed left L4-L5 and L5-S1 radicular findings though symptomatology was not present.

### *Discussion*

Ranking sixth among the most costly conditions in America,<sup>6</sup>

back problems accrue an annual cost of 50 billion dollars annually in the United States.<sup>7</sup> Back problems are also the fourth most expensive health condition for employers in the United States with a prevalence of 52.7 per 1000 employees<sup>6</sup> despite advances in technology and intervention.<sup>6</sup> Additionally, 80 percent of costs are associated with a mere 10% of cases.<sup>8</sup> Though low back pain symptoms have been found to resolve within 6 weeks of onset despite treatment type, chiropractic has been reported to decrease the likelihood of chronicity.<sup>8</sup>

In a 2002 study evaluating the two largest insurers in the state of Washington, 49 percent of visits for low back pain were made to chiropractors.<sup>9</sup> When comparing costs of treatment, (CAM) providers had a mean cost of \$342 whereas conventional providers mean cost of treatment per patient was \$506.<sup>9</sup> When this difference in cost is extrapolated to include the 22% or 104,358 people insured that sought care for low back pain, the utilization of CAM providers resulted in an annual savings of \$17,114,712. This substantial evidence supports further evaluation of the efficacy of chiropractic care in the treatment of low back pain even if only for purely economical benefits.

Chiropractors deliver over 90 percent of all manipulations in the United States.<sup>20</sup> Chiropractic manipulations in its broadest definition, is the application of a force to specific body tissues with therapeutic intent.<sup>20</sup> The approach to clinical diagnosis in chiropractic is not unlike all health care disciplines.<sup>20</sup> It consists of; history, physical examination, and specialty-specific assessments.<sup>20</sup> The central concept that has remained throughout history of the profession is that the nervous system regulates and controls all other body systems.<sup>21</sup> Additionally, any disruption to normal nervous system function can result in a wide variety of physiological dysfunctions and symptomatology.<sup>21</sup>

There is research available on the treatment of low back pain and its associated conditions with chiropractic care. A 2008 literature synthesis found that chiropractic treatment utilizing high velocity low amplitude techniques combined with strengthening exercises was as effective as non-steroidal anti-inflammatory pharmaceuticals combined with exercise.<sup>3</sup> Evidence also revealed that spinal manipulation outcomes had greater improvement in symptomatology when compared with general medical care or placebo.<sup>3</sup> When the outcomes of acupuncture, medication, or spinal manipulation were compared by Giles and Muller for the treatment of "spinal pain syndromes" only the spinal manipulation group displayed significant improvement.<sup>10</sup>

Another study performed in a National Health Service Outpatient Clinic in the United Kingdom compared chiropractic treatment with that of pain clinic management. Mean improvement and decreased disability was found to be greater with the chiropractic group when compared with the pain clinic management group.<sup>2</sup> The study concluded that chiropractic treatment may be effective in the treatment of patients with chronic low back pain.<sup>2</sup> Chiropractic care in conjunction with specific spinal intrinsic muscle strengthening exercises was more effective in one case study when compared with low back pain previously treated with physical therapy and massage.<sup>11</sup>

Lastly, encouragement and positive support by the chiropractor may result in a greater positive patient outcome by resulting in greater patient compliance to treatment recommendations and home protocols in instances of chronic low back pain.<sup>22</sup>

A correlation has been shown to exist between low back pain and depression.<sup>12,13</sup> Between 50-65 percent of patients with chronic pain have a concurrent diagnosis of depression.<sup>12</sup> Though signs and symptoms of depression in chronic pain populations may be different than "clinical depression" populations<sup>12</sup>, they do exhibit similar neurological changes in the brain.<sup>14</sup> Perhaps this can be attributed to the resultant decreased quality of life in patients with chronic pain symptoms.<sup>14</sup>

Complementary and alternative therapies have been found to be utilized more frequently than conventional therapies by people with severe depression.<sup>15</sup> Treatment of musculoskeletal conditions with chiropractic treatment has been demonstrated previously in the literature, especially in the area of low back complaints.<sup>2,3,13</sup> Results of treatment typically include one or more of the following; decreased pain symptoms, increased range of motion, increased muscle strength, and the return of function especially in the area of activities of daily living.<sup>5,10,12,13,16</sup> This in turn provides the mechanism for improvement in psychological well being with the utilization of chiropractic care.<sup>13</sup>

Nutritional and supplement recommendations are common among chiropractic practitioners. Chiropractic colleges typically offer at least two core nutritional classes, yet chiropractors fall short when applying nutritional recommendations to a patient base.<sup>17</sup> One particular study evaluated chiropractors in the New York area to assess for the quality of such recommendations.

The study surveyed 125 chiropractors and 81 percent are recommending nutritional changes or counseling in their patient treatment plans.<sup>17</sup> Sixty-five percent of respondents also stated that they did not feel adequately prepared to perform in-depth nutritional counseling from the education they received.<sup>17</sup> The correct protocol for nutritional counseling includes the following; assessing a diet diary, appropriate laboratory tests, creating and administering a dietary plan, and monitoring for improvement and patient health.<sup>17</sup>

This case study applied nutritional and supplemental recommendations in the treatment plan of the patient. When evaluating for proper protocol in nutritional counseling given in this case, it was correctly followed through with the exception of a diet diary.

## Conclusion

Presented in this study was a positive outcome in the treatment of radicular low back pain following conservative chiropractic care. Decreased pain and radicular symptomatology occurred along with the return of pain-free physical activities. Despite the absence of symptomatology, follow-up objective data revealed atrophy of the right lower extremity and disc herniation with accompanying foraminal

encroachment. With the progression of the study, concurrent depression and familial hemochromatosis were also discovered. Additional studies need to focus on obtaining quality objective data throughout the treatment process while maintaining consistent treatment with the aim of decreasing variables thus allowing for greater reproducibility.

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