Case Study

Resolution of Chronic Pain & Migraines Following Chiropractic Care to Reduce Vertebral Subluxation: A Case Study

Walter Hickman, D.C.[1]
Joel Alcantara, D.C.[2]

1. *Private Practice of Chiropractic, Cypress, TX*
2. *Research Director, the International Chiropractic Pediatric Association, Media, PA*

Abstract

Objective: To describe the chiropractic care of a patient presenting with chronic spinal pain and migraine headaches.

Clinical Features: A 52-year-old woman presented for care with a chief complaint of migraine headaches and left-sided spinal pain that radiated to the ipsilateral lower and upper extremities of 20+ years duration. Prescription medication provided moderate relief at best and not surprisingly, her quality of life was compromised in terms of her activities of daily living

Intervention and Outcome: The patient was cared for with the Gonstead Technique consisting at three times per week for 5 weeks with dramatic improvements in her migraine headaches and spinal pain with radiculopathy

Conclusion: This case report provides supporting evidence on the effectiveness of chiropractic care in the patients presenting with migraine headaches and atypically presenting spinal pain.

Keywords: *Radiculopathy, Gonstead Technique, quality of life, headaches, extremities, vertebral subluxation, adjustment*

Introduction

Chronic pain disorders, including fibromyalgia, back pain, and neck pain, are more common among chronic migraine sufferers.[1] Individually, chronic migraine and spinal pain present are significant causes of morbidity. Epidemiological studies indicate the average headache prevalence rate at 46% for 1-year prevalence and of 64% for lifetime prevalence. Among Western Europe and North America, prevalence rates are between 5% and 9% in men, and between 12% and 25% in women.[2] In Asian countries, the prevalence of migraine also favors women with rates ranging from 11.3%- 14.4% while men range at 3.6%- 6.7%.[3]

In Europe, migraine headaches had an estimated prevalence rate of 16.4% (i.e., 8.5% in men and 24.6% in women)[4] while in the United States, the 1-year prevalence of migraine in the United States is 13% with 18.2% in female patients and 6.5% in male patients.[5] Not surprisingly, migraine alone accounts for 1.4% of the mental and neurological disorders collectively accounting for 30.8% of all years of healthy life lost to disability (YLDs) globally and is in the top 20 causes of disability worldwide.[6] Chronic pain is also a widespread public health issue that has many effects on physical, emotional and cognitive functions. An estimated 10-55% of all adults are thought to have chronic pain. It is estimated that 126.1 million adults reported some pain in the previous 3 months, with 25.3 million adults (11.2%) suffering from daily (chronic) pain and 23.4 million (10.3%) reporting a lot of pain. Based on the persistence and bothersomeness of their pain, 14.4 million adults (6.4%) were classified as having the highest level of pain, category 4, with an additional 25.4 million adults (11.3%) experiencing category 3 pain.[7] Chronic pain impairs the quality of life for millions of individuals and therefore presents a serious ongoing challenge to clinicians and researchers.

Debilitating chronic pain syndromes cost the US economy more than $600 billion per year.[8] Interestingly, the use of alternative care approaches for any reason among persons with a musculoskeletal pain disorder (41.6%) was significantly higher compared to those without a musculoskeletal pain disorder (24.1%). Among adults with any musculoskeletal pain disorder, the use of natural products for any reason (24.7%) was significantly higher than the use of mind and body approaches (15.3%), practitioner-based approaches (18.2%), or whole medical system approaches (5.3%). In congruence with the principles of evidence-

informed practice, we describe the chiropractic care of a patient with co-morbidities of chronic migraine and spinal pain.

Case Report Narrative

History

A 52-year-old woman presented for chiropractic consultation and possible care with a chief complaint of migraine headaches and left-sided spinal pain that radiated to the ipsilateral lower and upper extremities. According to the patient, she suffered with these presenting complaints in the past 20+ years. Prescription medication provided moderate relief at best but did not address her symptoms while psychological distress proved provocative. According to the patient, she has had to present herself to the local hospital when these pain complaints were at their worst.

Not surprising, her quality of life (QoL) was compromised in terms of her activities of daily living. The patient indicated that her headaches involved her entire head while her spinal pain complaint(s) involved the entire left side of her spine with the previously described radiculopathy. The patient indicated that when her pain complaints were at their worst, she would rate (numerical rating scale (NRS)) the pain as severe (i.e., 10/10 [0=no pain [10= maximum pain]) but otherwise, her constant pain complaints was rated as moderate (i.e., NRS 4-6/10) and consistent throughout the day with no noticeable worsening or improvement throughout the day.

According to the patient, in addition to medical care, she attended the care of another chiropractor with moderate relief and admitted to using over-the-counter medication to self-medicate that was mild in providing her relief.

Physical examination

Physical examination initiated with clinical observation that revealed the patient to be agitated due to her pain presenting complaints. She was crying throughout the consultation and antalgic. Static digital palpation revealed restricted and concomitant aberrant motion at the C_1, C_5, L_2, L_4, T_3, T_5 and T_{10} vertebral bodies. There was reported tenderness and hypertonicity associated at the above aforementioned spinal levels. Active or passive range of motion (ROM), orthopedic testing and neurological testing examination were not performed. The patient was ultimately determined to have spinal subluxations as: L_2 PLI-M (-Z;-θY;- θZ), L_4 PRS (-Z;+ θY;- θZ), T_3 PRS (-Z;+ θY; -θZ), T_5 PRS (-Z;+ θY; -θZ), T_{10} PRS (-Z;+ θY; -θZ), C_1 ASLP (-θx;-X;+θY) and C_5 PRS (-Z;+ θY; -θZ).

Intervention & Outcomes

The patient was apprised of the chiropractic findings and consented to a course of chiropractic care utilizing the Gonstead Technique. Initial frequency of care was offered at 3 time per week. Initial chiropractic adjustments were performed in the following manner. The patient received spinal adjustment at the C1 and C5 vertebral bodies were adjusted in the seated position with a transverse process contact for C1 and a spinous contact with C_5. The thoracic spine (i.e., T_3, T_5 and T_{10} vertebral levels) was adjusted with the patient in the prone position utilizing a Hi-Lo table and a double pisiform contact to the paraspinal muscles. The L_2 vertebral body was adjusted in a similar patient position utilizing a transverse process contact. The L_4 was adjusted in a side posture position using a spinous process contact. The patient received chiropractic care at the described frequency for a period of 5 weeks.

At the patient's 7th visit, the patient's occiput was adjusted in the seated position as a PSRSRP (+θX;- θZ;= θY) subluxation listing with reported dramatic improvement in her presenting complaint (i.e., migraine headaches and spinal pain with radiculopathy). The patient elected to maintain regular chiropractic care at once a month despite her moving to a different city.

Discussion

In the case reported, many issues are salient for discussion in terms of the presenting complaints of chronic migraine and spinal pain in the context of chiropractic care. In the interest of brevity, our discussion will focus on issues germane for the practicing chiropractor and to inform research.

With respect to migraines, a national cross-sectional survey of Australian chiropractors (N=1869) found that a large proportion of chiropractors reported having a high migraine caseload (n = 990; 53.0%). Moore et al.[9] found that the strongest factors predicting a chiropractor having a headache management caseload include the frequent treatment of patients with axial neck pain, thoracic pain (referred/radicular) and non-musculoskeletal disorders. Motivation for chiropractic care among headache sufferers was for pain relief.

Interestingly, Moore et al.[10] found that a high percentage of these patients were likely continue with concurrent medical care but around half were not disclosing their use of chiropractic to their medical doctor. While there may be concerns by the medical profession on the safety of chiropractic care among adult patients and migraine sufferers (specifically), a recent study reported minor and minimal adverse events associated with chiropractic SMT.

Chaibi et al.[11] prospectively monitored all adverse events (AEs) in a chiropractic SMT RCT. Seventy migraineurs were randomized to an SMT or placebo group with 12 intervention sessions scheduled over a 3-month period. The AEs were described as frequencies and percentages within each group. Attributable risk (%) and relative risk were calculated with the corresponding 95% CIs. AEs were assessed in 703 sessions, with 355 in the SMT group and 348 in the placebo group. Local tenderness was the most common AE, reported by 11.3% and 6.9% of the SMT and placebo group, respectively. Interestingly, tiredness on the intervention day was reported by 8.5% and 1.4% of SMT group and the placebo group, respectively. The highest attributable risk was for tiredness on the treatment day, 7.0% which presented a relative risk of 5.9.

In terms of the efficacy of chiropractic care among migraine sufferers, 3 pragmatic chiropractic manual-therapy RCTs using the Diversified technique have previously been

conducted for migraineurs.[12] Chaibi et al.[12] commented that massage therapy, physiotherapy, relaxation and chiropractic SMT might be equally effective as propranolol and topiramate in the prophylactic management of migraine.

Parket et al.[13] performed a six-month trial involving 85 subjects suffering from migraine randomly allocated to three groups. One group received cervical manipulation performed by a medical practitioner or by a physiotherapist, another received cervical manipulation performed by a chiropractor, while the control group received mobilization performed by a medical practitioner or by a physiotherapist. Migraine symptoms were significantly reduced in all subjects, regardless of group affiliation. No difference in outcome was found between those who received cervical manipulation, performed by chiropractor or orthodox therapist, and those who received the control treatment. Despite finding that chiropractic was no more effective than the other two treatments in reducing frequency, duration or induced disability of migraine attacks, the chiropractic patients did report a greater reduction in pain associated with their attacks. There was a within-group reduction in migraine frequency, duration and intensity of 40%, 43% and 36%, respectively, at 2 months follow-up.

Nelson et al.[14] performed a prospective, randomized, parallel-group comparison. After a 4-week baseline period, 218 medically diagnosed migraine sufferers were randomly assigned to 8 weeks of treatment (i.e., amitriptyline, spinal manipulation and the combination of both therapies), after which there was a 4-week follow-up period. A headache index score derived from a daily headache pain diary during the last 4 weeks of treatment and during the 4-week follow-up period were the main outcome measure.

The investigators found that clinically important improvements were observed in both primary and secondary outcomes in all three study groups over time. The reduction in headache index scores during treatment compared with baseline was 49% for amitriptyline, 40% for spinal manipulation and 41% for the combined group. During the post-treatment follow-up period, the reduction from baseline was 24% for amitriptyline, 42% for spinal manipulation and 25% for the combined group. The investigators concluded that there was no advantage to combining amitriptyline and spinal manipulation for the treatment of migraine headache. Spinal manipulation seemed to be as effective as a well-established and efficacious treatment (amitriptyline).

Tuchin et al.[15] randomized 127 migraine sufferers into an SMT group and a control group with outcome measures (ie., headache diaries noting the frequency, intensity (visual analogue score), duration, disability, associated symptoms, and use of medication for each migraine episode) measured with two months of baseline measures, two months of treatment, and a further two months after treatment. Comparison of outcomes to the initial baseline factors was made at the end of the 6 months for both an SMT group and a control group. Tuchin et al.[15] found that the average response of the treatment group (n = 83) showed statistically significant improvement in migraine frequency, duration, disability, and medication use when compared with the control group (n = 40).

Recently, Chaibi et al.[16] addressed this with a prospective three-armed, single-blinded, placebo, randomized controlled trial (RCT) of 17 months duration. The study included 104 migraineurs with at least one migraine attack per month. Active treatment consisted of SMT characterized as Gonstead Technique while the placebo subjects received a sham push maneuver of the lateral edge of the scapula and/or the gluteal region. The control group (3rd group) continued their usual pharmacological management. The RCT consisted of a 1-month run-in, 3 months intervention and outcome measures at the end of the intervention and at 3, 6- and 12-months follow-up. The primary end-point was the number of migraine days per month with secondary end-points as migraine duration, migraine intensity and headache index, and medication use.

Chaibi et al.[16] found that migraine days were significantly reduced within all three groups from baseline to post-treatment ($P < 0.001$). The effect continued in the SMT and placebo group at all follow-up time points, whereas the control group returned to baseline. The reduction in migraine days was not significantly different between the groups. However, migraine duration and headache index were reduced significantly more in the CSMT than the control group towards the end of follow-up. Unfortunately, the investigators concluded that the effect of SMT was probably due to a placebo.

A recent examination of the current literature on the utilization of chiropractic services, reasons for seeking care, patient profiles, and assessment and treatment provided found that the most common reported reasons for people attending chiropractic care were spinal pain such as low back pain and neck pain as well as extremity problems. The most common treatment provided by chiropractors included SMT, soft-tissue therapy and formal patient education.[17]

The patient presented in this case report suffered from spinal pain with radiculopathy consistent with findings of spinal subluxation. We are of the clinical opinion that the radiating pain experienced by the patient may more likely be attributable to a sclerotogenous referral rather than nerve irritation (i.e., herniated intervertebral disc with radiculopathy) despite findings that nerve root pain should not be expected to follow along a specific dermatome, and a dermatomal distribution of pain is not a useful historical factor in the diagnosis of radicular pain.[18] The literature is has mixed support on the effectiveness of chiropractic in patients with spinal pain.[19-20] However, documentation of patients presenting similarly to the case presented is wanting. As further to our discussions, we note the safety of chiropractic in the care of spinal pain patients.

Swait et al.[21] recently performed a scoping review to characterize and summarize the available literature on risks of manual treatment of the spine. Based on 250 articles, benign adverse events were reported to occur commonly in adults and children. Predictive factors for risk are unclear, but for neck pain patients might include higher levels of neck disability or cervical manipulation. In neck pain patients, benign adverse events may result in poorer short term, but not long-term outcomes. Serious adverse event incidence estimates ranged from 1 per 2 million manipulations to 13 per 10,000 patients. Cases are reported in adults and children,

including spinal or neurological problems as well as cervical arterial strokes. Case-control studies indicate some association, in the under 45 years age group, between manual interventions and cervical arterial stroke, however it is unclear whether this is causal. Elderly patients have no greater risk of traumatic injury compared with visiting a medical practitioner for neuro-musculoskeletal problems, however some underlying conditions may increase risk. According to Swait et al.[21], the existing literature indicates that benign adverse events following manual treatments to the spine are common, while serious adverse events are rare. Furthermore, since serious adverse events could result from pre-existing pathologies, assessment for signs or symptoms of these is important.

The philosophical framework of constructivism is more congruent with providing research evidence to inform clinical practice based on clinical experience. Based on the ontology and epistemology that reality is constructed by individual perception and research emphasizes the meaning due to the human experiences, the findings of this case report should inform chiropractors in the care of patients presenting similarly.

Conclusion

This case report provides supporting evidence on the effectiveness of chiropractic care in the patients presenting with migraine headaches and atypically presenting spinal pain.

References

1. Sher AI, Buse DC, Fanning KM, Kelly AM, Franznick DA, Adams AM, Lipton RB. Comorbid pain and migraine chronicity: The Chronic Migraine Epidemiology and Outcomes Study. Neurology. 2017;89(5):461-468.
2. Manzoni GC, Stovner LJ. Epidemiology of headache. Handb Clin Neurol. 2010; 97: 3-22.
3. Peng KP, Wang SJ. Epidemiology of headache disorders in the Asia-pacific region. Headache. 2014;54(4):610-8.
4. Ertas M, Baykan B, Orhan EK, Zarifoglu M, Karli N, Saip S, Onal AE, Siva A. One-year prevalence and the impact of migraine and tension-type headache in Turkey: a nationwide home-based study in adults. J Headache Pain. 2012;13(2):147-57.
5. National Headache Foundation. American Migraine Study II. Accessed January 18, 2018 at: http://www.headaches.org/2007/11/20/american-migraine-study-ii/
6. Leonardi M, Steiner TJ, Scher AT, Lipton RB. The global burden of migraine: measuring disability in headache disorders with WHO's Classification of Functioning, Disability and Health (ICF). J Headache Pain. 2005;6(6):429-40.
7. Nahin RL. Estimates of pain prevalence and severity in adults: United States, 2012. J Pain. 2015;16(8):769-780.
8. Gutierrez J, Raju S, Riley JP, Boulis NM. Introduction to neuropathic pain syndromes. Neurosurg Clin N Am. 2014;25(4):639-662.
9. Moore C, Adams J, Leaver A, Lauche R, Sibbritt D. The treatment of migraine patients within chiropractic: analysis of a nationally representative survey of 1869 chiropractors. BMC Complement Altern Med. 2017;17(1):519.
10. Moore CS, Sibbritt DW, Adams J. A critical review of manual therapy use for headache disorders: prevalence, profiles, motivations, communication and self-reported effectiveness. BMC Neurol. 2017;17(1):61.
11. Chaibi A, Benth JRŠ, Tuchin PJ, Russell MB. Adverse events in a chiropractic spinal manipulative therapy single-blinded, placebo, randomized controlled trial for migraineurs. Musculoskelet Sci Pract. 2017;29:66-71.
12. Chaibi A, Tuchin PJ, Russell MB. Manual therapies for migraine: a systematic review. J Headache Pain 2011; 12: 127–133.
13. Parker GB, Tupling H, Pryor DS. A controlled trial of cervical manipulation of migraine. Aust NZ J Med 1978; 8: 589–593.
14. Nelson CF, Bronfort G, Evans R, Boline P, Goldsmith C, Anderson AV. The efficacy of spinal manipulation, amitriptyline and the combination of both therapies for the prophylaxis of migraine headache. J Manipulative Physiol Ther 1998; 21: 511–519.
15. Tuchin PJ, Pollard H, Bonello R. A randomized controlled trial of chiropractic spinal manipulative therapy for migraine. J Manipulative Physiol Ther 2000; 23: 91–95.
16. Chaibi A, Benth JŠ, Tuchin PJ, Russell MB. Chiropractic spinal manipulative therapy for migraine: a three-armed, single-blinded, placebo, randomized controlled trial. Eur J Neurol. 2017;24(1):143-153.
17. Beliveau PJH, Wong JJ, Sutton DA, Simon NB, Bussières AE, Mior SA, French SD. The chiropractic profession: a scoping review of utilization rates, reasons for seeking care, patient profiles, and care provided. Chiropr Man Therap. 2017;25:35.
18. Murphy DR, Hurwitz EL, Gerrard JK, Clary R. Pain patterns and descriptions in patients with radicular pain: Does the pain necessarily follow a specific dermatome? Chiropr Osteopat. 2009; 17: 9.
19. de Luca KE, Fang SH, Ong J, Shin KS, Woods S, Tuchin PJ. The Effectiveness and Safety of Manual Therapy on Pain and Disability in Older Persons With Chronic Low Back Pain: A Systematic Review. J Manipulative Physiol Ther. 2017;40(7):527-534.
20. Rubinstein SM, van Middelkoop M, Assendelft WJ, de Boer MR, van Tulder MW. Spinal manipulative therapy for chronic low-back pain. Cochrane Database Syst Rev. 2011;(2):CD008112.
21. Swait G, Finch R. What are the risks of manual treatment of the spine? A scoping review for clinicians. Chiropr Man Therap. 2017;25:37.