

Improvement in Chronic Musculoskeletal Arm Pain and Headaches in an 89-Year-Old Male Receiving Chiropractic Care Involving Torque Release Technique and Activator Methods Chiropractic Technique: A Case Report

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ABSTRACT:

Objective: To describe the presentation, care, and outcomes of an 89-year-old male experiencing medically-diagnosed chronic daily tension-type headaches, episodic migraines and co-existing musculoskeletal neck and arm pain.

Clinical Features: The patient had long-term, medically-diagnosed chronic daily tension-type headaches, frequent migraines, and chronic right arm and neck pain related to a blast injury suffered during an artillery bombardment in World War 2 and 2 severe motor vehicle accidents experienced during the 1950's and 1960's.

Intervention and Outcome: The patient received chiropractic care utilizing the Torque Release Technique and Activator Methods Chiropractic Technique for a 1-year period. After 12 weeks, the patient's daily headaches, episodic migraines and chronic arm and neck pain had completely resolved.

Conclusion: An 89-year-old male experiencing chronic headaches, arm and neck pain reported significant symptomatic improvements while receiving Torque Release Technique and Activator Methods Chiropractic Technique chiropractic care. Further research is required to better understand the efficacy and effectiveness of these chiropractic techniques when caring for older patients with musculoskeletal conditions.

KEYWORDS: Chiropractic; Tension-Type Headache; Migraine without Aura; Musculoskeletal Pain [Chiropr J Australia 2016;44(2):176-186]

INTRODUCTION

Headache disorders are regarded as 1 of the most common afflictions of the nervous system. The World Health Organization estimates that 47% of adults suffer from at least 1 headache per year (1). Headaches affect all populations, regardless of age, race, income level or geographical area; they "impose a recognizable burden on sufferers including sometimes substantial personal suffering, impaired quality of life and financial cost."¹ Many types of headaches become less frequent as we age but they remain a considerable burden in older adults (2).

Some headaches, including migraines, are associated with neck pain and disorders (3,4). Chiropractic care has been reported to help people suffering from a variety of headache disorders, but little scientific evidence exists that investigates the role chiropractors may play in helping older adults who suffer from chronic headaches (5).

Chronic musculoskeletal pain is also a common complaint in older adults. It can lead to a substantially increased risk of disability, a decline in mobility performance, and an increased risk of falling (6,7). Chiropractic care has been shown to be effective in managing individuals suffering from musculoskeletal conditions (8). However, it remains unclear whether chiropractors have a role to play in the care of older adults with chronic musculoskeletal conditions.

This case describes the presentation, chiropractic care provided, and outcomes of care of an 89-year-old male experiencing medically diagnosed chronic daily tension-type headaches, episodic migraines and co-existing musculoskeletal neck and arm pain.

CASE REPORT

Clinical Features

An 89-year-old male participated as a subject in a chiropractic research trial investigating the effects of chiropractic care on balance and falls in older adults. His history revealed significant trauma, including a motor vehicle accident (MVA) in 1957 in which he suffered 4 fractures in his right arm; they were managed with surgical reduction and fixation. Subsequently, he was unable to fully extend that elbow and he suffered from what he termed “agonising” (9 out of 10) ongoing night pain in his arm since the accident. Another MVA in 1962 resulted in the fracture of his C6 spinous process, causing him ongoing neck pain (rated as 9 out of 10) that had remained consistent since the injury. He also suffered a significant blast injury during an artillery bombardment in World War 2. Shrapnel became embedded in his left shoulder during this artillery attack and was never surgically removed. He reported that he had suffered from mild-moderate bilateral frontal headaches on a daily basis for as long as he could remember and believed these were associated with the significant traumas already mentioned. He described these medically diagnosed chronic daily tension-type headaches as feeling like ‘inside pressure’ and rated them from 4-6 out of 10 on a pain scale. Over recent years he had developed medically diagnosed migraine headaches without aura that occurred every 2-3 weeks – resulting in left-sided throbbing, incapacitating head pain, and photophobia. He rated these migraine headaches as 9 out of 10 but said he had learned to endure them. Despite these chronic symptoms, he had accepted that he would remain incapacitated by this pain and regarded his health as exemplary for his age, and he stated that he was still very active and rarely took any medication. The only medication he did take was a ‘sleeping pill once or twice a month’ and on the ‘odd occasion’ he would use asthma medication if he felt out of breath.

A physical examination was performed that included a postural and balance assessment, range of motion (ROM) testing, orthopedic examination, neurological screening entailing muscle strength tests, muscle stretch reflexes, sensory testing and cranial nerve testing, and a chiropractic examination was performed. The patient’s self-reported physical and mental health was also assessed using an SF-36 version 2.0 short-form health survey (9). The chiropractic examination included palpation for tenderness (10-12) passive intervertebral and active global motion of the cervical spine (measured using a manual goniometer) (13-16) and a chiropractic assessment using the Torque Release Technique™ protocol. This protocol involves a combination of observation, palpation, and functional tests to assess the spine for indicators of vertebral subluxation (17). The balance test involved the patient being asked to stand on a foam cushion for 20 seconds with his eyes closed (18). Orthopedic tests that were performed included the cervical compression test, straight leg raise and Patrick’s FABERE test. Full-spine radiographs were also taken due to the patient’s age and significant history of spinal trauma.

The physical examination and radiographic examination revealed substantial anterior head carriage with a straightening of the cervical lordosis. Muscle tightness was present throughout the cervical and upper thoracic spine. ROM was limited in all ranges in the cervical spine (see Table 1 for pain ROM and SF36 assessment results). At the initial evaluation the patient was unable to complete the balance assessment and the SF36 revealed that his self-reported physical component summary (PCS) score was below the expected norm (42.5, normal is 50) but his mental component summary (MCS) score was above the norm (56.3, normal is 50). All neurological assessments were found to be within normal limits, and there were no positive orthopaedic tests. Subluxation listings were recorded at C0, C1, C2, C5, C7, T1, T2, T4 and T6 vertebral levels as well as the sacroiliac joints.

The diagnoses given, based on the case history, clinical examination, and previous medical diagnoses, were chronic daily tension-type headaches, episodic migraines without aura, musculoskeletal neck and arm pain, and concomitant vertebral subluxations.

Interventions and Outcomes

Chiropractic care was provided using instrument-assisted techniques (i.e., Activator Methods Chiropractic Technique (AMCT) and Torque Release Technique (TRT) (17, 19,20) AMCT utilizes a hand-held instrument with a blunt stylus to deliver a high-velocity low-amplitude force to articulations in the spine and peripheral joints with the goal of restoring motion to the targeted spinal vertebra or joint (20). The technique system involves using a series of provocative diagnostic manoeuvres during prone leg checking in order to identify which joints should be adjusted (19). TRT utilizes an adjusting instrument with a pre-cocking, pressure sensitive tip and automatic release mechanism that aims to impart a high-velocity, low-amplitude force that includes a torque component into the area of the spine that is being adjusted (17). TRT involves a tonal approach as opposed to a segmental approach to chiropractic care. TRT adjustments are generally applied to specific locations in the spine (C1, C2, C5, sacrum and coccyx) that are thought to be important because of dural attachments in those areas. TRT also largely relies on provocative manoeuvres that are performed during prone leg checks to establish which areas of the spine should be adjusted (17). Vertebral subluxations are hypothesized to be dysfunctional areas of the spine that represent a state of altered afferent input to the central nervous system that can result in altered somatosensory input and sensorimotor integration, and ultimately lead to dysfunction including pain and disability (21).

Areas of the spine that were regularly adjusted using these technique protocols during the early stages of care were the C0, C1, C2 levels and the sacrum. The patient's initial care plan involved twice-weekly visits over a 6-week period using TRT. The patient was adjusted at every visit and a progress examination was conducted in the 6th week of care (12th visit). No other forms of treatment (i.e., adjunctive therapies) were provided during this time and no significant changes were made to the patient's normal daily routines.

In the first week of care the patient reported a considerable decrease in the intensity and frequency of his headaches and arm and neck pain almost immediately

following his first adjustment. At the 6-week progress evaluation he reported continued improvement with his tension-type headaches (2-3 out of 10 and no longer daily), and a complete cessation of migraines following the commencement of chiropractic care. He also noted that although he felt like his health was exemplary for his age before beginning chiropractic care he now felt a lot more comfortable walking, that he had more energy for daily activities, that he felt less pain (2 out of 10) and stiffness in his neck and shoulders, and that the pain in his right arm had also subsided (2-3 out of 10) and was no longer bothering him. He mentioned that he didn't mention the limitations he initially had with his mobility and energy when he began care because he just thought that was normal for his age. At the 6-week assessment, his cervical spinal range of motion had improved (Table 1) as had his SF36 PCS and MCS. At the 6-week assessment he again failed to complete the balance assessment.

Table 1: Range of motion, pain and SF36 scores at baseline and reassessments

Outcome	Baseline Assessment	6 Week Assessment	12 Week Assessment
Cervical Spine Range of Motion (°)			
Flexion (50)*	20	50	50
Extension (64)*	20	40	40
Lateral Flexion (L/R) (40)*	18/18	20/30	20/30
Rotation (L/R) (62)*	55/60	60/60	60/60
Tension-type Headache Pain**	4-6	2-3	0
Migraine Headache Pain**	9	0	0
Arm Pain**	9	2-3	0
Neck Pain**	9	2	0
SF36 Health Survey			
Physical Component Summary Score	42.5	52.8	47.6
Mental Component Summary Score	56.3	59.1	56.1

*Normal values for males over 60 years according to Cote, Kenny, Dussetschleger, Farr, Chaurasia, Cherniack (22)

**Measured using an 11-point pain scale

Normalized to have a mean of 50 based on New Zealand population norms

The chiropractor reported a decrease in clinical indicators of vertebral subluxations at the 6-week assessment, including decreased overall joint tenderness and improved intervertebral range of motion throughout the spine. However, specific vertebral levels in the upper cervical spine, cervicothoracic junction, and sacroiliac area remained tender when palpated and restricted in passive intervertebral motion. The chiropractor chose to switch to the Activator Methods Chiropractic Technique at the 6-week assessment in order to address these ongoing clinical indicators of vertebral subluxations that had not improved significantly during the initial stage of

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care.

Chiropractic care continued twice-weekly for another 6 weeks, at which point another progress evaluation was conducted. Although some clinical indicators of vertebral subluxation still existed, the patient reported a complete cessation of all headache and migraine symptoms and also his arm pain had completely subsided. At this 12-week assessment, his cervical range of motion findings remained consistent with the 6-week assessment but he was able to successfully complete the balance assessment. Although he reported significant improvements in his bodily pain and other aspects of his health at the 12-week assessment, his SF36 scores had decreased compared to the 6-week assessment, but his PCS remained higher than baseline and his MCS was similar to baseline (Table 1). The 'bodily pain' domain of the SF36 improved substantially from baseline (38.2) to 6 weeks (46.7), and from 6 weeks to the 12-week assessment (55.5). This was consistent with his subjective pain report, but a decrease in other SF36 health domains contributed to the decreased summary scores between the 6 and 12-week assessments.

Following this 2nd re-evaluation the patient received chiropractic care characterized as "maintenance care" for the following year. This care involved the ongoing provision of care each fortnight because clinical indicators of vertebral subluxation were still present even though the patients subjective complaints had resolved.²³ Maintenance care was provided at the patients request because he was very happy with the outcomes of care and didn't want to go backwards again if care was discontinued. This is consistent with respecting the patients values as a fundamental component of evidence-based practice.²⁴ At 1-year follow up he reported no further complaints of head, neck, or arm pain.

DISCUSSION

This case study reports the complete recovery of long standing headaches, upper limb pain and neck pain in an 89-year-old male following 12 weeks of chiropractic care, with no symptoms recurring over a 1-year follow up period of 'maintenance-type' care. Although there is a growing body of evidence suggesting chiropractic care may be beneficial for many people suffering from these conditions (5,25,26). there is a paucity of evidence that reports changes in these conditions in older people receiving chiropractic care (27).

It is well accepted in the scientific literature that headache disorders are one of the most common and debilitating conditions to burden modern-day society (1,2,28,29). The World Health Organizations ranking of causes of disability places headache disorders in the top 10 most disabling conditions for both genders, and the top five for women (29).

Categorically, the most prevalent headaches worldwide are of a primary nature (29). The percentage of the adult population with active headache disorders are: 3% for chronic daily headaches, 11% for migraine headaches and 42% for tension type (29). Most chronic daily headaches can be classified as either chronic tension-type headaches or transformed migraines, with roughly equal prevalence (30).

This case study reports the amelioration of chronic tension-type headaches, episodic

migraines and co-existing musculoskeletal neck and arm pain in an 89-year-old male within 6 weeks of initiating chiropractic care utilizing AMCT and TRT. For the age group of the patient described in this case report, the prevalence rate of chronic daily headaches is similar to that seen in the general adult population.³⁰ The patient had been medically diagnosed with chronic daily tension-type headaches and episodic migraine based on the frequency and patient description of the headaches. It should be acknowledged that it is possible that the diagnosis of tension-type headaches was incorrect and the headaches may have in fact been cervicogenic in nature and it is a limitation of this case study to rely on a previous headache diagnosis.

Systematic reviews have concluded that chiropractic care is as good as other interventions such as pharmaceutical therapy and other manual therapies when managing patients with migraines and cervicogenic headaches, (31-33) but evidence is lacking or inconclusive for chiropractic care for tension-type headaches and neck pain (32, 33). Evidence based guidelines for the chiropractic treatment of adults with headache suggest that for the treatment of migraines chiropractors should consider utilizing spinal manipulation, weekly massage, and multimodal multidisciplinary care. For tension-type headaches low-load craniocervical mobilization is recommended and spinal manipulation cannot be recommended based on the current lack of supporting research evidence. Recommendations for cervicogenic headaches include spinal manipulation, joint mobilization, and deep neck flexor exercises (5). For the treatment of neck pain the strongest evidence based recommendations include manipulation, manual therapy, and exercise in combination with other modalities (25). Evidence based practice embraces 3 fundamental components including the current best evidence, patient values, and clinical experience (24). The chiropractor providing care in this case chose to rely more heavily on their clinical experience and patient values than the current clinical practice guidelines when providing care for this patient. This is relatively common even amongst chiropractors who support the use of evidence based practice (34). Areas of care that did not closely follow evidence based practice guidelines included the use of full spine radiographs, use of a limited number of orthopaedic tests, reliance on a previous medical diagnosis, the use of AMCT and TRT to correct vertebral subluxations as opposed to treating particular conditions, and providing maintenance care after the resolution of symptoms (5,25,35,36). These may be limitations of the care provided, but the extremely positive patient outcomes may suggest that the chiropractors reliance on clinical experience and patient values over clinical practice guidelines was a reasonable approach to take in this case.

To date, surprisingly little is known or understood regarding the underlying pathophysiology and treatment of tension-type chronic daily headaches (37). Central and peripheral mechanisms may be involved in the etiology of tension type headaches (37). Of interest to chiropractors is that it has been suggested that “central sensitization is probably the most important key to understand this widespread disorder. An effective prevention or reversal of this central sensitization will probably be of major importance in future treatment strategies.” (38) There is a growing body of evidence suggesting that spinal dysfunction has an effect on central neural processing and it has been suggested that spinal dysfunction may lead to altered afferent input to the central nervous system (39). Therefore if chiropractic care improves spinal function by correcting vertebral subluxations it may impact on central sensitization through modulation of spinal cord reflexes or central cortical or subcortical pain control mechanisms (39). If this is the case it may provide one

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possible link between the potential effects of chiropractic care on patients suffering from tension type headaches, if a link does in fact exist.

To better understand this potential relationship between chiropractic care and tension type headaches further basic science studies will help us to understand mechanisms that may be involved in the changes observed, and further experimental trials are required to investigate whether a causal link exists between chiropractic care and improvements in tension type headaches.

The patient in this case report had been experiencing daily headache episodes throughout his life up until the age of 89 when he initiated chiropractic care. This may suggest there is a correlation between the cessation of headaches and musculoskeletal pain and the chiropractic care that was provided. It is important to acknowledge however that spontaneous remission and self-limiting aspects of the natural history and placebo effects cannot be ruled out. This limits the ability to make any cause and effect inferences in this case study.

CONCLUSION

This case study describes the presentation, chiropractic care provided, and outcomes of care of an 89-year-old male experiencing medically diagnosed chronic daily tension-type headaches, episodic migraines and co-existing musculoskeletal neck and arm pain. The patient reported a cessation of longstanding headaches and musculoskeletal complaints after 12 weeks of TRT and AMCT chiropractic care. These improvements persisted during the one year follow up period during which they were receiving regular ongoing chiropractic care. As a case study few conclusions can be made about the association between the chiropractic care that was provided and the improvements that were observed. Further research is required to better understand the efficacy and effectiveness of these chiropractic techniques when caring for older patients with musculoskeletal conditions.

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