CHIROPRACTIC/REHABILITATIVE MANAGEMENT OF CHRONIC HEADACHES: A RETROSPECTIVE CASE REPORT

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ABSTRACT

Objective: To discuss management of cervicogenic headache by chiropractic manipulation and an active rehabilitation program.

Clinical features: A 28-year-old female had headaches of approximately a 10-year duration that were located on the right occipital-cervical region with radiation into the right paraspinal musculature of the cervical spine. Prior allopathic intervention included pharmaceutical approaches without resolution of symptoms. The area involved demonstrated marked point tenderness to static/motion palpation techniques. Manual resisted muscle testing of the sub-occipitals, upper trapezius, levator scapulae and the rhomboids decreased her pain, while testing of the anterior scalenes and sternocleidomastoids muscles created an increase in her pain. Seated cervical spine range of motion was diminished in all ranges and was limited by an increase in her pain of the right sub-occipital joint. The remainder of the examination was unremarkable.

Intervention and outcome: Treatment plan and intervention included patient education in posture and an in-office treatment program progressing to home therapy was reviewed with the patient. She noticed an increase in signs and symptoms after her first 3 visits followed by a decrease in her primary signs and symptoms during visits 3–5. An in-office active rehabilitation program was included with a continued positive response. She was released to home therapy and supportive chiropractic manipulation with continued positive response.

Conclusion: Management of cervicogenic headaches with chiropractic manipulation and rehabilitation is discussed. A literature review is included. Past trauma with altered postural biomechanics appeared to be the cause in this particular case. Management strategies including education of proper biomechanics, rehabilitation and chiropractic manipulation were effective in this case. (*J Chiropr Med* 2003;2:96–101)

KEY WORDS: Headache; Chiropractic Manipulation; Rehabilitation

INTRODUCTION

The purpose of this case report is to describe and discuss chiropractic and rehabilitation techniques used in the treatment of a patient suffering from cervicogenic headaches.

According to the National Headache Foundation, over 45 million Americans suffer from chronic recurring headaches. (1) About 20% of children and adolescents are also reported to have significant complaints of headaches. (2)

Headaches can be considered a serious health problem as the disability associated with headaches can be significant. Certainly, there are times when a headache signals a serious condition. (3) However, in the majority of cases, the onset and continuation of a headache can be managed through medical or alternative intervention. (4–8) More than 90 percent of headaches can be classified as tension-type, migraine (with or without aura) or cervicogenic, of which the most common is the tension-type of headaches. (1,2,4,8) The typical presentation includes mild to moderate bilateral head pain. (1,4) The symptoms are usually described as tight, stiff and constricting, like having something wrapped tightly around the head. (1,4)

Migraines are periodic severe throbbing headaches that afflict a smaller percent of the population. (1,4) Women have a higher incidence of migraines than men. (1,3,4,9) The typical case of migraine is unilateral and can cause a loss of appetite, nausea and sometimes vomiting. There is often a pre-migraine warning called an aura that usually precedes the onset of the migraine heading within 5–30 minutes. (1,4)

A cervicogenic headache is a musculo-skeletal form of a tension-type headache, which can at times be related to migraines. (1,4) Often, patients with a cervicogenic headache remain undiagnosed due to the relative

newness of this classification (1, 4). A classification method introduced by the International Headache Society is as follows: 1) Migraine, 7 main classifications and 10 sub-classifications; 2) Tension, 3 main classifications and 4 sub-classifications; 3) Cluster headache and chronic paroxysmal hemi-crania, 3 main and 5 sub-classes; 4) Miscellaneous headaches unassociated with structural lesions, 6 main and 5 sub-classes; 5) Headache associated with head trauma, 2 main and 4 sub-classes; 6) Headache associated with vascular disorders, 9 main and 17 sub-classes; 7) Headache associated with non-vascular intracranial disorders, 7 main and 6 sub-classes; 8) Headache associated with substances or their withdrawal, 5 main and 16 sub-classes; 9) Headache associated with non-cephalic infection, 3 main and 4 sub-classes; 10) Headache associated with metabolic disorders, 6 main and 3 sub-classes; 11) Headache or facial pain associated with disorder of cranium, neck, ears, eyes, nose, sinuses, teeth, mouth or other facial or cranial structures, 7 main and 7 sub-classes; 12) Cranial neuralgia, nerve trunk pain deafferentation pain, 8 main and 13 sub-classes; 13) Headaches not classified. (10)

The headache represents a significant therapeutic problem in modern medicine and is the most frequent reason people seek medical advice today. (3,4,11,12) Approximately 10% of the chiropractic patient population are patients that present with headaches. (5,13,14) There are many causes of headache, such as accidents, hyper-flexion/hyper-extension injuries, space-occupying lesions in the brain, allergies, eyestrain, chemical/toxic precursors, and others. (4,6,11,12,15,16) Though most headaches are of a "benign" nature, there is agreement that most headaches have multiple causes - vascular, neurological, biomechanical, psychological and/or environmental.

There is increasing disagreement on the primary sources of pain, mechanisms, classifications, diagnosis and treatment. (3-5) However, the exact pathogenesis of the headache has yet to be established by either discipline. (8,11,13,15,17) Even a minimal change in the space may inevitably cause a dysfunctional reaction.

Chiropractic literature reports successful management of most benign headaches without medications, primarily through correction of the dysfunctional cervical spine with a variety of manipulative techniques. (4,5,14)

The objective of this case report is to offer a treatment/management approach for headaches, which may aid

future larger scale research efforts on the efficacy of chiropractic headache management.

CASE REPORT

A 28-year-old female had suffered from headaches for approximately 10 years. She states that the headaches present with an aura of nausea, dizziness and an occasional spotting of her visual field. The pain is located over the right occipital-cervical region with some radiation into the right paraspinal musculature of the cervical spine. She states that the headaches are exacerbated by a decrease of sleep, an increase of hours at work, intense sunlight and are decreased by ibuprofen, rest and the removal from extreme sunlight. She had previously been in a motor vehicle incident about 10 years ago. The patient stated the only treatment offered at that time was over-the-counter ibuprofen and ice packs at home.

Prior to entering the clinic, she had sought medical care consisting of special tests including CT scan, EKG, MRI and a nuclear bone scan to assess for possible tumors, cancer or vascular compromise. All testing was reported as negative. Her primary form of treatment at that time was codeine, Valium, birth control pills and anti-depressants. She stated that the drug therapy gave her some temporary relief of the pain. The patient ceased therapy due to her concern of a continued state of confusion, lethargy, an increase in weight gain and her fear of becoming dependent upon anti-depressants. The headaches resumed, and the patient began to use to over-the-counter headache medications.

Physical examination included a complete physical, orthopedic and neurological testing, all of which was unremarkable. A postural and palpatory exam revealed anterior head carriage, rounded shoulders with point tenderness of the right suboccipital region, left C1, C5, T4/5 on the right. All restrictions were verified via static/motion palpation. Palpation techniques and their reliability have been questioned as a diagnostic tool. Static palpation was noted as being highly reliable for spine tenderness. (18,19) Pressure-controlled palpation using a device called a palpometer is reported as having a much higher reliability than manual palpation techniques. (20) Motion palpation revealed a high level of reproducibility. (21) Though the aforementioned techniques revealed a high level of reproducibility, examination techniques, guidelines and documentation standards need to be more clearly established. (22,23) Hypertonic muscles, such as the deep neck flexors and weak musculature, ie, the sub-occipitals, sternocleidomastoids, upper trapezius, levator scapulae and the

rhomboids were differentiated utilizing muscle/palpation testing. (7) Differential diagnosis was cervicogenic vs migraine headache.

The patient was requested to fill out a PAR-Q (physical ability readiness questionnaire), Neck Disability Index (Vernon-Mior), Waddell Disability, Headache Disability Index, Borg Pain Scale, Pain Drawing, Visual Analog Scale and a job satisfaction questionnaire. (7) Upon review and scoring of the patient's questionnaires, an outcome assessment baseline was established. Cervical spine range of motion was (patient range/normal respectively): Flexion 38°/60°, Extension 37°/75°, Left lateral bending 27°/45°, Right lateral bending 27°/45°, Left rotation 39°/80° and Right rotation 39°/80°. (24) Range of motion was measured using a dual inclinometer, 3 times in each range with the greatest of the 3 attempts charted.

A clinical trial of stretching and manipulation was initiated followed by supine, diversified manipulation of the right suboccipital joint and the left C1/2, C4/5 cervical vertebrae. An upright anterior Diversified technique was utilized to adjust the T4/5 thoracic vertebrae. This technique is similar to a supine anterior adjustment, utilizing a wall pad.

The patient was instructed in proper performance of Brugger's Position. The Brugger's Position is performed by sitting at the edge of a chair with feet and knees wider than the pelvic width and rotated slightly outward. Maintaining a chin tuck, raise the chest up, allowing the spine to relax into a gentle arch. Relax shoulders down and internally rotate arms/hands so that thumbs point backward; hold and release as instructed. (25) She was instructed to perform this daily for 5 days, 2 sets, 8 repetitions, holding for 4 to 10 seconds with a resting time of 30 seconds. Initiation of a pectoral, sternocleidomastoid (SCM) and anterior scalene stretch at a frequency of 2 repetitions, hold 15 seconds with a 5 second rest 2 times per day for 5 days. (7,25) The patient was treated daily for 5 visits. During the first 3 visits she experienced a marked increase in all symptoms. Not only did the frequency increase, the patient stated the severity had gone to a constant 8 of 10 on a visual analog scale. The patient was informed and educated that this would probably happen. She understood that she has had this problem for some time, and that the biomechanical and postural corrections would cause an initial increase in signs and symptoms due to her body's adaptation to correction. She was receptive to this explanation and continued her treatment program. Visits 4 and 5 revealed a subjective moderate to marked decrease in her overall pain (4–5 out of 10)

frequency, duration, and most surprisingly to her was the increased ability to tolerate exposure to direct sunlight. Also noted were diminished anterior head carriage and a moderate decrease of involved muscular hypertonicity.

The patient was examined on her sixth visit to determine if she was a candidate for a structured rehabilitation program. The primary criteria for Stage 1 rehabilitation set by the American Chiropractic Rehabilitation Board (ACRB) is as follows: 1. Minimum of 5 visits (2 weeks) 2. 75% pain free range of motion and 3. 30% functional deficit. The patient, at that time, met the Stage 1 criteria and was clinically able to perform all the required tasks. Stage 1 rehabilitative stretching was performed with the patient's transition into an active role. Stage 1 rehabilitation included the following: Brugger's Position, pectoral, SCM and anterior scalene stretches continued as originally instructed and previously described. (7,25) Added to the regimen was chin tuck/retraction, lateral range of motion (ROM) lateral bending ROM and extension ROM. (25) This was performed using the same parameters as her other stretches. The patient was also instructed on basic proprioception activities including, cross crawl standing, cross crawl behind body and cross crawl sideways. (25) Proprioception exercises were to be performed daily, 1 set each for 1 to 2 minutes each, per patient tolerance.

The regimen of stage 1 stretching along with manipulation was performed at 3 times per week for 2 weeks in office. She was instructed to perform her stretching at home as originally educated. The patient was compliant with her treatment and continued to respond consistent with clinical expectations.

The patient's overall subjective complaints of pain, frequency, duration and sensitivity to light continued to resolve. She stated on a VAS, her pain was at a level of 3–4 of 10. Objectively, visual inspection of her anterior head carriage was diminishing and a reduction of point tenderness of the anterior scalenes, sternocleidomastoids and her primary area of pain, the right C1/C2 cervical spine musculature were noted. Similarly, improvement in static/motion palpation findings of the listed areas were noted. An examination to determine if this patient was a candidate to begin Stage 2 rehabilitation was performed. The criteria for this clinical decision were as follows: 1. Minimum of 5 visits (2 weeks) 2. 90% pain free range of motion and 3. 20% functional deficit. The patient met the criteria and was able to perform all required tasks.

Stage 2 rehabilitation continued with Brugger's Position, pectoral, SCM, chin tuck/retraction, lateral ROM,

lateral bending ROM and extension ROM and proprioception exercises continued as originally instructed in the Stage 1 phase. (7,25) Program additions included a seated scapular retraction, supine neck retraction and posterior cervical spine isometrics. (25) These were performed at 2 sets, 8 repetitions with a hold time of 6 seconds and a rest time of 30 seconds. These were instructed to be performed 3 times per week in-office only. This regimen was followed at 3 times per week for 2 weeks with continued positive response. The patient continued to state the pain, frequency, intensity and her overall lifestyle has improved.

At this time, an examination was clinically indicated to determine if the patient was a candidate for Stage 3 rehabilitation. The criteria are as follows: 1. Minimum of 5 visits (2 weeks) 2. Full pain free range of motion and 3. 10% functional deficit. The patient met all criteria and was able to perform all required tasks.

Stage 3 continued at a frequency of 3 times per week for 3 weeks. The following regimen was followed: Brugger's Position, at a decreased frequency of 3 times per week. Pectoral, SCM, lateral ROM, lateral bending ROM and anterior scalenes stretches continued at a frequency of 3 times per week. (7,25) Proprioceptive training now included an anterior-to-posterior wobble board. (7,25) Proprioceptive training also continued at 3 times per week. Supine neck retraction and posterior cervical spine isometric exercises continued at a frequency of 3 times per week (25). The patient also graduated to elastic-type band exercises such as seated scapular retraction, seated row, front pull down and shrugs, all performed at 3 sets for 10 repetitions with a 30 second rest between sets at a frequency of 3 times per week, in office only. (25) Manipulation was also continued on the listed occipital, cervical and thoracic vertebrae at a frequency of 3 times per week.

This regimen continued with positive response. At this time, the patient was ready to continue her home regimen as follows: Brugger's Position, pectoral, SCM, lateral ROM, lateral bending ROM, anterior scalene and the addition of mid-back quadruped-stretches. (7,25) Proprioception, supine-neck retraction, posterior, cervical spine isometrics, along with elastic bands performing, seated scapular retraction, seated row, front pull down and shrugs were to be performed at a frequency of 2 times per week with manipulation to be performed 2 times per month. (25)

Up to the time of this case study, the patient has continued her home regimen along with her manipulation as suggested with overall positive results. Her VAS

was at a consistent 0–1 of 10, and outcome assessment forms scores continued to be favorable. Her cervical spine range of motion had increased to full and pain free.

DISCUSSION

Rehabilitation and the application of physiological therapeutics in chiropractic history possibly began with D.D. Palmer as early as 1886 (26) and was firmly established by 1914. (27) Chiropractic rehabilitation embraces a continuum of care integrating passive and active treatments. (28) Manipulation is pivotal, as it has demonstrated superiority over other methods for providing pain relief. (29) The goal of rehabilitation is to improve the effectiveness of chiropractic adjustments as to achieve a positive effect of the entire loco-motor system. (30)

The basic starting point of rehabilitation is an assessment for abnormal function such as in strength, endurance, coordination, balance and flexibility. (31) An effective training regimen should be administered which isolates the "weak link" and provides the appropriate mode, intensity, frequency and duration. (31) Chiropractic adjustments can achieve short-term relief of pain and restore biomechanical function, but cannot sufficiently influence the muscular system to improve motor control. (31) Palliative care approaches utilizing passive care modalities usually fail to rehabilitate abnormal muscle function. (31) Rehabilitation and active care are key aspects to the new quality of care paradigm referred to as the biopsychosocial model, which is emerging.

For chiropractors to be in step with this evolution they need to learn evaluation and treatment skills along with a revised philosophy of care. (32) Linton demonstrated that early aggressive treatment, patient education, exercise instruction and physical rehabilitation were superior to traditional treatment approaches of rest, analgesics without physical therapy for 3 months. (32,33) Mitchell, in a comparative study of passive physical therapy versus active rehabilitation noted, active exercise to provide mobility, muscle strengthening, and work conditioning has shown superior results. (32,34) Timm, in a randomized controlled study looking at exercises and passive care found that low-tech exercises gave a greater benefit than high-tech exercises. (35) The incorporation of rehabilitation into the chiropractic treatment model represents a new way to manage presenting chiropractic patients. This allows physicians to evaluate regional conditions despite of dysfunction in the entire locomotor system. (32)

Rehabilitation has been shown to be effective in the control and management headaches, mechanical neck pain, trauma and whiplash-type injuries. (36–38) In this case the chief complaint was headache with secondary neck pain. Supine Diversified technique was applied to the cervical spine and an upright Diversified technique was utilized on the thoracic spine. A clinical trial period of 3 times per week was initiated. Subjective complaints, headache, neck pain and visual disturbance diminished. Outcome assessment continued to improve along with positive response to manipulation. The active care of this plan of aerobic exercise, stretching, activity of daily living modification, proprioceptive training and therapy bands was utilized to decrease the healing time of this patient. Active rehabilitation was also used to allow the patient to care for herself and to decrease the potential of doctor patient dependency and pain related behavior that she had developed from relying on over-the-counter medication. An important part of the active program was aerobic exercise, utilizing a recumbent bicycle. Aerobic exercise increases cellular metabolism and blood flow to tissues in a manner not possible by non-aerobic exercises. (39) Stretching was utilized both in office and at home. In-office stretching was used prior to in-office rehabilitation and at home or office when she could not exercise. Part of the active care strategies included activity of daily living modifications. This included proper sitting techniques, the addition of headsets on all her phones, initiation of daily stretching, and cervical contoured pillow.

Proprioceptive training was also used to aid the patient's sense of bilateral stability and cognitive sense. Therapy bands were introduced to stabilize biomechanical structures and aid in the stability of her adjustments. Analyzing this case would not be complete without discussing the change in patient behavior during the management of this case and how this occurred.

The patient's recovery is dependent on compliancy of her treatment plan and schedule. She took great pride in her improvements because she was actively participating. She had to make the decision to follow the treatment plan and make the necessary changes in her life. She was continually reinforced that her dedication and compliancy were the primary reason for her positive results. When the patient was released to supportive care she was both mentally and physically relieved and felt she was finally in control of her own problem. Therefore, improvement in the chronic pain syndrome that she initially presented with represents appropriate case management embracing the biopsychosocial model.

There are some methodological limitations to this study. Several forms of intervention were utilized. No single form of therapy was utilized and monitored for potential response. This case report was written in a retrospective manner. A more defined hypothesis, designated interventions and pre-determined observation phases alternating with periods of treatment, characteristic of a prospective time-series design, may have provided a more defined report. While the management protocols utilized in this case may be applicable to the case management of a broader spectrum of headache patients, this report is limited in its application by the limitation of a retrospective case report. More precise and reliable techniques of palpation should be utilized for a study of this type.

Results of case reports can not be generalized to all or other types of headache due to the lack of control of situations that occur to individual patients on a daily basis. Generalizations from a retrospective case study to other headache populations should be reserved for high quality, controlled clinical trials involving a larger patient populations.

CONCLUSION

A patient with a clinical diagnosis of cervicogenic headaches responded positive to a clinical trial of manipulation and active rehabilitation that included specific adjustments of the cervical and thoracic spine, exercises for her condition along with activity's of daily living modifications.

No firm conclusion can be derived from the outcome of a single retrospective case study. It does suggest that chiropractic and rehabilitation may provide long term, positive response for a patient with chronic complaints of cervicogenic headaches. Conservative treatment such as manipulation and rehabilitation should be considered before chemical and/or invasive procedures in my opinion.

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