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Headache in the Whiplash Patient

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New evidence has emerged which suggests a powerful role for chiropractic and exercise in the treatment of headache. It has been shown that the majority of chronic neck pain patients post-whiplash have significant pain provocation from their cervical zygapophyseal joints.¹ Second, chronic headache patients can be distinguished from normals by a test of deep neck flexor weakness.² Third, postconcussional headache sufferers also have a weakness of their deep neck flexors, along with a forward head posture and shortening of their suboccipital muscles.³ What does this mean for practicing chiropractors? We now have proof of key dysfunctions associated with chronic neck pain and headaches in whiplash patients. Most importantly, manipulation and exercise are indicated as the treatments of choice based on this research.

Bogduk and co-researchers discovered by using a double anesthetic block technique that the posterior zygapophyseal joints were primary pain generators in chronic neck pain patients who had suffered a whiplash.¹ The double block procedure rules out a placebo response, by using a short acting and long acting anesthetic in successive treatments. The patients must report both short acting relief and long acting relief that is consistent with the anesthetic they received. This occurred in 60 percent of the patients, thus proving the existence of posterior zygapophyseal joint pain in 60 percent of individuals with chronic neck pain after whiplash.

Watson showed that decreased isometric strength and endurance of the deep neck flexors (longus collis and capitus) is correlated with chronic headaches.² Measurement was with a simple strain gauge.² Treleaven and Jull showed that neck flexor weakness, head forward posture, and shortened suboccipital muscles were associated with postconcussional headache.³ All of their low-tech tests were found to have good interexaminer reliability.

Treleaven and Jull used a modification of Janda's neck flexor test.⁴ The patients were supine and their head was repositioned in a chin tuck position about 1 cm off the table. Using a blood pressure cuff to measure a

constant force the patient was asked to hold their head steady. A positive test occurred if the patient's chin poked, their head raised up off the blood pressure cuff (decreased pressure), or their head dropped back (increased pressure).

The kinesio pathology of the deep neck flexors cannot be separated from the head forward posture. In the head forward position the lower cervical spine becomes flexed with hypomobility at the cervicothoracic junction and hypermobility at C5-6. The cervicocranial junction (C0-C1) hyperextends and the sternocleidomastoid (SCM), normally a flexor of the head on the neck, becomes active even though the upper cervicals are in extension. The suboccipitals are kept in a shortened range as a result of this neck posture and they adapt to this by losing their normal extensibility.

What is the treatment? Adjustments alone to the painful posterior joints may not be enough if these muscle imbalances have been memorized by vestibulocerebellar pathways. Suboccipital stretching, SCM relaxation, postural and ergonomic advice, and deep neck flexor exercises will be necessary to achieve lasting results with our adjustments. In addition, it is important to pay specific attention to very low cervical fixations (C6-7 and below) which may be best adjusted in the seated position, lateral to medial (neck in flexion). Cervicothoracic adjustments (as low as T3-T4) to improve extension will also be crucial. Repeated adjustments without addressing the underlying muscular imbalances may only lead to hypermobility and possible instability.

If hypermobility is present and poor coordination between the SCM and deep neck flexors is hard to improve lumbopelvic stabilization and proprioceptive exercises may be needed. Stabilization training focuses on control of lumbopelvic posture through strength, endurance, and coordination exercises for the abdominals, gluteals, and quadriceps. Proprioceptive training uses balance boards and shoes to improve foot and ankle reflex motor control of standing posture and gait.

Table 1 summarizes the treatment protocol:

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Treatment Protocol:

Advice

- Postural correction (lumbar support during sitting)

Manipulation

- Adjustments (C0-C1, lower cervical, and cervicothoracic)
- Muscle relaxation (SCM, upper trapezius, levator scapulae)

Exercise

- Stretching (suboccipital, pectorals, hamstrings, erector spinae)
- Strengthening (deep neck flexors, abdominals, gluteals, erector spinae)
- Proprio sensory retraining

Is there scientific evidence for joint irritation leading to muscle weakness or inhibition?

DeAndrade in 1965 showed immediate atrophy of the vastus medialis oblique after knee joint swelling.⁵

Hides and Jull recently showed a selective type 2 muscle fiber (slow twitch, phasic) atrophy in the low back musculature on the symptomatic side immediately after acute onset low back pain.⁶

Any chronic headache patient, whether they have been in a car accident or not, should be evaluated for a loss of deep neck flexor strength or endurance. Evaluation is simple, inexpensive, and reliable. Treatment is gentle and cost effective. By adding a rehabilitation dimension to your chiropractic approach you will find that many of your difficult patients will hold their adjustments much better. In the case of mild to moderate whiplash injuries it may be possible to eliminate the need for passive physical agents (i.e., thermal or electrical) within 4-6 weeks of treatment. Treatment for an additional 6-8 weeks with a combination of adjustments, muscle relaxation and/or stretching, muscle facilitation and/or strengthening, and postural re-education techniques should lead to excellent measurable outcomes in the majority of our posttraumatic headache patients. This same approach can be initiated in the first 2 weeks to resolve uncomplicated cases within 6-8 weeks from onset.

These treatment parameters are consistent with the Mercy guidelines allowance of 12-16 weeks care for a complicated spinal disorder. A complicated case here would be justified on the basis of either severe pain (<50 percent on a Visual Analog Scale⁷), waiting over one week before presenting to the treating doctor, a past history of >3 episodes of the same complaint, or the new condition being superimposed on a pre-existing structural pathology or skeletal anomaly.⁸

These suggested methods of evaluation and treatment are compatible with existing chiropractic protocols. By addressing joint dysfunction and muscle imbalances the prevention of reinjury or recurrence is more likely. This approach necessitates that we treat regional conditions like headache in light of dysfunction in the entire locomotor system. Manipulation to the posterior zygapophyseal joints will be the mainstay of our therapeutic efforts. Advice or patient education to improve posture and ergonomics, that contribute to a head forward posture, will also be used. Exercises to address muscle imbalances will be a final step in rehabilitation of the motor system in a headache patient.

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