

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. The Box summarizes the treatment protocol.

Box 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)

Proprioceptive retraining

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 a chiropractic approach it will be found that many 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 reeducation techniques should lead to excellent measurable outcomes in the majority of our post-traumatic headache patients. This same approach can be initiated in the first 2 weeks to resolve uncomplicated cases within 6–8 weeks from onset.

This approach necessitates that we treat regional conditions like headache in light of dysfunction in the entire locomotor system. By addressing joint dysfunction and muscle imbalances

the prevention of reinjury or recurrence is more likely. Manipulation to the posterior zygapophyseal joints is 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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Neuromuscular therapy for headache

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ME's symptoms, while not a contraindication for relaxation massage, indicate a need for a more detailed treatment. Several soft tissue approaches, such as myofascial release, structural bodywork or shiatsu, may offer relief. This discussion, however, will be limited to a neuromuscular therapy approach. Because of the previous blow to her head, craniosacral therapy is also

recommended and, because of the head trauma, should be performed by a well trained, highly skilled practitioner (for cautions in craniosacral therapy see vol. 1 issue 1 of *JBMT*).

Since ME is experiencing frontal, temporal and parietal headaches, the trapezius, sternocleidomastoid (SCM), temporalis and masseter muscles will be a focus of her therapy as her pain

patterns are classic trigger point referrals (Figs 1, 2 & 3) for these muscles (Chaitow 1996, Travell & Simons 1983). Trapezius and SCM may also be contributing to the head tilt and should always be treated bilaterally since releasing one side only may cause further distortions. While upper trapezius is obviously involved from the palpation noted, the middle and lower trapezius may be referring into the upper portion and producing the hypertonicity and trigger points found there (Travell & Simons 1983). Therefore, all segments of this muscle should be treated (Figs 4, 5, 6 & 7). The SCM belly, while easy to lift, must be carefully treated to avoid the carotid artery which lies deep to it. The head should be moved towards the side being treated and slightly elevated. The SCM should be carefully palpated avoiding the artery (Fig. 8). A detailed treatment of these and other cervical muscles may be found in *Modern Neuromuscular Techniques* (Chaitow 1996).

The levator scapulae attaches to the upper 4 cervical transverse processes and may contribute to the lessened mobility of C2/3 as might splenius cervicis, which attaches to the first 3 vertebrae. When working on the transverse processes, care should be taken to avoid the anterior aspect due to the sharp tubercles and the cervical nerves exiting the spine (Walker 1994). Friction should be applied to the posterior attachments in a lateral direction only to avoid pressing the tendons against the lateral surface of these bones (Fig. 9). Splenius capitus, as well as the suboccipitals deep to it, should be treated since their cranial attachments may be contributing to the head tilt.

The scalenes would also be treated, primarily because they attach to the cervical transverse processes and may contribute to cervical scoliosis, loss of cervical mobility and to disk crowding. Secondly, their trigger points may refer into the chest where ME experiences a feeling of

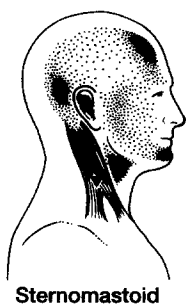


Fig. 1

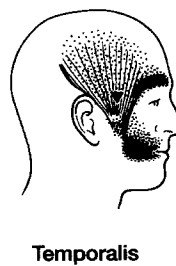


Fig. 2



Fig. 3



Fig. 4

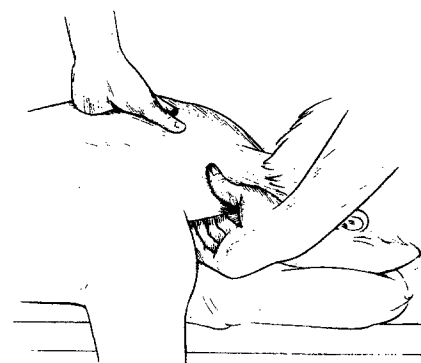


Fig. 5



Fig. 6



Fig. 7

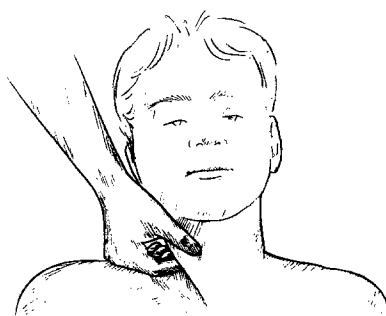


Fig. 8



Fig. 9

'tightness'. Travell notes that trigger points in the scalenes are often secondary to trigger points in the SCM, which, as mentioned, should also be treated (Travell & Simons 1983). The noted loss of diaphragmatic involvement also suggests that the scalenes are overloaded and in need of treatment. Thoracic scoliosis arouses a suspicion that the intercostals may be dysfunctional.

If ME actually rests her laptop on her lap, then the longus capitus and longus colli muscles (sometimes called longus cervicis) are most certainly involved in positioning her head to see the screen, which leads to chronic contraction of these muscles and probably contributes directly to flattening of the cervical curve, a condition commonly called 'military neck' (Fig. 10). They must be *very* cautiously addressed as they lie deep to the esophagus and trachea and directly between the carotid arteries (Clemente 1987). Great caution must be taken when treating them so as to avoid pressure on these structures. Treatment protocols for these two muscles should only be attempted by a well trained, confident, highly experienced practitioner since the carotid arteries lie very close to the treatment area.

ME's chronic poor posture is probably a contributing factor to her current condition. Specific massage therapy is needed for intercostals, pectoralis major and minor, upper rectus abdominis, diaphragm, obliques and erector spinae. She may respond more quickly if ice stroking (dry) or contrast hydrotherapy is used in conjunction with range of motion work (Travell & Simons 1992).

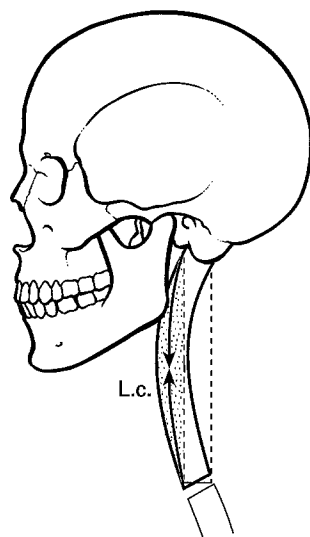


Fig. 10

However, long-term benefits are more probable if a stretching and strengthening program is added to restore balance to her structure. More awareness of her posture, especially during her extended hours at the computer, as well as more frequent breaks, will help to prevent a return to the old patterns. Hypertonicity of the above mentioned muscles may also affect her breathing. Therefore, treatment benefits will be twofold, affecting posture and breath.

ME could also benefit from breathing retraining in several ways. The muscles responsible for diaphragmatic breathing appear to be dysfunctional, placing an undue workload on her scalene muscles. Retraining her breathing would restore function and eliminate undue stress on these and other neck muscles. Shallow breathing has been associated with anxiety (Chaitow 1995), therefore her panic attacks and current anxiety may be reduced with improved respiratory

function. Finally, her soft tissue hypertonicity and trigger point formation are also likely to be reduced, with enhanced oxygenation of the tissues.

In addition to the suggested counselling for her anxiety, ME should be referred to an appropriate health care practitioner for joint mobilization, stretching and strengthening exercises. Her digestive problems as well as her anxiety and pain patterns may also benefit from acupuncture, changes in her diet and supplementation of vitamins, minerals and herbs, as appropriate.

ME's concern that her body is letting her down would be expected to subside as she becomes more involved in her program. With each step toward recovery, she should gain other benefits besides the obvious ones. These could include increased energy, more flexibility in both mind and body, confidence and a greater sense of wellbeing.

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