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Physiotherapy Treatment of Cervical Spondylosis- looking beyond shortwave and traction

Cervical spondylosis is one of the most common conditions referred by doctors to physiotherapists. In this article, we discuss the several causes of pain in cervical spondylosis and the anatomical structures responsible for it. Specific treatment targetted to each of these structures is subsequently described. This highlights the crux of our clinical reasoning. Furthermore, the article adds clarity on how the actual cause and not just the symptom is treated, making the recovery lasting and more cost effective for patients (Jull et al 2002,).

In patients with cervical spondylosis the basic assessment starts with a posture check and then steers specifically in identifying and treating which joints and muscles are affected. A brief summary is given below:

Posture

Often, patients with neck pain present with a forward head posture (see fig 1), a thoracic kyphosis and either a lordortic or flat lower back. In this posture, because of the thoracic kyphosis the lower cervical is held in constant flexion whilst their upper cervical is in extension. This posture will put the C0/1, C1/2 and maybe C2/3 facet joints in constant compression, leading to joint degeneration at those levels. Pfaffenrath and Kaube (1990) and Nilsson (1995) found that 14-18% of chronic headaches are cervicogenic, i.e. headaches which result from musculoskeletal dysfunction in the cervical spine. Hence we assess and treat the upper cervical spine in patients with cervicogenic headache. Additionally, unless the compression on C0-3 is relieved through thoracic spine extension and upper cervical retraction any treatment will be short term.

Figure 1:Forward Head Posture

Joints

Due to the facet joint degeneration in cervical spondylosis, the affected joints will have a loss of normal range of movement. This results in other levels having to compensate, leading to increased loading and eventual wear and tear. When there is a significant amount of hypomobility, general range of motion will be limited and clients will often complain of achiness ("sng") in the neck and referred pain to the respective dermatomes. Zito et al (2006) found that in cervicogenic headaches C0/C1, C1/2 were significantly hypomobile. Hypomobility is treated with mobilization of the affected facet joints and self mobilization techniques using a Mulligan cervical strap.

Another presentation that we as physiotherapists find is that the vertebrae can be rotated either at one level or at several levels. This happens when there is muscle spasm, trigger points or hypertonic muscles unilaterally at those levels causing lateral flexion. Since those joints are already mal positioned, it is impossible to have normal range of motion at those levels. Using those joints in our functional activities which require full range will result in irritation of the surrounding structures. To normalize range requires normalization of the position of the vertebrae. This is done through reducing spasm and lengthening the affected muscles. A technique that is often used to achieve this is called Muscle energy technique (see fig 2). This technique involves submaximal contraction of the affected muscle and on post contraction, this muscle in stretched to a new length. This is a more effective technique than plain stretching because of the specificity of the level and enhanced post contraction- relaxation phase. Muscle energy technique promotes muscle relaxation by activating the golgi tendon reflex. It has also been proposed that temporary muscle fatigue blocks reflex-contraction thus allowing for an increase of range of motion to beyond the barrier.

Muscles

Due to poor posture, wrong types of muscles are used imposing undue stress on the spine and causing pain. There are two basic types of muscle - phasic (power muscles) and tonic (postural muscles). The power muscles create movement. Examples of these muscles in the neck are the sternocleidomastoid (SCM), scalenes and the levator scapulae. The tonic muscle work at low levels and their function is to stabilize. Examples of such muscles in the neck are the deep neck flexors and the longus capitus and colli.

When the head is held in a forward head posture, the deep neck flexors (which are in front of the neck) are lengthened and weak. The role of stabilisation of the cervical spine is now compensated by the phasic muscles. As these muscles are not designed to contract for prolonged periods of time as required for stabilization, they tighten and develop overuse trigger points. The trigger points themselves can be painful and may refer elsewhere.

In a study (Zito et al 2006) that looked at neck pain and cervicogenic headache, it was found that the incidence of muscle tightness was significantly higher in the power muscles such as upper trapezius, levator scapulae, scalenes and suboccipital extensors when compared to control and migraine sufferers. EMG activity for SCM was also higher when neck pain and headache sufferers were asked to perform cranio–cervical flexion test. This indicates an altered pattern in the neck flexor synergy where there is a poor contractile capacity of the deep neck flexors which are suited for cranio-cervical flexion.Treatment requires retraining of the tonic deep neck flexors (see fig 3) and release of the muscle tighness in the phasic muscles.

Figure 2:
Muscle Energy Technique

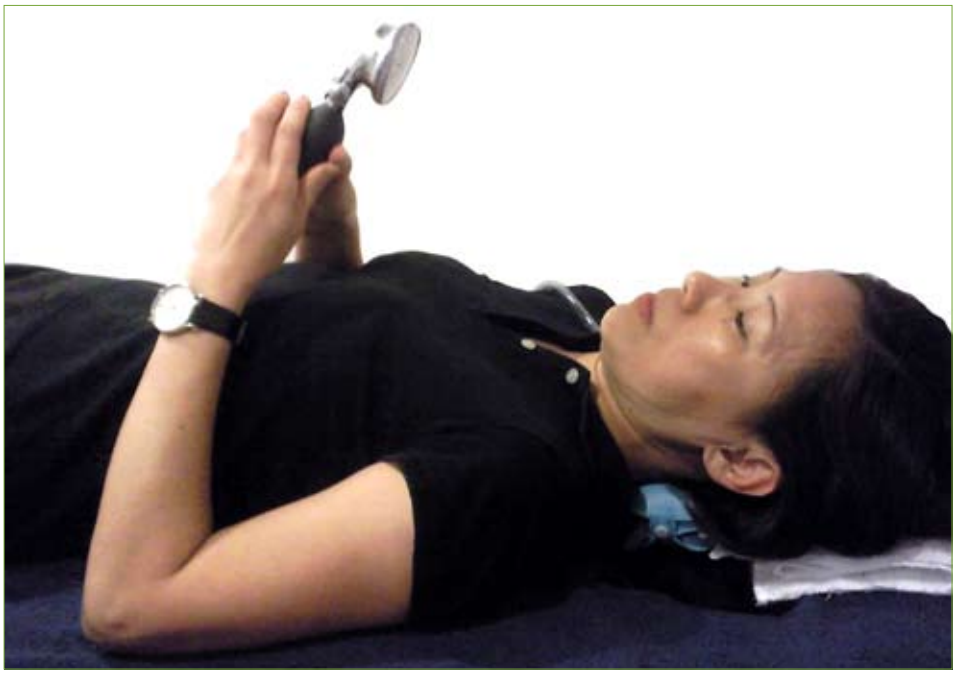

Figure 3: Deep neck flexor exercise with pressure feedback

In a study, Jull et al (2002) compared the effectiveness of manual therapy alone with a group that received both manual therapy and deep neck flexor exercise to a control group. Significantly lower intensity and frequency of pain were found in groups that recieved either manual therapy alone or both manual therapy and exercise therapy as compared to controls. Interestingly, when the groups were reviewed 12 months later the group that recieved a combination of exercise and manual therapy did much better than the other groups. This suggests that a specific exercise program yeilds a better outcome over the long term.
These results reinforce the clinical evidence that the deep cervical flexors are important muscles for cervical segmental and postural control and lose their endurance capacity in patients with neck pain (Watson and Trott 1993).

Conclusion

A review of the above literature and clincal findings brings us to the conclusion that definite dysfunctions exist in patients with neck pain and cervicogenic headache. Changing the symptoms with electrotherapeutic modalities only looks at the tip of the iceberg. Treating the dysfunctions in posture, joints and the muscles not only resolves the neck pain and headache solves the cause reducing future incidences.

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