



Apple Cart

a core concepts musculoskeletal group newsletter

A Case Study: Spasmodic Torticollis & Physiotherapy

Spasmodic Torticollis (ST) also known as cervical dystonia is a syndrome where the muscles in the neck contract involuntarily. This results in involuntary twisting, turning or tilting of the head and neck. These contractions may be sustained or occur in spasms. ST is usually accompanied by pain. Although it is said that ST occurs as a result of a dysfunction of the brain, the exact cause to how the nervous system of the brain goes awry remains unknown.

There are a number of treatment options have been shown to provide symptomatic relief, these include botulinum toxin injection, stress reduction technique and physiotherapy. The case study below illustrates the role of physiotherapy in the management of ST in one of our clients.

Background

Mr X is a 38-year-old speechwriter who is deskbound. Two years ago, he started to experience neck pain accompanied by muscle spasms that caused his neck to rotate away and side flex towards his left shoulder. The neck pain and muscle spasms contributed to stiffness and soreness in his upper back. He reported that stress and lack of rest aggravated his condition. Due to poor sleep, his symptoms became more frequent and intense. He found it strenuous to work for long hours in front of the computer. The chronic spasm and pain had limited his range of motion in his neck.

Mr X was diagnosed with cervical dysto-

nia by his physician and was tried on a variety of medications and interventions including Botox injections and relaxation therapy. When his symptoms persisted, his neurologist referred him for physiotherapy.

On his initial visit to our clinic, we established that the primary goal was pain management. He hoped to better manage his pain so that he could get quality sleep.

Medical History

Mr X has a medical history of insomnia and high blood pressure. He was involved in a RTA 10 years ago. During that accident, he was thrown off his bike and landed at the back of his head. However, there was no significant injury or pain to his neck at that time.

Family History

His elder brother was diagnosed with cervical dystonia at the age of 40 (2 years ago).

Physical Examination

On physical examination, Mr X had an asymmetrical posture. His body and head was deviated away from midline towards his left. His right shoulder was elevated. On palpation, his left sternocleidomastoid, scalenes,

trapezius, levator scapulae and splenius capitis muscles were more tender and tight than the right side. He had a loss of dexterity in his head movement. His head exhibited a jerky movement when he moved into left rotation and right side flexion.

Passive physiological intervertebrae mobilisation of the cervical and thoracic spinal joints indicated restrictions in the mid-cervical to mid-thoracic region. In supine position, with his muscles were more relaxed, there was an improvement in the quality and range of movement of his cervical spine.

Physiotherapy Diagnosis

Mr X was diagnosed with cervical dystonia with secondary joint stiffness and altered posture.

Treatment Plan

1. *To reduce muscle spasm.* We chose to use moist heat treatment to improve the blood circulation to the affected muscles. The heat aided in relaxation of the muscles. The combination of heat treatment and deep tissue release aimed to down regulate the



Figure 1 : The pictures above is taken on the initial assessment session

firing of the nerve impulses into the muscles.

2. *To reduce muscle tightness.* Neck muscle stretch with soft tissue mobilisation technique was used as research has shown to have a more superior result to normal static stretching.
3. *To reduce joint stiffness.* This is achieved by using gentle joint mobilisation and manipulation. Gentle mobilisation of the vertebrae from the mid-cervical to mid-thoracic was applied to aid the return of normal movement in the joints. The cervical spinal muscle, ligaments and the nervous system homeostasis depend on proper motion in the spine. Spinal mobilisation and especially manipulation is an efficient treatment to stretch soft tissue, stimulate the nervous system, increase vascular supply and reduce muscle tightness and inflammation.
4. *To reduce his thoracic spine lateral flexion to the left at T10 level.* This is to reduce his neck compensatory strategy to keep his eyes in a leveled position by activating the scalenes and sternocleidomastoid on one side. Joint mobilization, soft tissue stretches and exercises promoting right lateral flexion was utilized to achieve this goal.
5. *To improve abnormal head and back posture and neck movement dexterity.* This is being achieved by prescribing these home exercises:
 - a. Activating his deep neck flexor during movement.
 - b. Using visual feedback via mirror
 - c. Single leg activities
 - d. Back and neck stretches
 - e. Neck movement with resistance

These exercises were shown to help him to reduce his neck muscle spasm during



Figure 2: These pictures are taken at the 3rd month of physiotherapy session

movement.

Treatment outcomes

Mr X's neck pain subsided after 6 sessions of physiotherapy. He was able to sleep better after the second session. After 2 months of physiotherapy intervention, Mr X started to show improvement in his back and neck posture. His back and neck posture are now less deviated away from midline. He also reported that he is able to turn his head with less jerky movement.

In the course of our management of Mr X's condition, we noticed that exercises that activate his deep neck flexors coupled with movement tended to improve the smoothness of his head movement. One such exercise is placing a ball between the head and the wall and doing neck rotation in standing against the wall. The goal is to exert enough pressure on the ball without dropping it during movement. Such exercises have so far shown some potential in reducing his neck muscles spasm during movement thus allowing him to move and control his head in a smooth motion. The exercises seem to have a longer carry over effect for reducing the muscle spasms during movement. By being able to activate his deep neck flexors, it not only improved the stability of the cervical joints, it also resulted in a relative increased in flexion. This increased flexion in the mid and upper cervical spine reduced the facet joint compression hence reducing pain. As painful stimuli are received and processed by the basal ganglia, the synaptic changes provoked by pain may lead to the abnormal physiology underlying dystonia in the first place. Therefore as the pain provocation reduces, the input to the basal ganglia reduces thus possibly reducing the effect of his dystonia (Dauer et al, 1998).

From our observation, he is always able to activate his deep neck flexor better whenever his sternocleidomastoid is less excited. This is always effectively achieved through cervical mobilisation. This phenomenon was supported by a study

done by Sterling, et al (2001). In that study, they investigated the effects of cervical spine mobilization on the deep neck flexors. They found out that a decreased in EMG activity in the superficial SCM muscle was observed, and that resulted in an increase in deep neck flexor activity.

We also noted that by doing the single leg balance with neck activities, we are able to reduce his postural deviation from midline. However, these sets of exercises only have a short carry over improvement after exercise. In our opinion, in performing a single leg balance, we could be stimulating to his vestibular system which in turn may reduce his neck muscles excitability. This is concurrent with the findings by Rosengren and Colebatch (2006) who investigated the effect of vestibular stimulation on patients with cervical dystonia. It was found that vestibular stimulation could reduce neck muscle activity in cervical dystonia and give symptomatic relief.

In summary, with the growing knowledge of rehabilitative exercises, physiotherapy is able to provide both symptomatic relief and better management of cervical dystonia.

References:

1. William T. Dauer, Robert E. Burke, Paul Greene and Stanley Fahn. Current concepts on the clinical features, aetiology and management of idiopathic cervical dystonia. *Brain* (1998), 121, 547-560
2. ROSENGREN Sally M. and COLEBATCH James G. Cervical dystonia responsive to acoustic and galvanic vestibular stimulation. *Movement disorders* (2006), 21, 1495-1499
3. Sterling M, Jull G, Wright A. Cervical mobilization: concurrent effects on pain, sympathetic nervous system activity and motor activity. *Manual Therapy* (2001), 6(2), 72-81.

This newsletter is produced by Core Concepts - Musculoskeletal Health.

We can be reached at
T: 6226 3632 or
E: enquiry@coreconcepts.com.sg
W: www.coreconcepts.com.sg