Thoracic Outlet Syndrome

Many patients suffer from the symptoms of pain, weakness, parasthesia and fatigue of both the spine and upper extremities from a condition known as Thoracic Outlet Syndrome (TOS). TOS is an abnormal compression of the neurovascular bundle (brachial plexus, subclavian artery/vein) as it moves away from the neck. This compression can happen from a combination of osseous, ligamentous or muscle abnormalities. Frequent catalysts for the symptomology of TOS are tightness of the anterior scalene muscles, costoclavicular approximation and pectoralis minor shortening. Anterior scalene tightness involves the impingement of the neurovascular bundle as it passes from the cervical spine through the anterior and middle scalene to its final destination in the upper extremity. Costoclavicular approximation occurs when the first rib and clavicle are drawn together by muscle, fascia and ligamentous structures, impinging the neurovascular junction. Shortening of the pectoralis minor can impinge the neurovascular junction by causing undue constriction between the pectoralis tendon and the coracoid process of the scapula. Although, individually, all of these are possible components of TOS, more often they are combined with other issues as the underlying cause of TOS.

As described above, obstruction of the Thoracic Outlet occurs when the size, shape and position of the opening is altered. The anatomical changes that occur can be caused by many life events, including motor vehicle accidents, falls, trauma (including emotional trauma), weakness, pregnancy, exercise or congenital defects (i.e. extra rib). These events often affect the Thoracic Outlet and add to the symptomology of TOS, but most cases of TOS are perpetuated by habitual poor posture. Abnormal postures are often not realized by the patient as there is little to no conscious awareness. Many occupations including student, cash register attendant, hairstylist, electrician, mechanic, administrative assistant or manual laborer all perpetuate poor static postures (i.e. leaning over a desk) or repetitive motions (i.e. cutting hair) that can cause compression of the Thoracic Outlet. Obstruction can also occur in athletes who constantly move their arms overhead such as swimmers, volleyball players, pitchers or tennis players. Neurological symptoms include tingling, numbness, cramping, muscle weakness and/or loss of dexterity of the upper extremity. Vascular symptoms include swelling, discoloration, feelings of heaviness, muscle ache, fatigue and/or distension of the hand. The patient will often report any or all of these symptoms as well as pain throughout the cervical, chest and/or thoracic regions. These symptoms are serious and can lead to severe disability, medication abuse, reduction of functional activities, unnecessary surgeries (i.e. carpal tunnel) and a compromise of their quality of life. Inner Circle's unique evaluation perspective, understanding and treatment approach will assist patients suffering from TOS.

Stacy was a 35 year-old female hairstylist who presented for evaluation after 2 years of symptoms including pain in the right upper extremity, cervical and thoracic spine, parasthesia of the C8-T1 dermatome, heaviness of the arm and difficulty with fine motor tasks. She was extremely frustrated and had multiple diagnostic tests performed (MRI, EMG, X-Ray), multiple diagnoses (herniated disc, tendinitis, carpal tunnel) and finally, carpal tunnel surgery without success. Upon evaluation, she presented with an elevated right shoulder, rounded shoulders bilaterally, kyphosis, forward head and a right elevated rib complex. The patient had a positive costoclavicular and Allen test, as the radial pulse became absent. The patient also demonstrated multiple weakness and range of motion discrepancies throughout the arm, neck and shoulder upon testing. Following the evaluation, the patient was explained the findings and the treatment protocol that was to take place. The physician was also informed as symptoms are never definitive and TOS symptoms can be indicative of more serious conditions.

Treatment consisted of education including questions and discussion of the activities and positions that produce or alleviate symptoms, therapeutic exercise, postural re-education and manual therapy. Although all of these treatments are necessary for the patients' improvement, the manual therapy provided by Inner Circle's highly-trained staff allows for the system to actually change and long-term relief to be achieved. The manual therapy utilized for this patient included Myofascial Release, Strain/Counterstrain, Muscle Energy, acupressure, joint mobilization and Upper Nerve Tension. All manual application was designed to change the compression of the

muscle and fascia throughout the Thoracic Outlet. Myofascial Release and Strain/Counterstrain was performed throughout the scalene, trapezius, sternocleidomastoid, levator scapula, paraspinals, external shoulder rotators, triceps and extensors of the wrist. Muscle Energy and joint mobilization was applied throughout the shoulder, first rib and thoracic spine. Once the compression had reduced, Upper Nerve Tension techniques were utilized to allow normal nerve gliding to occur. A complicated, chronic condition slowly began to change as the numbness and heaviness dispersed and pain levels reduced. Occupational activities became easier and her quality of life began to return. After 4 months of treatment, the underlying cause was traced to pelvic weakness and tightness of the psoas complex which, after being treated, resolved the patient's long-standing complaints.

This case study is an example of the complexity of musculoskeletal difficulties but, also, the difference that can be made with the skilled "hands-on" approach offered by Inner Circle. The techniques and treatment approach utilized by Inner Circle can be effective for many musculoskeletal conditions that your patients are suffering from. If medications and testing are ordered for a patients' musculoskeletal condition, consider the Alternative Physical Therapy approach offered by Inner Circle. I hope this article was informative and, as always, I am available for demonstrations or questions.