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The Treatment of Shoulder Dysfunction by the Correction of Shouler Girdle Muscle Imbalances: A Case Study

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THE TREATMENT OF SHOULDER DYSFUNCTION BY THE CORRECTION OF SHOULER GIRDLE MUSCLE IMBALANCES: A CASE STUDY

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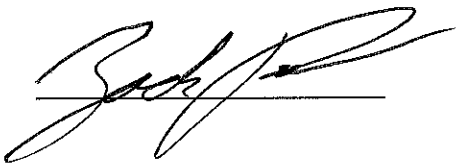
Signature 

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ABSTRACT

Background and Purpose: Shoulder dysfunction is a broad expression that encompasses the shoulder girdle not being able to perform fluently, without pain, or within normal ranges of motion. Current literature elaborates on potential causes of dysfunction such as: osteoarthritis, impingement syndrome, and cervical myelopathy. From a clinical standpoint, it is crucial to differentiate between possible diagnoses to ensure the proper treatment is utilized.

Case Description: The patient was a 66-year-old female who was referred with the initial diagnosis of shoulder osteoarthritis. She presented with headache pain that was debilitating and followed a pattern consistent with muscle guarding, limited L shoulder ROM, guarded forward shoulder posture, and scapular upward rotation force couples that were not functioning properly. A score of 45/70 on the Pain Disability Index (PDI) was recorded at evaluation.

Discussion and Conclusion: It was evident that osteoarthritis was not the underlying source of her dysfunction. The patient was treated twice a week for 4 weeks with exercises that promoted corrected scapular upward rotation force couples, exercise to reduce forward rounded shoulder posture, and manual therapy to relive muscle guarding. The patient reduced PDI score to 3/70, restored shoulder ROM to equal bilaterally, and improved posture and scapular alignment.

CHAPTER 1

BACKGROUND AND PURPOSE

Impairments of the shoulder girdle may impede activities of daily living for those affected. Common pathologies presenting to physical therapy are osteoarthritis, impingement, and cervical radiculopathy. These pathologies may lead to shoulder dysfunction.

Osteoarthritis is a degenerative disorder that affects 27 million adults in the United States.[1] The disorder deteriorates the articular cartilage surrounding bones in articulating joint spaces while initiating hypertrophic changes in the bone itself. The disorder is common, but risk factors include genetics, female sex, past trauma, advancing age, and obesity.[2] Patients presenting with shoulder osteoarthritis typically present with pain on range of motion, limited range of motion (especially external rotation), and crepitus with range of motion.[2]

Osteoarthritis can be treated by nonpharmacologic, pharmacologic, complementary and alternative, and surgical interventions. Nonpharmacologic treatment primarily pertains to exercise. The exercises for osteoarthritis are in most cases prescribed by a physical therapist, and are based off of the patient's individual movement restrictions. The pharmacologic approach is most often treated by acetaminophen. If acetaminophen fails to alleviate symptoms, nonsteroidal anti-inflammatory drugs (NSAIDS) are taken with caution. Intra-articular injections of corticosteroids or hyaluronic acid also fall into this

category but lack compelling evidence showing benefits out weigh the potential harm at the glenohumeral joint.[3]

Complementary and alternative forms of treatment include acupuncture; dry needling; supplements of glucosamine and chondroitin; and the use of topical creams, mineral baths, and spa therapy.[2] Although acupuncture is a reserved term trademarked by acupuncturists, dry needling has similar effects and is performed by a physical therapist and/or other certified specialists. Dry needling has shown positive benefits for pain relief in myofascial pain, acute mechanical neck pain, chronic neck pain, and trigger points in upper trapezius musculature. Dry needling has a positive effect on the pressure pain threshold, myofascial pain, chronic mechanical neck pain, acute mechanical neck pain, and chronic neck pain. Dry needling also has a positive effect on functional outcomes in chronic myofascial neck pain, and chronic neck pain.[4]

Surgical intervention for the shoulder would entail a shoulder arthoplasty.[2] Resurfacing the humeral head, anatomic hemiarthroplasty, total shoulder arthroplasty, reverse shoulder arthroplasty, and trauma-specific implants for fractures and nonunions are modern surgical options.[5] When managing shoulder osteoarthritis, treatment should start off with the least invasive form before progressing to invasive treatments.[3]

Osteoarthritis is not the only pathology that can cause dysfunction of the shoulder girdle; shoulder impingement syndrome can cause biomechanical dysfunction as well. In 1972, Neer described shoulder impingement syndrome as a painful condition in which the soft tissues of the subacromial space (bursa, rotator cuff tendons, biceps tendon) were chronically entrapped and compressed between the humeral head and the subacromial arch.[6] Certain motions that cause superior or anterior translation of the humeral head on

the glenoid fossa, inadequate external rotation of the humerus, decreases in normal scapular upward rotation, and decreases in posterior tipping of the scapulae on the thorax may all contribute to the underlying cause of impingement.[7]

Anterior subacromial impingement, as described by Neer,[6] is caused by soft tissues filling the subacromial space; the tissues become chronically entrapped between the humeral head and the coracoacromial arch. This entrapment affects the blood supply and gradually erodes the tendons of the supraspinatus muscle and the biceps long head,[6,8] primarily causing pain or dysfunction with the actions of those muscles.

Posterior glenoid rim impingement is caused by compression of the inner fibers of the rotator cuff and the fibers of the posterior superior labrum between the greater tuberosity and the posterior superior glenoid. This type of impingement is most often associated with athletes who use repetitive motions in sports such as baseball and water polo.[6,9]

Subcoracoid impingement may be caused from posterior elevation of the humerus in the plane of 30 degrees from the frame combined with internal rotation. Repeated shoulder flexion and internal rotation are the driving factors that lead to inflammation of the subscapularis bursa and damage to the subscapularis tendon. The repeated damage may lead to a partial or complete tear of the subscapularis muscle.[6,10]

Suprascapular nerve impingement syndrome may be caused by encroachment of the suprascapular nerve. The nerve entrapment may cause infraspinatus muscle atrophy, decreased strength in the external rotation, and pain in the posterior and lateral aspects of the arm.[6,11]

Patients presenting with a shoulder impingement syndrome may have pain with humeral elevation that is particularly painful between 60 degrees- 120 degrees of shoulder elevation in the scapular plane, but is relieved when outside of this plane. This phenomenon is referred to as a "painful arc". Although a "painful arc" is indicative of shoulder impingement syndrome, it may not occur in every case. Patients may also experience localized pain. The location of this pain may identify the structure being impinged. Abrased supraspinatus, infraspinatus, subscapularis, and teres minor tendons, or swollen subacromial bursa are all common structures which may be responsible for localized pain. Bilateral scapular thoracic muscle imbalances may also be noticeable with observation and/or palpation.[7]

It is commonly accepted that the rotator cuff muscles are the primary stabilizers of the glenohumeral joint. In the event that the primary stabilizers have been weakened or damaged, such as in impingement, the body will commonly compensate with activation of the pectoralis major, middle trapezius, serratus anterior, and triceps long head musculature. These structures allow for individuals to continually perform tasks, such as repeated lifting or carrying with a coexisting rotator cuff dysfunction. The muscles are activated to assure stabilization of the shoulder girdle, but over activation of the musculature could lead to further shoulder dysfunction.[12]

Specific muscle imbalances, or lack of muscle activity, have been linked to the undesired kinematics of scapular motion displayed in shoulder impingement subjects. The insufficiently acting muscles are primarily the scapulae upward rotators during arm elevation, specifically decreased serratus anterior muscle activity, dominant upper

trapezius activity, or a disproportion of forces generated by the lower trapezius verses the upper trapezius.[7]

The intervention tactic for dealing with a patient with shoulder impingement primarily relates to the symptoms perceived by the patient. As previously stated, there are multiple forms of impingement, multiple causes of impingement, as well as multiple structures that are at risk for impingement. Therapeutic modalities, gentle active and passive range of motion, stretching, mobilization exercises, interventions to decrease hypermobility, and interventions to improve hypomobility and stability of the shoulder girdle are all appropriate interventions for treating impingement.[6]

The plan of care for treating shoulder impingement syndrome should incorporate specific elevation exercises in the scapular plane to correct shoulder kinematics. The exercises should primarily focus on levator scapulae, rhomboid major, pectoralis minor, upper trapezius, middle trapezius, lower trapezius, and serratus anterior muscles.[13] Appropriate exercises to target the selected muscles are towel wall slides, scaption, and bilateral elevation with external rotation while holding a Thera-Band.

When treating patients with an apparent shoulder impairment, it is crucial to not overlook the possibility of the pain originating from the cervical neck region. Cervical radiculopathy occurs when cervical nerve roots become compressed near their foramina opening either by a herniated disc, spondylitic spur, or cervical osteophyte. The compression may cause sensation or motor impairments to the upper extremity, depending on the severity of the compression and the nerve root involved. Neck pain may be present with this condition, but is usually not the primary complaint. Patients typically present with pain, numbness, tingling, and weakness in the upper extremity.[14] It is not

uncommon for a patient to present with a mixture of symptoms that take clinical reasoning to diagnose the underlying cause of the dysfunction.

The purpose of this case report is to describe a patient who was referred to outpatient physical therapy with an initial diagnosis of osteoarthritis. The patient had an abnormal presentation of the disorder, which was marked by an evident musculoskeletal movement dysfunction. Physical therapy played a primary role in her road to recovery.

CHAPTER II

CASE DESCRIPTION

The patient in this case study will be identified as, "Jen" in order to retain confidentiality. Jen, a 66-year-old female, was referred to an outpatient orthopedic physical therapy facility with a medical diagnosis of osteoarthritis of the left glenohumeral joint.

Jen's primary complaint was increasing neck pain, which radiated into her head causing headaches that disrupted her sleep cycle. The neck pain limited her cervical range of motion. In order for Jen to look from right to left, she rotated at her trunk instead of her cervical spine. The neck pain started four months prior to her evaluation and she was unable to reduce the pain on her own.

Left shoulder pain was also a complaint and had been increasing in severity over the past four months. The pain was located on the posterior aspect of her shoulder and was also constant. The only way she knew how to manage her pain was for her to stop using her left upper extremity completely. She performed all activities of daily living with as much use of her right upper extremity as possible. While at rest Jen's pain was not a sharp pain, but more of a constant ache. She complained of a "pinching sensation", with left shoulder elevation. This sensation made activities that forced her arms to go over shoulder level the most painful.

Jen lives in the rural Midwest with her husband and has close family ties in the area, including her several grandchildren whom she cares for daily. Jen's prior occupation was

that of a secretary. The job entailed long hours sitting at a desk typing on a computer and she has now been retired for 10 years. Jen currently takes pride in taking care of her household as well as her grandchildren. Activities of daily living that were once pleasurable are now miserable. Pulling and reaching motions, such as gardening, and opening cabinets and doors can only be performed with the right upper extremity. The patient is unable perform bilateral upper extremity tasks such as carrying a load of laundry, taking baked goods out of the oven, or carrying her grandchild. The patient was independent with ADLs prior to the onset of her increasing pain.

The patient had similar complaints of neck pain that radiated into her head in the past and received dry needling of her upper back musculature 3 years ago. This technique provided her with temporary relief of her symptoms. The patient had no history of cervical fractures or other past medical history pertinent to her current signs and symptoms.

Examination and Evaluation

This patient was evaluated based on Magee's Orthopedic Physical Assessment of the shoulder.[15] Jen presented with a forward head posture with her external auditory meatus positioned anterior of the acromion. The patient presented with her shoulders in a forward rounded posture. She looked tense and stressed out. Her shoulder blades were upwardly rotated and elevated, with her left shoulder elevated higher than her right. A guarded posture was noted when walking into the examination and when asked to use the left shoulder. When asked to raise her arms into abduction over her head, she was unable to do so bilaterally. It was noted that pain in the shoulder, upper back, and neck were the limiting factor for mobility in the left upper extremity. A painful arc was not present, nor did the patient have any complaints about a catching sensation. The lack of these symptoms

reduced the thoughts of an impingement present in the left glenohumeral joint. Special tests, such as Neers or Hawkins Kennedy, could have been performed to rule out impingement, but they were not as the patient presented without a painful arc or catching sensation.[7]

Jen was asked to rate her headache pain, neck pain, and shoulder pain on a scale of 1-10, with 1 being no pain and 10 being extreme pain. She rated her headache pain at a 4/10 while she was resting, and the pain increased to a 7/10 after she performed daily activities. Her headache was described as a dull pressure at the occipital aspect of her head. The headache was variable in regards to duration, but was present most of the day. She attempted to control the pain by keeping a guarded posture in her neck, which she claimed helped alleviate her symptoms. The headache signs and symptoms described indicate the pain arised from cervical neuralgia, which may be due to poor posture or muscle guarding.[15] She rated her neck pain at 4/10 while she was resting, and 7/10 while active. She rated her shoulder pain at 1/10 while resting, and 7/10 while active.

Measurements were taken by a goniometer and are presented on Table 1. Jen had marked decreased AROM in her left shoulder, but had no restrictions with PROM.

Table 1. Glenohumeral Joint Motion

	Flexion		Abduction		Medial Rotation		Lateral Rotation	
	AROM	PROM	AROM	PROM	AROM	PROM	AROM	PROM
Right	173	173	172	172	70	70	79	70
Left	97	170	91	73	48	70	23	80

Cervical range of motion in the frontal, sagittal, and transverse planes was

performed. The patient was not measured with a goniometer for these measurements. Active ROM was recorded as WFL for bilateral cervical rotation, bilateral lateral flexion, flexion, and extension, while PROM was recorded as WNL. Jen grimaced when attempting to actively perform these motions and stated that pain along with muscular tightness along the lateral aspect of her neck and upper back were her limiting factor.

When performing manual muscle tests on this patient, she was surprisingly stronger on her left side as opposed to her right. See Table 2. During flexion and abduction, Jen repeatedly shrugged her shoulders even when instructed not to. With her forward rounded shoulder posture and elevated scapulae, it was observed with clinical judgment that her scapular elevators were short and strong and her scapular retractors were long and weak, but these muscle groups were not manual muscle tested. Sharp pain in the lateral aspect of her neck, upper back, and a nagging dull pain in the posterior shoulder was present during the muscle tests, but pain was not a limiting factor in regards to strength.

Table 2. Manual Muscle Testing of the Shoulder Girdle

	Flexion	Abduction	Medial Rotation	Lateral Rotation	Serratus Anterior	Lower Trapezius
Right	4/5	4/5	4/5	4/5	4/5	3+/5
Left	5/5	5/5	5/5	5/5	4/5	3+/5

It was noted that from left superior angle to right superior angle of the scapulae the patient had a measured distance of 3½ inches, and from left inferior angle to right inferior angle of the scapulae the patient had a measured distance of 5½ inches. The left scapula was also 1 inch higher as compared to the right scapula. These observations point in the

direction of a scapular rotational dysfunction being present.

Contractile tissues of the upper extremity tested with resisted isometrics were strong and painful on the left upper extremity, and weak and pain free on the right upper extremity. Jen cleared a peripheral joint scan of the TMJ, elbow, wrist and hand, but was unable to clear the cervical spine due to pain in the lateral aspect of her neck and upper back. Jen was showing no signs of sensation loss or neurological dysfunction, thus dermatomes, myotomes, and reflexes were not tested.

With palpation of the left superior angle of the scapula, the patient experienced a sharp pain. It was noted that the superior angle is the origin of the levator scapulae. Inflammation of this muscle could be caused by a few factors. Levator could be shortened due to a forward head posture causing it to become short and stiff. The levator could also be irritated from overuse of the muscle due to her increased scapulae elevation. The patient experienced similar sensations when left upper trapezius was palpated, along with left rhomboid major and left middle trapezius. The upper back musculature was dense and guarded on the left. On the right, the patient was relaxed and the tissues had no abnormal feel.

To address the root of the problem potentially originating from the cervical spine, the Spurling Test was performed to rule out cervical radiculopathy (specificity 93%, 94%, 93.8% sensitivity 30%, 95%, 52.9%).[16,17,18] The test consists of cervical extension and lateral flexion to the side of the body being tested; a compressive force is then delivered through the cervical spine. A positive test would cause reproduction of the patient's symptoms, and a negative test would not. The patient did not have reproduction of her symptoms with this provocative test. The patient had no numbness or tingling following a

dermatome pattern; she also had no weakness of the upper extremity following a myotome pattern. This ruled out the differential diagnosis of cervical root entrapment being the cause of her pain and glenohumeral dysfunction. Special tests to identify the degree of osteoarthritis present in the glenohumeral joint were not performed due to the patient's presentation of muscle imbalances and faulty recruitment patterns with scapulae rotation.

Prior to treatment, Jen filled out the Pain Disability Index, or PDI. The PDI is a self-reported questionnaire of seven areas of daily life: family/home responsibility, recreation, social activity, occupation, sexual behavior, self-care, and life-support activity. The patient rated each category from 0 (no disability) to 10 (total disability). The general disability score can then range from 0-70.[19] Jen's self-reported score was 45, indicating that her life was moderately disrupted by chronic pain.

Imaging was unavailable and was not examined during physical therapy examination and evaluation.

CHAPTER III

INTERVENTION

This patient was seen twice per week by physical therapy for 4 weeks and independently performed her HEP 1-2 times per day, 7 days a week. After the initial evaluation, a suboccipital release was performed for 5 minutes. The headache pain subsided immediately after, leading towards musculature dysfunction being the primary cause of the headache pain.

The plan was to engage and strengthen scapular depressors (primarily lower trapezius); engage and strengthen scapular upward rotators without overworking upper trapezius and serratus anterior muscles; relax the upper back musculature that controls scapular elevation (upper trapezius and levator scapulae); and retract the scapulae without upper trapezius muscle over activation. Even though it was not evaluated, stretching of latissimus dorsi was included to ensure that the muscle was not limiting shoulder flexion.

The patient's initial treatment consisted of wall towel rolls to engage the lower trapezius.[13] The patient stood facing a wall, 1 foot away, while holding a rolled up towel in both hands, the patient was then instructed to slide the towel towards the ceiling while keeping shoulders down. The patient required tactile queuing to restrain the shoulders from elevating throughout the movement (engagement and strengthening of the lower trapezius). The patient performed 2 sets of 10 reps of this exercise.

The patient was then handed a green Thera-Band® that was secured to a platform

in the wall. The band originated at the height of her xiphoid process. The patient was instructed to face the wall, stand 3 feet from the wall with a band in each hand, and pull the bands towards her navel while squeezing together her shoulder blades and simultaneously keeping shoulder blades depressed. Once band was at the naval, the patient was instructed to hold for a count of 5 seconds, and then slowly return to the starting position. The patient required tactile cues to keep shoulder blades depressed (scapular retraction with decreased activation of upper trapezius). The patient performed this exercise for 3 sets of 10 repetitions.

The final exercise of initial treatment required the patient to lay supine on a plinth with head supported by a pillow to comfort level. The patient was handed a 3 pound dumbbell in each hand and instructed to straighten her elbow and keep shoulder flexed at a 90-degree angle with hand facing towards the ceiling. The patient was then instructed to reach the dumbbell towards the ceiling as high as she could, and then lower back to starting position (engagement and strengthening of serratus anterior). The patient performed 3 sets of this exercise for 15 repetitions on each side.

During all 3 of Jen's exercises, she looked uncomfortable and stressed out. It was noted that she continually needed verbal and tactile cues to keep her shoulder blades down, retracted, and to breathe. Once Jen listened to the cues, she became increasingly comfortable with the exercises. Along with exercises, Jen was educated on proper posture and its importance in a healthy lifestyle.

While performing the 3rd exercise, the patient was having a pulling sensation in her neck that caused increased pain and exasperated her headache. The patient was instructed to remain in the supine position and then actively flex her shoulder from a neutral position

to a 90-degree of flexion position. While this motion was being performed, the therapist applied a sustained pressure to the superior angle of the scapula (active release of levator scapulae). This manual therapy technique relieved the pulling sensation felt by the patient. This relief in pain sparked the idea of the use of dry needling.[4] The patient underwent dry needling of bilateral levator scapulae and upper trapezius by certified dry needling therapist. The patient tolerated this treatment and continued with this plan of care for her first 2 weeks of therapy.

The final 2 weeks of this patients treatment consisted of the same exercises listed above, with dry needling only taking place 1 session per week. Two additional exercises were then added to the treatment. The first exercise was bilateral elevation of the humerus with external rotation by holding a yellow Thera-Band®. This exercise recruits scapular retractors while primarily targeting the lower trapezius and rhomboid major.[13] The patient was instructed to hold the Thera band in each hand, have arms resting at side, and elbows positioned to 90 degrees. The patient was then instructed to pull apart the band while keeping elbows fixed at 90 degrees. Once 15 degrees of external rotation was reached, the patient was instructed to lift her arms up as high as she could while maintaining tension in the band. The tension was maintained by keeping the scapulae retracted together while simultaneously keeping 15 degrees of external rotation. The patient performed 3 sets of 10 repetitions of this exercise.

The next exercise required the patient to sit on a plinth with her hips supported by plinth and feet supported by floor. The patient was then instructed to sit on a 3 inches towel roll under a unilateral hip. The patient was instructed to reach up with her arms towards the ceiling, and to laterally lean towards the hip with the towel roll. The patient

was encouraged to keep the opposite hip firmly in contact with the plinth. Her lumbar spine was kept in a neutral position. She needed cues to keep her scapulae depressed during shoulder abduction, but she demonstrated the ability to perform the action with her scapulae depressed. The patient held this stretch for 10 repetitions of 20-second holds, performed 2 sets. This exercise was intended to relax the patient, reduce stress, promote breathing during exercise, and stretch latissimus dorsi causing neuromuscular awareness of the muscle. The patient tolerated these addendums and felt relief after each session.

CHAPTER IV

OUTCOMES

After the patient's 4-week outpatient Physical Therapy intervention, ROM and strength were improved as shown in Tables 3 and 4. Cervical ROM improved to WNL bilaterally.

The musculature on the patients left side relaxed. All sharp pain with palpation of upper back musculature subsided. Her scapula was no longer an inch higher on the left side. Superior angle to superior angle measured 4 inches apart, and retrospectively inferior angle to inferior angle measured 5 inches apart.

The patient presented at discharge with an all around more relaxed posture, shoulders were no longer forwardly rounded, and her forward head posture was not fully corrected but was improved. Neck pain decreased from 4/10 at rest to 1/10 at rest, and 7/10 while active to 1/10 while active. Her shoulder pain decreased from 7/10 while active to 1/10 while active. Jen was headache free from week 1 of the treatment. Upon discharge, the patient recorded a score of 3 on the PDI.

Table 3. Glenohumeral Joint Motion

	Flexion		Abduction		Medial Rotation		Lateral Rotation	
	AROM	PROM	AROM	PROM	AROM	PROM	AROM	PROM
Right	173	173	172	172	70	70	79	70
Left	170	170	168	173	68	70	79	80

Table 4. Manual Muscle Testing of the Shoulder Girdle

	Flexion	Abduction	Medial Rotation	Lateral Rotation	Serratus Anterior	Lower Trapezius
Right	5/5	5/5	5/5	5/5	5/5	4+/5
Left	5/5	5/5	5/5	5/5	5/5	4+/5

CHAPTER V

DISCUSSION

Jen presented to physical therapy after being referred for pain management of osteoarthritis in her left shoulder. Diagnostic imagining was not available in our evaluation of this case, so it cannot be said that osteoarthritis was a misdiagnosis, but it is believed to have had a minimal contribution to the underlying cause of her pain. Like a typical OA patient would present, the patient had pain with ROM and limited external rotation. Where this patient differed, is that she had no pain, limited motion, or crepitus with passive ROM. If a calcification buildup is occurring in the glenohumeral joint, there is a high likelihood that the patient would experience pain in both passive and active ROM. She also had radiating pain to her head, causing debilitating headaches. Pain with active motion that also caused headaches supports the underlying dysfunction originating from a musculoskeletal problem. External rotation was limited in this patient, but it was no more limited than medial rotation, lateral rotation, flexion, and extension.

Jen had pain in her shoulder, as well as her head and neck. It was imperative that cervical radiculopathy be cleared out as a possible diagnosis. Jen had pain in the posterior aspect of her left shoulder, but lacked weakness with glenohumeral motion on her involved side. She also had no numbness or tingling on her involved side. With these findings, along with a negative Spurling test, cervical radiculopathy was ruled out as a potential cause of her dysfunction.

Jen presented with an elevated scapulae on her left side. This showed over use of

upper trapezius, rhomboid major, and levator scapulae as scapulae elevators, as well as under use of lower trapezius as a scapular depressor. With the scapula elevators being over worked, it explains the muscle tenderness upon palpation. Jen also presented with her bilateral scapula upwardly rotated. This upward rotation paired with elevation, points to upper the trapezius playing a larger role in upward rotation than the lower trapezius and serratus anterior. These 3 muscles should work together as a force couple of equal proportions for upward rotation. The muscle testing performed at the shoulder girdle reinforced the lack of equal proportion. The upper trapezius was observed to be carrying a majority the work load when it came to scapular upward rotation, while the lower trapezius and serratus anterior were not functioning properly and received a sub par manual muscle test strength grade.

As previously discussed, scapular rotation imbalances are causes of shoulder impingement syndrome. At the time of my affiliation, I was not as familiar with the presentation of shoulder impingement syndrome as I am now. The patient was lacking the presence of a painful arc, but I now know that symptom is not presence in every impingement case. Even though I did not perform special tests to rule in or rule out impingement, I believe that chronic muscle tension led to Ischemic muscle pain, which was the underlying cause of Jen's pain and lack of ROM.

Reflective practice

Jen was one of the first patients I worked with on my 1st clinical affiliation. Looking back at my outcomes, it's hard to say that I made any devastating mistakes with my treatment. However, there are things I would do differently with the knowledge I have gained since my affiliation.

I was confused at the fact that Jen had no sign of a “painful arc”. After conducting research for this project, I learned about different forms of impingement syndrome, as well as different presentations. I should have completed special tests, such as Neers or Hawkins Kennedy to rule in or rule out impingement.

The only special test that I actually performed was Spurling. I should have completed a Crank test to assess the degree of osteoarthritis present in the shoulder girdle. Now that I have completed a medical imaging course, I could also look at the radiograph and actually be able to interpret the results.

As Jen was referred to the facility with the diagnosis of shoulder osteoarthritis, I primarily took measurements of glenohumeral motions. I observed that her shoulders were elevated and upwardly rotated and I knew that upper trapezius was strong, but I did not manual muscle test this muscle. I also should have manual muscle tested middle trapezius and rhomboids to support my physical therapy diagnosis.

I think the reason why I lapsed on the special test portion of my examination is my fear of taking too long. At the outpatient facility I was at, I had patients scheduled throughout the day and it was a grind for me to stay up with my productivity. As I progressed throughout my affiliation, I became more confident with my time management skills and was able to complete a more thorough examination in a reasonable amount of time.

Jen was limited in cervical range of motion, and it was obvious. I should have taken measurements with a tape measure or goniometer. Acquiring solid ROM degree values looks professional during documentation, and provides anyone looking back at my note a more accurate presentation of the case.

Working with Jen was an eye opening experience for me as an aspiring therapist. She made me explore a variety of different analogies and tactics with my communication skills. As mentioned earlier, she required repeated cueing during treatment to relax her upper trapezius during exercise and posture. Even after I would take 5 minutes out of our treatment session just to educate her, it was obvious that something wasn't clicking. It took some time to adjust my medical terminology to layman's terms, but eventually I made it through that obstacle. I was then able to apply that lesson to future patients.

Conclusion

I believe that Jen's osteoarthritis, even though it's not an extreme case, was what started her journey to shoulder dysfunction. The slight discomfort that she received from her OA caused a snowball effect for other complications. I think her poor posture was her attempt to be as comfortable as possible while performing her daily tasks. Also to increase comfort, Jen had stopped using her left shoulder altogether, keeping it tightly guarded to body at all times. Consequently, she developed muscle imbalances, and had large amounts of muscle guarding and tension in her upper back musculature. The muscle imbalances occurred primarily with the scapula upward rotators. The upper trapezius became dominant and subsequently led to shoulder impingement. Normal shoulder motion should be a 2:1 ratio with the humerus on the glenoid fossa moving 2 parts as opposed to the scapula on the thorax moving 1 part. When the scapula is not properly upwardly rotating on the thorax, the shoulder complex loses a majority of its ROM. When the scapula is elevated too far, it causes a decreased area for the structures in the subacromial space to clear the acromion, causing a form of impingement. The guarding in the upper back musculature caused radiating headaches that prevented her from sleeping. Dry needling,

active release, and suboccipital release were all forms of tolerable treatment that allowed the patient to relax these muscles temporarily to relieve headache pain and muscle guarding. When the patient was relaxed, she could then be reeducated on how to perform normal daily motions with proper posture and without firing musculature that caused radiating pain. After therapeutic intervention, the patient reduced her PDI score from 45(moderately disrupted by chronic pain) to 3(not disrupted by chronic pain), her effected shoulder girdle was restored to within functional ranges of motion, shoulder girdle muscle imbalances were corrected, headaches ceased to be debilitating, and therapist and patient were pleased with the outcome.

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