CASE REPORT

Wesley C. Lockhart, DO, FAAO

A Case Study of Postural Imbalance with Lymphatic Congestion Which Responded to OMT

Abstract

This case report covers a nonagenarian who was in otherwise good health before a significant ankle fracture that required surgery and a prolonged rehabilitation due to the trauma, surgery and colitis. She developed or exacerbated a postural imbalance due to deconditioning, unequal leg length due to immobilization, and shoulder pain due to the use of a walker. This case report also covers the osteopathic manipulative treatments used.

Introduction

This case involves a 93-year-old female who developed a postural imbalance after rehabilitation for a bi-malleolar fracture of her left ankle. The patient was treated on multiple occasions with myofascial release and integrated neuromuscular release (INR) over several months with resolution of the symptoms and musculoskeletal restrictions. Physical findings included an enthesopathy of the right shoulder, somatic dysfunctions of the cranial, cervical, thoracic, lumbar, sacral, pelvic, upper extremity and lower extremity regions. At each treatment session the patient was examined to determine that day's area of greatest restrictions and were treated as such.

Additional issues found with treatment were significant restrictions of the cervicothoracic junction areas which included restriction of the right thoracic duct as well as significant tightness of the lateral and anterior cervical musculature resulting in a complaint of mild dysphagia, both of which resolved after the course of treatment.

The application of cervicothoracic junction myofascial release and integrated neuromuscular release was used to resolve a postural imbalance resulting from a bimalleolar ankle fracture and the post rehabilitation use of a walker. Lymphatic obstruction of the right thoracic duct and hypertonicity of lateral and anterior cervical muscles were also resolved with the use of myofascial release.

History of Present Illness

A 93-year-old female patient was referred to the author by a geriatrician in the author's group due to persistent thoracic back pain. She also has pain in the right shoulder that increases with activity. The patient reports that the problem began after she had a left bi-malleolar fracture with subsequent open reduction and internal fixation. She also developed pseudomembranous colitis and was

Corresponding Author

Wesley C. Lockhart, DO, FAAO Touro University Nevada College of Osteopathic Medicine Department of OMM, Room #1118 874 American Pacific Drive Henderson, NV 89014 Phone: 702-777-3234

Email: wlockhar3@touro.edu

Keywords

postural imbalance, integrated neuromuscular release, lymphatic congestion, OMT

9

hospitalized for treatment. Subsequently, she had rehabilitation including gait training and had to use a walker. The continued use of the walker caused progressive discomfort in the shoulders and upper arms especially on the right side as this was a new activity for her.

The patient admits that the pain began during her rehabilitation for the ankle fracture last year. She states that the pain is currently intermittent but is made worse after the use of the walker. The pain levels in the shoulder and mid thorax range from a 1-7/10. Rest helps as do the medications that she takes for pain. The pain decreases in the evening and at night. There is little pain upon awakening, but it becomes much worse when she must use the walker during the day. She has been relying on the walker less, but the pain returns after volunteering for several hours at a local hospital as a greeter and discharge wheelchair assistant.

In addition, the patient has a small mass just superior to the medial aspect of the right clavicle. The supraclavicular mass was investigated by the geriatrician. The patient had X-Rays, CT of thorax, CTA of thorax, ultrasound, and needle biopsy with the results being that the mass was of lymphoid tissue origin. There were no signs of malignancy.

PMHx: COPD, osteopenia, Herpes Zoster (x2), paralytic ileus (x2) with hospitalizations (not recent), CVA, duodenal ulcer, osteoarthritis, hypertension, mild COPD

Past Trauma Hx: head injury during fall last year when she sustained bimalleolar fracture.

Past Surgical Hx: TAH (endometriosis) 1963, cholecystectomy 1989, rhinoplasty 1997, open reduction with internal fixation of the left ankle (bimalleolar) 2011, cataract removal (bilateral)

Past Family Hx: unknown (adopted)

Current Medications:

- Hydrochlorothiazide one 12.5 mg tablet daily
- Vitamin D3 one 5000 IU tablet daily
- Naproxen 250 mg one tablet per day
- Acetaminophen 500 mg one tablet prn
- Mega Red capsules one 300 mg per day
- Potassium one 99 mg tablet per day
- Metamucil daily

Allergies: none

Social Hx: retired widow, volunteers at local hospital several days a week currently. Does not drink alcohol or smoke cigarettes, smoked in the past, quit many years ago. Has two cups of coffee per day.

Assessment

- 1. Enthesopathy of right shoulder complex involving the subscapularis muscle and upper trapezius due to postural imbalance.
- 2. Somatic Dysfunction of the cranial, cervical, thoracic, lumbar, sacral, pelvis, upper extremity, and lower extremity areas
- Cervicothoracic junction restriction with restriction of lymphatics at terminal junction
- 4. Mild dysphagia due to esophageal dysfunction resolved
- 5. Post-surgical ORIF of left ankle bimalleolar fractures
- 6. Mild hypertension
- 7. Post pseudomembranous colitis, stable

Course of Treatment

Initial treatment

The patient's initial treatment included myofascial release to the cervical muscle hypertonicity and somatic dysfunctions. Thoracic muscles were treated with Integrated Neuromuscular Release at the cervicothoracic junction3 and prone myofascial thoracolumbar release technique.5 Lumbosacral junction treated with prone lumbosacral myofascial release technique.⁴ Pelvis and sacrum treated with supine pelvis release with ASIS bridge technique using myofascial release.⁶ AC joint treated with muscle energy technique. Lower extremity treatments were treated supine with counterstrain and myofascial release.⁷ Release of the SBS compression was attempted with osteopathic cranial manipulative medicine.

After the first two treatments, the patient stated the there was a slight improvement for a couple of days, but the problem would return. Subsequent examinations and treatments revealed similar findings as the initial exam with some additional diagnoses and treatments as follows:

T2 – ERS right, T12 – ERS left – Treatment with MFR to the cervicothoracic and thoracolumbar junctions.

Sacrum – Left on right torsion – Treatment with MFR (4, 5)

Upper extremity – levator scapula counterstrain point on right, very tight subscapularis muscle with lateral counterstain point that did not release muscle. Balanced ligamentous tension technique was used to successfully release the shoulder complex. Discussion describes techniques.

BLT technique for the right shoulder as follows: Patient

Table 1. ROS.

System	Findings
General	Feeling well except for present illness. No significant weight loss or gain. No recent medication changes
HEENT	Slight difficulty with swallowing, patient has informed primary care practitioner and studies have been ordered. Admits her hearing is not as good as it used to be but feels that she does not need a hearing aid yet. Denies other eye, ear, or nose problems.
Cardiovascular	Denies chest pain, palpitations, rapid or slow heart rate. Mild hypertension for which she is being treated.
Respiratory	COPD, "not bad." Does not require O2. Does not affect volunteer work as a discharge wheelchair assistant. Denies chronic cough, significant shortness of breath at rest or with exertion.
GI	See past history. No complaints now. Does have a slight hiatal hernia but denies symptoms. She does state that she has developed a mild difficulty swallowing over the last three months.
GU	Denies any problems.
Neurological/ Psychiatric	Denies stress, anxiety, depression, balance problems have been made much better with training in rehabili- tation. The patient denies any post-CVA neurological deficits.
Musculoskeletal	See present illness. Left ankle is much better, and she no longer requires the walker.
Endocrine	Denies history of diabetes or thyroid problems.

Table 2. Physical Exam.

System	Findings
Vital signs	BP 128/78 Pulse 82 Resp 16 Temp 98.7 Fahrenheit
General	93-year-old female, alert and oriented, well-nourished, and well hydrated in no acute distress. Patient ambulated into exam room unassisted with slight left lower extremity limp.
HEENT	PERLA, Cranial nerves intact without deficit, dysphagia not noted on exam.
Heart	Regular rate and rhythm. No S3, S4, murmur or other abnormalities noted
Lungs	Clear to auscultation and equal bilaterally. No rales, rhonchi or rubs noted.
Neurological exam	eep tendon reflexes appear normal and equal bilaterally. Musculoskeletal Strength is 4/5 for all extremities except left ankle which is -4/5 for dorsiflexion and plantar flexion, 4/5 for inversion and eversion. Decreased range of motion for the right shoulder, specifically at the glenohumeral joint for internal and external rotation performed at ninety degrees abduction in the coronal plane.

 Table 3. Osteopathic Structural Exam.

System	Findings
Cranial	Sphenobasilar symphysis compression.
Cervical	Tight left long cervical extensor muscles, hypertonic right scalene and anterior flexor muscles (right more than left). OA - ERRSL, C6 – FRRSR.
Thoracic	Increased posterior curve, tight left latissimus dorsi, tight right upper traps. Mass noted in medial supra- clavicular region on right described in ultrasound report. Slightly mobile measures 3 cm by 5 cm. The cervicothoracic junction was rotated right, side-bent left with restriction in that position. The right side was relatively flexed, and the left side relatively extended as compared to being neutral. Left trapezius hyper- tonic with elevation of the left scapula.
Lumbar	L5 – FRSL, mild group curve side-bent left, rotated right, L1-4.
Pelvis	Fascial rotation preference left, left innominate superior shear, left and right SI restriction with supine ASIS compression test. Right innominate anterior rotation.
Sacrum	Right on right sacral torsion.
Upper extremity	Elevated scapula on right with restriction in that position. Restricted right AC joint to internal and external rotation while in scaption.1,2 Glenohumeral joint internal rotation on the right and internal and external rotation on the left were without significant restriction.
Lower extremity	Left medial malleolus is more cephalad than right. Right femur abducted with tight abductor muscles and lateral hamstring. Left ankle mortis restriction involving bilateral malleolar and talocalcaneal joints. Restricted left deep fascia of distal to middle lower leg.

is seated, operator sits on side of dysfunction facing patient. Operator's left hand is placed on the scapula, operators' right thumb is inserted into the axilla to contact the subscapularis muscle. This is usually painful if the procedure needs to be done. The patient is asked to relax as they will contract upper trapezius as a reflex mechanism for the pain. Once the patient can relax the shoulder the scapula is balanced with a posterior contact over the point of contact of the thumb on the anterior surface. This will relax the entire shoulder complex. Once this was done to the patient the pain subsided. On return visits, if the shoulder pain was present, this technique was performed, and the shoulder relaxed. After approximately three or four visits that included this procedure the patient's pain had subsided completely.

During one visit she complained of a headache that she admitted felt like it did after the head trauma from the fall last year. At the time of the visit, the headache had been present intermittently for about 2 weeks. The symptoms were aggravated by neck movement. The osteopathic cranial manipulative medicine (OCMM) findings at the time were a significant OA and less significant occipitomastoid suture restrictions on the right. This was successfully treated with OCMM.

The patient responded well to the treatments which included myofascial release of the cervicothoracic junction on each visit. The patient moved out of state to be closer to her family. At the time of the last visit, the supraclavicular mass was gone, and the mild dysphagia had also subsided.¹⁰

Plan

- 1. OMT to thorax, upper extremity, lower extremity, cranial, cervical, lumbar, sacrum and pelvis with resolution of symptoms
- 2. Continue home exercise program given by rehabilitation

3. Return as needed.

Discussion

The above patient who was referred to the author for thoracic and shoulder pain following a recent ankle fracture with prolonged rehabilitation and deconditioning. She had to use a walker for assistance and demonstrated a postural imbalance presenting in an interesting way. The shoulder dysfunction can be attributed to the use of walker after a significant postural imbalance created by the multiple fractures at the ankle joint. Although the rehabilitation of the ankle was by all accounts successful, the resulting postural imbalance was not addressed.

The postural imbalance was created most probably by the casting or other device used for immobilization after surgical fixation and the prolonged use of a walker afterwards. Although there may have been some component of postural imbalance before the accident and rehabilitation, it did not affect the patient's volunteering 4-5 days a week as a discharge wheelchair assistant at a local hospital. As the author had never seen the patient before the initial visit it was difficult to determine how much of a postural imbalance was present before the ankle fractures. While immobilized the left leg functioned as a longer leg which resulted in structural changes, specifically, superior shear of the left innominate, sacral torsion, uncompensated lumbar somatic dysfunction, and changes in the thoracolumbar dorsal fascia. Per the work of Vladimir Janda, MD, a lower extremity cross syndrome, if left unattended, can also create an upper extremity cross syndrome⁸ as is what happened in this patient. This upper extremity postural imbalance can be directly attributed to the use or perhaps overuse of the upper extremities while the patient used a walker. This presented as pain and restriction in the upper thorax and right shoulder. Referring to work and publications of Andre Vleeming, MD, the connection of the lower extremity dysfunction to the upper extremity is through the thoracolumbar dorsal fascia. According to Janda, the upper trapezius and pectoralis major as well as the levator scapula tend to hypertonicity in the upper extremity crossed syndrome. Because the thoracolumbar dorsal fascia is in an "X" pattern, the left lower extremity dysfunction affects the right upper extremity as this connection is part of gait. The patient already had some degenerative changes in the AC joint, the imbalance affected the function of the shoulder complex including the subscapularis. This was effectively

treated along with the postural imbalance.

Treatment of the postural dysfunction upper and lower cross syndromes was mainly achieved with the use of myofascial release and Integrated Neuromuscular Release as published by Robert C. Ward, DO, FAAO. The main components of the treatment used releases published by Dr. Ward and included those for the cervicothoracic junction, thoracolumbar junction, and lumbosacral junctions with wide-spread effects due to the type of manipulation. The success of these techniques depends on the region addressed and includes all levels of dysfunction (superficial to deep) and more distant musculoskeletal areas affecting the junctions. Integrated Neuromuscular Release was used to hasten the myofascial direct barrier restrictions.

The trauma site at the left ankle was treated with myofascial release and BLT. The right shoulder upper cross syndrome was treated with myofascial release and an uncommon BLT technique as described in the body. An interesting presentation of the upper cross syndrome was significant restriction of the right cervicothoracic junction that created a restriction to the right thoracic duct as well as a mild dysphagia associated with cervical muscle tightness. Both issues were resolved with treatment. By that time, the patient was able to ambulate without the walker. The lower cross syndrome as well as the lumbar, sacral, and pelvic dysfunctions were treated with muscle energy, MFR, and BLT with success. When the patient left the practice, she had little evidence of a significant postural dysfunction.

Conclusion

A nonagenarian who was in otherwise good health before a significant ankle fracture that required surgery and a prolonged rehabilitation due to the trauma, surgery and colitis developed or exacerbated a postural imbalance due to deconditioning, unequal leg length due to immobilization and shoulder pain due to the use of a walker. The postural imbalance followed a well-recognized pattern of dysfunction between the left lower extremity and the right upper extremity through the dorsal thoracolumbar fascia. The somatic dysfunctions in the right shoulder, neck and upper extremity also caused restriction of the right thoracic duct and restriction of the lateral and anterior neck muscles that resulted in lymphatic congestion and mild dysphagia, respectively. The postural imbalance was corrected, and the right shoulder and cervicothoracic junction somatic dysfunctions were corrected with osteopathic manipulation. The lymphatic congestion and the

References

- 1. McGee D. Active movements, scaption. Orthopedic Physical Assessment. 5th edition. Saunders Elsevier, 2008: p. 251-252
- 2. Greenman P. Acromioclavicular joint, Muscle energy treatment in scaption of internal and external rotation restrictions. In: *Greenman's Principles of Manual Medicine*. Lippincott, Williams, and Wilkins, DeStefano, editor, 2011:400.
- Ward R. Craniocervical Spine, seated. In: Foundations of Osteopathic Medicine. 2nd edition. Williams and Wilkins, Ward, editor. 2003:952-953, Figures 60.54, 60.55, 60.56, 60.57.
- Ward R. Combined Sacroiliac, Sacral Base and Lumbopelvic Releases, prone. In: *Foundations of Osteopathic Medicine. 2nd edition*. Williams and Wilkins, Ward, editor. 2003:938-940, Figures 60.12, 60.13, 60.14, 60.15, 60.16, 60.17.
- Ward R. Thoracolumbar Release. In: Foundations of Osteopathic Medicine. 2nd edition. Williams and Wilkins, Ward, editor. 2003:936-937,

mild dysphagia resolved.

Figures 60.5, 60.6, 60.7, 60.8, 60.9, 60.10, 60.11.

- Ward R. Sacroiliac Release, supine. In: *Foundations of Osteopathic Medicine. 2nd edition.* Williams and Wilkins, Ward, editor. 2003:947-951, Figures 60.39, 60.40, 60.41, 60.42, 60.43, 60.44, 60.45, 60.46.
- Ward R. Foot and Ankle. In: *Foundations of Osteopathic Medicine. 2nd edition.* Williams and Wilkins, Ward, editor. 2003:961, Figures 60.77, 60.78, 60.79, 60.80.
- 8. Janda V. Postural and phasic muscles in the pathogenesis of low back pain. In: *Proceedings of the 11th Congress of International Society of Rehabilitation of the Disabled*. Dublin, Ireland. 1968.
- 9. Vleeming A, et al. Movement, Stability and Lumbopelvic Pain. 2nd edition. Churchill Livingstone, Vleeming, editor. 2007:47-73.
- Stoll S, Tune J, Downey H. Increased lymphatic flow in the thoracic duct during manipulative intervention. *JAOA*. October 2005. 105(10), 447-456.