The Use of Osteopathic Manipulative Treatment in Addressing Neurogenic Thoracic Outlet Syndrome

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CASE DESCRIPTION

- **Chief Complaint:** Neck pain and intermittent headaches for the past 5 years.
- **HPI:** 63-year-old male patient presented to the clinic complaining of a 5-year history of constant bilateral neck pain associated with headaches per week and intermittent bilateral upper extremity paresthesias. At baseline the patients neck pain was 3/10 and achy. At its worst, the pain was 8/10 and described as sharp. His symptoms have been worsening in severity and frequency over the last 9 months.
- **ROS:** Positive for back pain and mild weakness of upper extremities. Negative for dizziness or vision changes.
- **PMHx:** Bilateral CTS, Left Horner’s Syndrome, Cluster HA’s, Migraines, DID, HTN, and Pre-DM.
- **PSHx:** Left inguinal hernia repair, left lower extremity varicose vein ligation, and umbilical hernia repair.
- **Medications:** Lisinopril HCTZ 20/12.5mg, 1 Tab PO Daily, Atorvastatin 20mg, 1 Tab PO Daily, and Cavediol 12.5mg, 2 Tab PO Daily.
- **Social History:** Patient is a chef and thus is required to travel many times throughout the year and work under conditions that put excess stress on his upper back and neck. Patient does not exercise, stopped ESH 2 years ago, and does not use any tobacco products.
- **Neurological Physical Exam:** Biceps, Triceps, and Brachioradialis reflexes 2+. Bilaterally. Gross sensation to light touch intact bilaterally in C5 – T1 dermatomal distribution. Gross upper extremity strength 5/5 and intact bilaterally.
- **Osteopathic Structural Exam:**
  - **Special Tests:**
    2. Left upper extremity: ⊖ Wright’s Hyperabduction Test
    3. Right upper extremity: ⊖ Wright’s Hyperabduction Test.
    (This test is typically positive if the primary somatic dysfunction involves the pectoralis minor muscle.)
  - **Assessment:** Neurogenic thoracic outlet syndrome is the primary differential at this point.
  - **Plan:** Trial period of OMT targeted at the most dysfunctional somatic areas elicited on the osteopathic structural exam with regular interval follow-up.

INTRODUCTION

- **Neurogenic Thoracic Outlet Syndrome (NTOS) is a disorder which develops due to compression of the brachial plexus secondary to fascial and muscular somatic dysfunctions.** Most patients with this disorder have a history of neck-trauma; with auto accidents being the most common cause and repetitive stress at work being the second most common cause. Typically, patients with NTOS develop paresthesias, weakness in the upper extremity and hand, neck pain, and accompanying cervicogenic headaches. Currently, the mainstay initial treatment approach for NTOS is conservative and consists of muscle relaxants, anti-inflammatory agents, and physical therapy. Although these typically do help patients, a subset of folks do not respond to this form of therapy and are forced to consider surgical correction as a treatment option. However, studies have shown that using a number of different modalities of Osteopathic Manipulative Treatment (OMT) can help decrease muscular tone in the scalene muscles, free up fascial restrictions, and correct bony dysfunctions of ribs 1, the cervical spine, and the upper thoracic spine. Improvement of these areas ultimately can lead to a reduction of symptoms and over time may help diminish the symptoms to a negligible level.

OBJECTIVES

- Osteopathic Manipulative Treatment (OMT) may serve as an effective primary treatment approach in patients suffering from NTOS. Encouraging osteopathic physicians to incorporate OMT in their approach to treating patients with NTOS may lead to a considerable decrease in symptoms as well as an improvement in the patient’s overall quality of life.

METHODS

- The patient was seen twice a month to prevent decompensation of muscles following treatment.
- A myriad of techniques and modalities were utilized in treating the patient.
- The modalities which proved most effective were:
  - Ligamentous Articular Strain
  - Stills Technique
  - Facilitated Positional Release
  - Osteopathic Cranial Manipulative Medicine

OSTEOPATHIC MANIPULATIVE TREATMENT

- **Ligamentous Articular Strain (LAS)**
  - The patient’s muscles were so hypertonic that pure indirect techniques were not useful. Initially, LAS allowed me to break the cycle of hypertonicity and allow for sufficient tissue release and softening.
  - **Facilitated Positional Release (FPR)**
    - Once I was able to break the cycle of hypertonicity, FPR was used as a way to help the patient’s muscles reset themselves and prevent them from having a rebound spasm.
    - **STILLS Technique**
      - As noted previously, the patient had a number of cervical and upper thoracic bony dysfunctions. Due to the patient’s history of degenerative joint disease, performing any pure direct techniques to fix these bony dysfunctions may have caused harm. Therefore, Stills was used as a way to correct the dysfunctions and ensure that our patient would not be harmed.
      - **Osteopathic Cranial Manipulative Medicine (OCMM)**
        - During the patient’s first visit I noticed that his right temporal bone was extremely restricted. This case highlights the effectiveness of targeted OMT in significantly reducing symptoms as well as improving the patient’s overall quality of life.

RESULTS

- In order to properly quantify the patient’s improvement, we evaluated two important parameters: the severity of neck pain and the frequency of headaches experienced.
- Immediately following the first treatment the patient reported 3–4 headaches per week and rated his neck pain as varying between 2-4 on a scale of 10.
- After the patient’s 3rd treatment the patient reported 1-2 headaches per week and rated his neck pain as 1-2/10.
- During the patient’s 5th visit he stated that his headaches were occurring once a week and his neck pain was mild.
- By the patient’s 8th visit the patient was complaining of low back pain. He stated that his headaches and neck pain were negligible.

CONCLUSIONS

- Neurogenic thoracic outlet syndrome arises commonly as a result of musculoskeletal somatic dysfunctions secondary to either an acute trauma or chronic stresses to the area.
- The somatic dysfunctions will typically affect the cervical spine, upper thoracic spine, 1st rib, pectoralis minor, clavicle, brachial plexus, and surrounding fascial structures.
- As a result, patient may experience a myriad of symptoms including neck pain, back pain, cervicogenic headaches, and paresthesias in a non-radiculogenic distribution.
- This case highlights the effectiveness of targeted OMT in significantly reducing symptoms as well as correcting structure-function imbalances related to neurogenic thoracic outlet syndrome.
- Furthermore, this case demonstrates a significant improvement in quality of life, overall happiness, and patient satisfaction simply by using osteopathic manipulative treatment as the primary treatment modality.

FUTURE CONSIDERATIONS

- There have been many studies conducted on the efficacy of physical therapy, NSAIDs, and anti-inflammatory medications as a first line treatment choice for patients suffering from neurogenic thoracic outlet syndrome.
- There are a subset of patients that do not respond to these types of treatment, however, and will typically be referred to a specialist for surgical evaluation.
- It would be of interest to design an experiment in which patients are categorized into three groups; one that receives physical therapy and medications, a second group that consists of only OMT, and a third group that consists of all three treatment approaches.

REFERENCES


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