A Case Report on the Diagnosis and Treatment of Parsonage-Turner Syndrome with Osteopathic Manipulative Treatment

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Lecture Objectives

1. Presentation of a brachial plexopathy case
2. Present the anatomical relationships of the brachial plexus
3. Present the effects of OMM on the treatment of brachial plexopathy
Case Presentation

• History of Presenting Illness
  • 39 YO right-hand dominate male presented with 3 mo h/o constant numbness, tingling, and weakness in the left forearm and hand
  • Symptoms have progressively worsened
    • Patient was filing for disability at the time of presentation
    • Reported sporadic, sharp, shooting pain down the left arm that wakes him from sleep
    • Constant, severe pain between shoulder blades and neck with associated constant throbbing pain in neck and dull ache in mid-back
  • Overall discomfort: 7 out of 10 via pain diagram
Case Presentation Cont.

• Pertinent Review of Systems
  • Patient denied any recent history of illness, trauma, bowel or bladder incontinence/retention, unplanned weight loss, dizziness, light headedness, fainting, and hypermobility of neck.

• Past Medical History
  • Chronic neck and lower back pain
  • Migraines
  • Right Labral tear, 1985
  • Fibromyalgia
  • Hypoglycemia
  • Kidney Stones
  • Depression and Anxiety
  • Recent emotional trauma from being robbed in own home at shotgun-point
Case Presentation Cont.

• Past Surgical History
  • Deviated Septum, 1996
  • Ankle: bone removed from ankle, 1994

• Social History
  • Tobacco addiction: quit June 2013 but still smokes 2% nicotine with e-cig
Case Presentation Cont.

• Previous Radiologic Studies
  • Cervical spine MRI without IV contrast obtain 1 mo prior to presentation revealed:
    • Mild degenerative cervical spondylosis
    • Mild spinal stenosis at:
      • C3-C4
      • C4-C5
      • C5-C6
    • Moderate RIGHT-SIDED neuroforaminal narrowing at:
      • C3-C4
    • No significant left-sided neuroforaminal narrowing
Case Presentation Cont.

• Pertinent Neuromuscular Exam Findings:
  • Left hypothenar eminence atrophy
  • Sensory
    • Reduced left-sided light touch at dermatome levels:
      • C4 – acromioclavicular joint
      • C8 – medial epicondyle
    • Reduced left-sided pin prick in glove-like pattern that extended to mid-forearm as well as the medial epicondyle (C8)
  • Reflexes
    • Triceps (C7): 1/4
    • No spasticity or flaccidity
Case Presentation Cont.

• Pertinent Neuromuscular Exam Findings Cont.:
  • Muscle Strength
    • 4/5 shoulder abduction and elbow flexion due to pain
    • 5/5 elbow extension and wrist flexion
    • 2/5 wrist extension
    • 4/5 grip strength
    • < 2/5 abductor digiti minimi and first dorsal interossei
    • 3/5 abductor pollicis brevis
  • Range of Motion
    • Decreased left shoulder active flexion and extension due to pain
Differential Diagnoses

- Lower trunk brachial plexopathy affecting the lower trunk/medial cord and middle trunk/posterior cord
- C8 radiculopathy
- T1 radiculopathy
- Ulnar neuropathy
- Carpal Tunnel Syndrome
- Thoracic Outlet Syndrome
Differential Diagnoses Cont.
Case Study Cont.

- EMG and nerve conduction studies of left upper extremity
- Limited fibrillation potentials of:
  - Triceps
  - Abductor pollicis brevis
  - First dorsal interosseus
- Reduced recruitment of:
  - First dorsal interosseus
- Mild Increase in motor unit complexity and polyphasia of:
  - Triceps
  - Abductor pollicis brevis
  - First dorsal interosseus
- Electrophysiologic findings were consistent with mild subacute to chronic left lower trunk brachial plexopathy
Case Study Cont.

- Brachial plexus MRI without IV contrast obtained was unremarkable
- Assessment
  - Patient was diagnosed with Parsonage-Turner Syndrome
- Plan
  - Consent was obtained and patient was treated with OMT 5 times over a 2 mo period
    - Techniques were used to address 9 key body regions
    - Head, Cervical spine, Thoracic spine, Lumbar spine, Pelvis, Sacrum, Lower extremity, Upper extremity, and Rib-cage
Epidemiology of Parsonage-Turner Syndrome
Parsonage-Turner Syndrome

- Also Know As...
  - Idiopathic Brachial Plexopathy
  - Brachial Neuritis
  - Neuralgic Amyotrophy

- Rare condition
  - 1.64 cases per 100,000 people
  - True incidence may be higher as a result of underreporting due to missed diagnosis

- Men more commonly affected than women
- Affects individuals between 3\textsuperscript{rd}-7\textsuperscript{th} decades of life (4,8)
- Predominantly affects proximal motor nerves (5)
Parsonage-Turner Syndrome Cont.

- Symptomatic Presentation:
  - Sudden, severe unilateral pain within the shoulder girdle (5,7)
  - May extend to the trapezius, upper arm, forearm, and hand
  - Progressive neurologic deficits (4)
  - Motor weakness
  - Dysthesias
  - Numbness
  - Atrophic changes of the upper extremity
  - Non-positional
  - Worse at night with associated awakenings from sleep
  - Self-limiting (10)
  - Lasting months to years
Case Study Cont.

• Subsequent Re-evaluation and Results
  • Patient reported improved range of motion and decreased symptoms in left upper extremity, neck, upper-, mid-, and lower back following each OMT
  • Patient regained left-sided 5/5 muscle strength of:
    • Shoulder Abduction
    • Elbow Flexion
    • Wrist Extension
    • Grip Strength
    • Flexor digiti minimi
    • First dorsal interossei
    • Abductor pollicus brevis
  • Patient recovered left-sided sensation to light touch throughout entire upper extremity
Discussion
Discussion

- Parsonage-Turner Syndrome (PTS) Pathophysiology:
  - Theorized to be an axonal process
  - Complete denervation is common
  - May not follow classic nerve or plexus distribution
  - Predominantly affects proximal motor nerves
    - Upper trunk of brachial plexus, suprascapular, long thoracic, and axillary
  - Nerves least commonly affected
    - Ulnar, Radial, Medial, and Middle and Lower trunks of the brachial plexus
Phases of Pain associated with PTS

- Acute neuropathic pain – severe and continuous in nature (8)
  - Typically dissipates in 1-2 wks
- Subacute neuropathic pain – radiating pain exacerbated by movement (10)
  - Due to plexus damage
  - Typically dissipates in wks – yr
- Musculoskeletal sprains, strains, and imbalances (5)
  - Due to residual paresis, compensating muscles, and joint dysfunctions
  - Typically dissipates in yrs
Discussion Cont.

• **Diagnosis**
  - Dependent on EMG, including muscles not commonly checked due to widespread denervation pattern of PTS

• **Standard of Care Treatments**
  - Pain management
    - Opiates, NSAIDS, neuroleptics, and transcutaneous electrical nerve stimulation are commonly used
  - Poor evidence to support oral steroids
  - Physical therapy with emphasis of strengthening exercises

• **Prognosis**
  - Functional recovery rates are good
    - 36% by 1 yr, 75% by 2 yrs, and 89% by 3 yrs (5,9)
Conclusion
Conclusion

- In utilizing OMT as an adjunctive treatment modality, our patient made a full recovery after 2 mo (5 total treatment sessions)
  - Significantly less than the average recovery of 2-3 yrs
- We hypothesize that by treating key somatic dysfunctions we were able to relieve the strains, sprains, and imbalances caused by PTS and directly address the patient’s musculoskeletal pain (3)
  - Which in turn may have helped decrease the pressure on the brachial plexus
- Therefore, OMT is theorized to be beneficial in resolving the longest lasting phase of pain in PTS, with a resultant reversal of weakness and improved function.
References


