1 CASE STUDIES IN OMM
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2 Objectives
- Review autonomic innervation consideration in diagnosis and treatment with OMT for various cases.
- Review fluid and diaphragm considerations in diagnosis and treatment with OMT for various cases

3 Autonomic nerve
- Sympathetic
  - T1-L2
    - sympathetic chain
    - Celiac ganglion
    - Superior mesenteric ganglion
    - Inferior mesenteric ganglion

- Parasympathetic
- Cranial Nerves
  - Oculomotor (3)
  - Facial (7)
  - Glossopharyngeal (9)
  - Vagus (10)
  - S2-S4

4 Sympathetic
- T1-T4 - Head
- T1-T6 - Heart and Lungs
- T2-8 – Upper extremity
- T5-T9 – Greater Splanchnic - Celiac ganglion - Upper GI
  - T5R – Gallbladder
  - T7R – Pancreas
  - T7L – Spleen
  - Stomach, duodenum, liver
• T10-T11 - Lower GI – Lesser splanchnic – Superior mesenteric ganglion
  • T10-12 - Kidney
  • T12 – appendix
  • Small intestine, Right colon, upper ureter
• T11-T12 – Lower extremity
• T12-L2 – Least splanchnic/Lumbar splanchnic – Inferior Mesenteric Ganglion
  • Left colon, lower Ureter, Bladder, Uterus, Prostate, Genitals

Parasympathetic
• CN 3 – Ciliary ganglion – pupil
  • CN 7 – Sphenopalantine ganglion - sinus
  • CN 9 – Inferior Salivatory nuclues – Parotid
• CN 10 (Vagus) – Heart, Lungs, Kidneys, Upper ureters, midtransverse colon
  • S2-S4 – Left colon, lower ureter, bladder, uterus, prostate

Lymphatic
DRAINAGE

Diaphragms
• Thoracic outlet / Sibson’s facia
• Respiratory diaphragm
• Pelvic diaphragm

Case Presentation
• A 29 year old female presents to your office complaining of headache, face hurting, stuffy nose, cough, general malaise, and fever (100.4°) times 3 days. She took some OTC cold medication, but she can’t remember what it was. Drainage is white with some yellow.

Differential Diagnosis
• Viral URI
• Allergic Rhinitis
• Sinusitis

**Treatment Considerations**

- Pharmacologic
  - Mucolytics agents
  - No Antibiotics
  - Decongestants
- OMT
  - Sympathetics
  - Parasympathetics
  - Lymphatics
  - Respiratory Mechanics
- Hydration - Drink warm, clear fluids

**Osteopathic Considerations**

- Cervicals - Superior sympathetic ganglion in close proximity to OA
- Thorax
  - Sympathetics
  - Lymphatic return
- Pterygoid mm.
- Sphenopalantine ganglion

**Sympathetic Innervation**

- T1 - T4
- Ascend to the head through the cervical chain ganglia.
- Viscerosomatic Reflex
  • Palpatory and other TART changes in the upper thoracic and cervical paraspinal tissues indicate increased functional activity of the sympathetic nervous system
13 Increased Sympathetic Tone
• Vasoconstriction of vessels
• Diminishes nutrient supply to the tissues (including medications)
• Reduces lymphaticovenous drainage
• Inhibits secretion
  • Dryness and cracking of the mucosa can lead to secondary bacterial infections

14 OA Dysfunction
• Why treat the OA?
  • Trace the course of CN VII
    • Relation to the temporal bone
    • What drives the temporal bone?
  • That’s right, the occiput!
  • 85% of venous drainage of the head is through the Jugular veins
  • Pass through the jugular foramen
  • Superior sympathetic ganglion

15 Sub-occipital Decompression
• Objective: decrease suboccipital (SO) muscle tone
  • 1) Doctor at head of table; patient supine.
  • 2) Pads of fingers just beneath superior nuchal line in the SO tissues
  • 3) Lift head slightly so its entire weight is supported on fingers; pull forearms toward operator at 45 degrees

16 Thoracic treatment of choice

17 Parasympathetic Innervation
• Postganglionic fibers from the sphenopalatine ganglion
  • AKA pterygopalatine ganglion
  • Via CN VII
• Secretomotor supply to the nasal glands
• Innervation of lacrimal gland
18 **Parasympathetic Hyperactivity**

- Profuse, clear, thin secretions from the mucosa of the nasopharynx and sinuses
- Sphenopalatine syndrome
  - “described as redness and engorgement of the mucous membranes, photophobia, tearing and pain behind the eyeball, nose, neck, ear, or temple.”

19 **Sphenopalatine Ganglia**

- What are you treating?
  - Parasympathetics
- Goal of Treatment?
  - Thin the mucous secretions so the sinuses can drain.
  - You will need some gloves.

20 **Sphenopalatine Ganglion (aka Pterygopalatine ganglion)**

21 **Sphenopataline Ganglion Technique**

- Slide your gloved pinky external to the teeth (but yes, inside the mouth)
- Continue until your finger passes between the teeth and the mandible. There should be a small depression after the last molar.
- Add passive pressure over the lateral pterygoid muscle - have the patient lean his or her head towards your finger.
- Do not jam your finger into the pterygoid
- Continue this until you notice unilateral tearing

22 **Galbreath Technique**

- What are we affecting?
  - Mandibular drainage
- Why is this important?
  - Drainage of nasopharyngeal area
• Decongestion
  • Opening of pharyngotympanic (eustachian) tube
  • Normalizes pressure and improves drainage

23 **Galbreath Technique**

24

25 **Galbreath Technique**

  • Patient supine with head elevated and rotated 90° to the side opposite the side to be treated (rotate right to tx the left)
  • Operator stands on side pt is facing, placing the fingers of the caudal hand below the zygomatic arch and over the temperomandibular joint.
  • The heel of the same hand contacts along the mandible to the chin (symphysis menti)
  • Patient must relax the lower jaw. Doctor uses a downward, forward, and medial force with the caudal hand. Release and repeat slowly and firmly.
  • Cephalad hand is placed on the patient’s frontoparietal region to steady the patient’s head

26 **Lymphatics**

  • Lymph congestion
    • Boggy edematous tissue
    • Decrease transport of nutrients to the tissue
    • Decreased removal of metabolic wastes from mucosa
    • Hinders homeostatic mechanisms
  • GOAL - Open lymphatic pathways while avoiding direct manipulation of swollen lymph nodes

27

28

29 **Thoracic Inlet**

  *dir. Myofascial release of Sibson’s fascia*

  • Caudal fingers on the superior aspect of the supraclavicular
fossa, apply an inferior/anterior traction to the pt's wrist. The caudal fingers apply gentle anterior pressure against the clavicle.

• Move the pt's arm into flexion, abduction, and then extension. Follow the rotation of the clavicle posteriorly until tension develops. Hold this until some relaxation is noted.

• Repeat two or three times.

30 Case Presentation

• 18 year old female presents to your office with her mother. She complains of debilitating periods for the past 7 months. Patient describes cramping pelvic pain and a constant low backache which begins the day her menstrual cycle begins and ends 2 days later. She describes bloating, occasional diarrhea and decreased appetite in addition to the pain. Her mother states that she has missed a few days of school because of the pain.

• Menarche at 15. Normal cycle is 28 days with 4-5 days of bleeding. No excessive bleeding is described.

• Patient states that she is not sexually active and has no need for birth control

31 Differential Diagnosis

• Primary Dysmenorrhea
• Secondary Dysmenorrhea
  • Endometriosis
  • Adenomyosis
  • Pelvic Inflammation
  • Uterine fibroids
  • Stenosis of the cervical canal
  • Ovarian Cysts
  • IUD
  • Pelvic Varicocele

32 Autonomic Innervation to Uterus
1. Sympathetic: T12-L2
   - Superior and Inferior Hypogastric Plexus
   - Uterine Fundus – Constriction
   - Uterine Cervix – Relaxation
   - Vasoconstriction

2. Parasympathetic: S2-S4
   - Pelvic Splanchnics
   - Uterine Fundus – Relaxation
   - Uterine Cervix - Constriction
   - Vasodilation

33. Treatment Considerations
   - NSAIDS
   - Oral Contraceptive Pills
   - Progesterones
   - OMT

34. OMT Treatment Plan
   1. Sympathetics
      - Thoracolumbar Jct
   2. Lymphatics
      - Sibson’s
      - Respiratory Diaphragm
      - Pelvic Diaphragm

2. Parasympathetics
   - Pelvis
   - Nonphysiologic
   - Pubic
   - Innominate
   - Sacrum
   - SI Joint
• Lumbar treatment of choice
• Pelvis treatment of choice
  • Muscle energy
• Sacrum treatment of choice
  • MFR

A/P Treatment of Diaphragm
• The contacts are both anterior and posterior.
• May be either direct or indirect force. You’re treating what is between your hands with myofascial release
• Posterior contact is the thoracolumbar junction.
• Anterior contact is along the costal margin with the finger tips and around the umbilicus with the heel of your hand.

Pelvic Floor Dysfunction
Dx: Myofascial tension or asymmetrical motion of the pelvic diaphragm.
Clinical: Pelvic floor pain or dysfunction can contribute to prostatic spasm, dyspareunia, vaginismus, bladder symptoms without infection.

Pelvic Floor-Diaphragm Release
Treatment:
1. Pt supine with knees and hips flexed. Doc on side to be treated.
2. Locate the ischial tuberosity.
3. Place the fingers of the caudad hand medial to the ischial tuberosity keeping the pads of the fingers in contact with the ischial tuberosity, pressing the fingers into the ischiorectal fossa.
4. As the pt exhales follow the diaphragm cephalad with fingers and hold.
5. As pt inhales resist decent of diaphragm. 
6. Repeat steps 4 & 5 until good motion is felt.

39 □ Long lever technique

40 □ For the Patient
   • Firm, continuous pressure over the sacral base
   • Knee-Chest Position

41 □ Case 3
   • 26 year old women with complaint of pain and tingling in her left hand. It starts at the elbow and radiates down.
   • Her fingers fall asleep at night.
   • Recently started working part time in a family restaurant serving and hosting. Her day job involves working on a computer.
   • Physical Exam:
     • + Tinel at the wrist. Negative phalen. Minimal tenderness at the lateral epicondyle.
     • + Adson, Negative hyperabduction, + Costoclavicular, Negative foraminal compression test.
     • DTRs normal, Strength normal, radial pulses normal.

42 □

43 □ OMT Considerations
   □ Cervical Spine
     • Origin of Brachial plexus C5-T1
   □ Thoracic Spine
     • Sympathetic innervation to upper extremity T2-T8
   □ Sibson's Fascia, Pectoralis Minor, Clavicle, 1st Rib, Scalenes
     • Possible impediment to neural and vascular supply to extremity
   □ Forearm
   □ Wrist
• Direct association to carpal canal

44 Anatomy

45 Anatomy

46 Opponens Roll
- Used to assess rotation of the thumb away from palm
- Combination of abduction and extension
- Treatment with lateral rotation component to stretch the opponens pollicis muscle and stretch transverse carpal ligament
- Contact pisiform and scaphoid
- Extend, abduct and lateral rotation of thumb

47 Articulatory with Traction
- Physician places hands over dysfunctional carpal articulation
- Squeeze the palms of hands (can pull apart the fingers)
- Apply gentle traction
- Articulate in both clockwise and counter clockwise manner

48 Ligamentous Articular Strain
- Grasp the thumb and hypothenar eminence
- Flex the wrist and supinate the arm, direction of force as shown
- Slowly take the wrist through its ROM waiting for any barriers to release
- Once the forearm is pronated carry the wrist into ulnar deviation

49 Myofascial Release Long Axis Approach
- Grasp the wrist and the elbow as shown
- Take into the barrier in supination/pronation of forearm
- Take into barrier in flexion/extension/ abduction/ adduction of wrist
Add in compression or traction
Use respiratory cooperation as needed

**Forearm Tenderpoints and Counterstrain**
- Supinator
- Supinator muscle at the lateral aspect of the forearm near the radial head
- Treatment position
  - Extension
  - Supination
  - Slight abduction of forearm

**Forearm Tenderpoints and Counterstrain**
- Pronator
- Medial forearm at the proximal pronator teres attachment
- Treatment position
  - Flexion
  - Pronation
  - Slight adduction of the forearm

**Pectoralis Minor Release**
- Patient supine
- Maintain steady, balanced pressure with the pad of the thumb
- Start at lateral edge of pectoralis minor about 2 inches from coracoid
- Sweep medially across the chest as muscle relaxes

**First Rib – Fascilitated Positional Release**
- Patient supine.
- Monitor the posterior portion of the first rib with one hand
- With the other hand grasp the patient’s elbow, flex the arm to 90 degrees and abduct and internally rotate until your feel a softening of the tissue under the monitoring hand
• Add a compressive force through the elbow
• Hold for 3-5 seconds
• Maintaining the compressive force take the arm across the chest and through its ROM and back into a neutral position

54 **First Rib – Facilitated Positional Release**

• Patient supine.
• Monitor the posterior portion of the first rib with one hand
• With the other hand grasp the patient’s elbow, flex the arm to 90 degrees and abduct and internally rotate until your feel a softening of the tissue under the monitoring hand
• Add a compressive force through the elbow
• Hold for 3-5 seconds
• Maintaining the compressive force take the arm across the chest and through its ROM and back into a neutral position

55 **Clavicle**

• Patient seated (may also do supine version)
• Thumbs at medial third of the clavicle as a fulcrum
• Fingers monitor at the SC and AC joints
• Patient turns away slightly (side opposite the treated clavicle)
• Patient drapes arm over the physicians arm
• Can be used as BLT or MFR with respiratory cooperation

56 **Clavicle Myofascial Release**

• Patient seated (may also do supine version)
• Thumbs at medial third of the clavicle as a fulcrum
• Fingers monitor at the SC and AC joints
• Patient turns away slightly (side opposite the treated clavicle)
• Patient drapes arm over the physician’s arm

57 **References – Sinusitis/URI**

References – Upper extremity

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