Musculoskeletal Medicine in Psychiatry
An Osteopathic Perspective

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Osteopathic Tenets

• The body is a unit; the person is a unit of body, mind, and spirit.
• The body is capable of self-regulation, self-healing, and health maintenance.
• Structure and function are reciprocally interrelated.
• Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.
**Background:**

*Neuromusculoskeletal Medicine*

- Health of the body (soma & viscera) has a direct influence on ability to fend off disease states
- Structural examination to locate and characterize somatic and visceral dysfunction
- Somatic Dysfunction: altered or impaired function of body framework system (skeletal, arthrodial, myofascial) structures and related vascular, lymphatic, neural elements
- Clinical manifestations via palpation:
  - Changes in tissue texture (T)
  - Anatomic asymmetry of the effected region (A)
  - Altered ease or range of motion (R)
  - Tenderness/ Increased sensitivity to touch (hyperalgesia) (T)
- Somatic dysfunction involves significant alteration in underlying tissues related to edema and inflammation
Nociception & Spinal Facilitation:

- SD in peripheral tissues produce inflammatory compounds that irritate primary afferent nociceptors (PANs)
- Increased drive from PANs contribute to central sensitization in the spinal gray matter (spinal facilitation)
- Lowered threshold for activation of spinal circuits
- PANs needed to establish facilitation but not to maintain it
Fig. II-29. Peripheral nerve composition at thoracic cord level and a comparison between somatic motor and visceral moto r(sympathetic) innervation (see text for discussion).
Spinal Facilitation & Brainstem Arousal System:

Ascending info carried by Anterolateral System:
- Pain localization via Spinothalamic Tract to parietal cortex
- Nociceptive info via Spinohypothalamic Tract to limbic forebrain
- Spinorecticular Tracts carry warning to brainstem & prefrontal cortex
- Activity both somatic and visceral
- Older, slower system activates arousal that is protective in nature with influence on body homeostasis

Brainstem Reticular Formation:
- Major target of ascending fibers w/nociceptive info
- Responds to increased activity of PANs generated by SD
- Output of arousal system alters homeostasis via neuroendocrine-immune network
A Role for Manual Medicine:

- Identification and treatment of somatic dysfunction to facilitate a natural homeostatic balance by mitigating the drives on the arousal-compensatory system.
- These drives can be viewed as handles available for modulating the activity of this system and promoting the body's ability to defend against disease.
Palpation exercises

Layer palpation

Barrier concept: Direct v Indirect
Thoracic inlet release:

- Fingers over clavicle and sternum in front, palms over the first rib, thumbs/palms over trapezius, supraspinatus
- Engage w/ compression and follow the fascia indirectly until release (softening, warming, change in barrier)
- Target lymphatics
**Thoracic inlet, from above and in front, in an articulated skeleton**

1. First thoracic vertebra
2. Head of first rib
3. Shaft of first rib
4. Sternal end of clavicle
5. Sternoclavicular joint
6. Jugular notch
7. Manubrium of sternum
8. Manubriosternal joint (angle of Louis)
9. Second sternocostal joint
10. Second costal cartilage
11. Second costochondral joint
12. Third rib
13. Third costal cartilage
14. First costal cartilage
15. First sternocostal joint
16. First costochondral joint

*The thoracic inlet (upper aperture of the thorax) is approximately the same size and shape as the outline of the kidney, and is bounded by the first thoracic vertebra, first rib and costal cartilages, and the upper border of the manubrium of the sternum. It does not lie in a horizontal plane but slopes downwards and forwards.*
Right anterior dissection

- Internal jugular vein
- External carotid artery
- Ascending cervical artery
- Phrenic nerve
- Anterior scalene muscle
- Inferior thyroid artery
- Transverse cervical artery
- Suprascapular artery
- Costocervical trunk
- Thyrocervical trunk
- Subclavian artery and vein

- Thyroid gland (reflected)
- Superior cervical sympathetic ganglion
- Vagus nerve (X)
- Vertebral artery
- Common carotid artery
- Recurrent laryngeal nerve
- Brachiocephalic trunk
- Internal jugular vein (cut)
Cervical Spine Release:

• Move hands to the cervical spine (C6/7 area), allowing the participant’s body sink into the pads of fingers.

• Work segment by segment in the paravertebral muscles (fingers lateral to spinous processes) w/ gentle lateral traction on both sides following the fascia indirectly until release

• Move cephalward to C5/C6 area and repeat this procedure, then C4/C5 area and repeat, then C3/C4 area and repeat, and finally C2/C3 area.
Suboccipital release:

- At the occiput (atlanto-occipital joint), cup the hands with fingers at the occipital base, pushing the fingertips anteriorly and allowing gravity to relax the muscles.
- Follow the fascia indirectly as needed until release
- Influence parasympathetic nervous system via the vagal nerve
Rib Raising:

• Seated at the side, focus on thoracic spine, begin at T1 and T2 fingertips are the costo-vertebral junction (where transverse processes meet the ribs)
• Gentle lift anteriorly for a few seconds and release. Repeat and follow by gentle lateral traction of the posterior thoracic fascia-follow indirectly until release
• Move inferiorly to engage the next group of segments
• Repeat tx sequence on the opposite side
• T1-T4 is a key component (symapthetics to the head and neck)
• T5 – L2 is the GI tract and other visceral structures – many of which will be functioning suboptimally in people with GAD
• normalize sympathetic activity via the thoracic sympathetic ganglia which are anterior to their corresponding rib
Autonomic Nervous System

Schema

Note: blue-shaded areas indicate zones of parasympathetic

Oculomotor nerve
Facial nerve
Glossopharyngeal nerve
Medulla oblongata
Vagus nerve
Greater splanchnic
Lesser splanchnic
Least splanchnic
Lumbar splanchnic
Sweat
Peripheral blood vessel
Hair follicle (smooth muscle and sebaceous glands)

Note: above 3 structures are shown at only 1 level but occur at

Hypogastric nerves
Sacral splanchnic nerves
Pelvic splanchnic

Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Antidromic conduction

Intracranial
Eye
Lacrimal
Pterygopalatine ganglion
Parotid glands
Otic ganglion
Sublingual and submandibular
Peripheral cranial and facial
Submandibular ganglion
Larynx, trachea, bronchi and
Pulmonary
Cardiac
Heart
Celiac ganglion
Stomach
Aorticorenal ganglion
Liver Gallbladder
Bile ducts Pancreas
Superior mesenteric ganglion
Suprarenal Kidneys
Inferior mesenteric
Intermesenteric plexus
Intestines
Superior hypogastric plexus
Descending colon Sigmoid colon
Rectum
Inferior hypogastric
Urinary Prostate
External genitalia

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Expansion of Biopsychosocial Model

Touch-Stress Reduction
Basilar Decompression–CV 4

**Sympathetic Model**
- Collateral ganglion inhibition
- Paraspinal inhibition
- Thoracolumbar/costal OMT
- Rib raising OMT
- Soft tissue OMT

**Parasympathetic Model**
- III: Inion BMT; SBS
- VII: Sphenopalatine ganglion OMT
- IX–X: OA-AA-C2A, occipitomastoid
- Pelvic Splanchnics: SI joint

**Respiratory–Circulatory (Venous Lymphatic) Model**
- Open fascial pathways at transition zones
- Redome thoracoabdominal diaphragms
- Lymphaticovenous pumps
- Mobilize peripheral edema