OMT in Concussion

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Concussion in Real Time
Objectives

• Describe current research related to concussion and manual therapy

• Discuss relevant anatomy to concussion

• Demonstrate and teach techniques applicable to the treatment of concussion and its associated symptoms
Current Research
Multimodal PT RCT

- **Aim**: Determine if a combination of cervical and vestibular physiotherapy is an effective treatment for persistent dizziness, neck pain and headaches following a sports-related concussion.
- **Involved 31 participants aged 12-30.**
- **Groups**
  - Control = rest + gradual exertion
  - Treatment = multimodal PT = vestibular rehab, manual therapy, neuromotor, and sensorimotor retraining exercises
- **Frequency**: once weekly x 8 weeks or until medically cleared to return to sport
- **Results**:
  - 11/15 in treatment group cleared to return to sport at 8 weeks
  - 1/14 of control group cleared to return to sport at 8 weeks
  - 2 lost to follow up

Concussive impact of mTBI

- Military model of projectile impact on helmets and affect on:
  - Axonal damage
    - accumulation of β-amyloid protein in corpus collosum
  - Astrocyte activation
    - most prominent in hippocampus
    - Act to preserve neural tissue, restrict inflammatory cell invasion
  - Impact location affect on gait disturbance
    - Temporoparietal region affected gait more

CONCUSSION RELATED SYMPTOMS

SUFFERING FROM

BRAIN FOG?

CONCUSSION RELATED SYMPTOMS
Anatomy
Mastoid process
Three Types of Headaches

1. **Post-traumatic Headache**
   - Acute < 3m
   - Chronic > 3m

Also meets classification for TENSION TYPE and MIGRAINE without aura

2. **Tension Headache**

3. **Cervicogenic Headache**
   Syndrome characterized by chronic hemicranial pain referred to the head from either bony structures or soft tissues of the neck

Physiology - Cervicogenic HA

- **Suboccipital nerve** occipital region
- **C2 spinal nerve** occipital, Parietal, temporal, frontal, and periorbital
- **C3 dorsal ramus** frontotemporal, occipital, and periorbital

NECK PAIN - CERVICAL ANATOMY
Involved Anatomy

- GGL. NODOSUM
- SUPERIOR CERVICAL SYMPATHETIC GANGLION
- VAGUS NERVE
- CERVICAL SYMPATHETIC RAMI
- INTERNAL CAROTID ARTERY
- SYMPATHEITC CERVICAL TRUNK
Connection between Rectus Capitus Posterior Major, Obliquus Capitus Minor, AA Myodural Bridge and C1-2 Cervical Dura


DIZZINESS
Vestibular System Orientation
CONTRAINDICATIONS TO MANIPULATION/OMT

- Skull fracture
- Increased intracranial pressure
- Suspected or documented intra EXTRA cranial hemorrhage
- Suspected or confirmed cervical fracture
Osteopathic Exam Findings

• Dependent on patient!!!!!

• Frequently have:
  • Dominant or primary restriction in body
  • Tissue with cellular fear/trauma
  • Reduced CRI
  • Cranial strain pattern present
  • Brain restriction
  • Bony motion and sutural restrictions of cranium
  • Sacral motion restrictions

Bruno Chikly, MD, DO

Greenman & McPartland. Cranial findings and iatrogenesis from craniosacral manipulation in patients with traumatic brain syndrome. JAOA; 95(3) 182-192.
Quinn’s Treatment Approach

• Complete thorough MSK/Neuro Exam!!!!
• Treat as soon as possible!
  – So strain patterns do not have a chance to organize/engrain themselves
• Use techniques tolerable to patient
  – Indirect treatment modalities (MFR, LAS, soft tissue, counterstrain, lymphatic, Still, OCF, etc)
• Treat dominant lesion in body
  – Osteopathic structural screen, position/mechanism of injury
• Address cellular fear
• Treat cranium, brain, spinal cord
• Balance autonomies

• Let body rest 1-2 days to 1 week and then recheck/treat residual restrictions
Treating Cellular Fear

• Palpate a solid/wall like barrier
  – Move hand parallel to body at interface
• Patient exaggerates what they feel
• Doc- provide reassurance/safe space
• Continue to move through interfaces until hand on patient’s body and get “still point”
• Physical signs of sympathetic discharge=
  – Shaking, trembling, tremor, micromovements, perspiring, deep breathing, tachycardia, nostril flaring, pupil dilation, hypervigilance, muscular tension
  – If these dominate, SLOW DOWN AND BACK OFF!

Reference-Bruno Chikly, MD, DO
Table Time! Treat that cellular fear!
Cerebellar Anatomy

Adapted from Sobotta’s Textbook and Atlas of Human Anatomy 1908
Treating the Cerebellum

- **Patient**: prone
- **Doc**: seated at head of table
  - Hands just below superior nuchal ridge on either side of inion
  - Start at midline and then move laterally ½ finger width for each nuclei
  - Layer by layer palpation
  - Follow where it wants to go (indirect release)
Treatment of Thoracolumbar spine and sacrum

- **Patient:** Supine
- **Doc:** At side of table, caudad hand under sacrum, cephalad hand under vertebra
  - Balance sacrum (Superior/inferior/rotation/SB)
  - Move cephalad hand anterior and superior towards patient’s eyes (position of ease)
  - Maintain balance point until release

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Ligamentous Articular Strain Osteopathic Techniques for the Body. C. Speece and WT Crow, 2001
CV4

• “Enhances tissue and fluid motion and restores flexibility of autonomic response”
• **Doc:** place thenar eminences **POSTEROMEDIAL** to occipitomastoid sutures
  – Encourage extension as occiput moves into extension
  – Resist flexion (take up slack with extension and hold there)
  – Continue until Still Point

_Hanten et al._ The effectiveness of CV4 and resting position techniques on subjects with tension-type headaches. _Journal of Manual and Manipulative Therapy._ 1999; 7(2), 64-70.
_Atlas of Osteopathic Techniques._ Nicholas and Nicholas. 2nd ed. P 564
So back to my player......
Studies related to manual medicine and headache


Studies related to manual medicine and neck pain

• Miller et al. Manipulation or Mobilisation for neck pain. Cochrane Database of Systematic Reviews 2010, Issue 1.

Studies related to manual medicine and vestibular dysfunction

Proposed considerations by Philippe Druelle, DO - Canada

- Normalize somatic dysfunction outside of the head, especially upper T spine
- Target OA and AA, foramen lacerum, course of carotid artery
- Treat posterior fossa and brainstem, thalamus
- Normalize ventricles
  - If recent, start peripherally at sacrum
  - Short frequent treatments <10-15min, then increase after 1 week if improved
Questions?