Hypermobility 108: Headaches, Migraines, and TMJ Pain associated with HSD, POTS and MCAS

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Slide handouts and recordings are available at: https://webspace.clarkson.edu/~lrussek/hsd.html

Artist: Richard MacCormack, “Silent Scream”

Who Am I?

- Professor Emeritus, Physical Therapy, Clarkson University.
- Staff PT, St. Lawrence Health System, Potsdam NY.
  - Clinical specialties: hypermobility, chronic pain, fibromyalgia, headaches, temporomandibular disorders
- Facilitator of the North America Allied Health Professionals ECHO
- Member of:
  - The Allied Health Working Group of the International Consortium of Ehlers-Danlos Syndromes and Hypermobility Spectrum Disorders
  - The National Academy of Sciences, Engineering and Medicine Committee on Selected Heritable Connective Tissue Disorders and Disability.
- Author of ”Chronic Pain” chapter in *Physical Rehabilitation* textbook for PT students
- Lrussek@Clarkson.edu
- https://webspace.clarkson.edu/~lrussek/
- I do free weekly Zoom lectures for people with HSD (see website)

I do not have any conflicts of interest to report

Hypermobility Lecture Series

I will refer to these if you want more info

- HSD 101: Basics of HSD/hEDS and self-care
- HSD 102: POTS and POTS self-care, basics of MCAS
- HSD 103: Pain management in HSD/hEDS
- HSD 104: Safe exercise selection and progression with HSD/hEDS
- HSD 105: Posture and joint protection
- HSD 106: Gut issues in HSD/hEDS, POTS, MCAS
- HSD 107: Fatigue in HSD/hEDS and POTS
- **HSD 108: Headaches, migraines, & TMJ pain associated with HSD, POTS and MCAS**
- HSD 109: Breathing disorders in HSD
- HSD 110: Lumbar instability
- HSD 111: Management of cervical instability (anatomy & diagnosis portion pre-recorded)
- HSD 112: The vagus nerve
- HSD 113: The importance of fascia

Relevant Handouts Available

I will refer to these if you want more info

- https://webspace.clarkson.edu/~lrussek/research.html
- **Self-Care Strategies**
  - Headache Trigger Points. Trigger points commonly causing headaches.
  - Temporomandibular Disorder (TMD). TMJ self-care strategies.
  - Breathing. Breathing incorrectly can increase pain sensitivity, headaches, jaw pain, and more.
  - Posture. Good posture decreases strain on muscles and joints, and can prevent many problems.
  - Sleep Hygiene and Positioning. Sleep posture and sleep hygiene strategies.
  - Checklist for POTS self-care management.
  - Suggestions for managing MCAS.

- **Cervical instability**
  - Upper cervical Instability. (UCI).People with hypermobility can sometimes have upper cervical instability. This handout is based on the recent article I co-authored. You can access the full article at Full text of UCI article. ..
  - A very comprehensive patient guide to EDS cervical instability by EDSawareness.

- **Pain Management**
  - Pain self-care plan. Create a pain self-care plan to improve your pain management.
  - Pain flare management plan - PDF version. Create a flare management plan so you know what works when you have a flare. PDF version to print. Word version so you can type your info in.
  - Heart-rate variability biofeedback. Biofeedback can increase activation of your parasympathetic nervous system to quiet sensitive nerves and decrease pain.
  - Free chronic pain management apps for teens: Cogntive behavioral approaches to pain management.
  - Chronic pain management app. Cognitive behavioral approaches to pain management. Contact Dr. Russek if you are interested in 6 weeks free access: Lrussek@clarkson.edu

DISCLAIMER

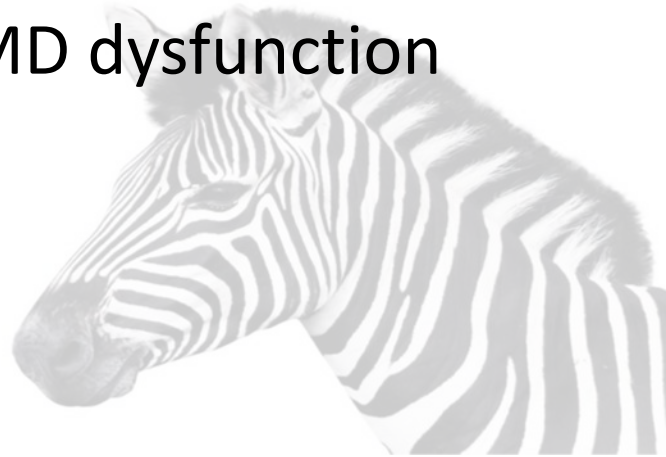
- I cannot provide individual medical advice in this presentation
- The information provided here is generally applicable to HSD/hEDS, but your personal situation may be different.
- You should discuss options with your healthcare provider before starting a new management approach.

Objectives

- **At the end of this session, participants will be able to:**

1. Identify musculoskeletal factors contributing to headaches and TMD in individuals with hypermobility.
2. Describe the types of HA common in POTS
3. Describe the links between MCAS, histamine intolerance, and migraines
4. Identify strategies to prevent HA, migraines, and TMD dysfunction

HA = headaches
TMD = temporomandibular dysfunction
POTS = postural orthostatic tachycardia syndrome
MCAS = mast cell activation syndrome



Approach to Management of HSD

Assist patient in identifying and managing systemic comorbidities: education, treatment and/or referral

Decrease central, peripheral, and autonomic pain sensitization

Educate for correct posture and joint alignment, body mechanics, joint protection, appropriate use of splints and braces

Proprioceptive and motor control training, with training to relax muscles that are guarding

↓

Stabilization, strengthening, muscle flexibility, aerobic conditioning

↓

Integration of proper alignment & movement into function

↓

Education about flare management

Prevention Is The Best Treatment!

- The best way to manage HA, migraines, and TMD is to prevent them!
  - Medication and injections just make the symptoms go away
  - The causative factors are often still present, and can still cause damage
- Medications and injections are like using earplugs to 'fix' the bangs and squeaks your car makes

Common Headaches (HA) in HSD

- HSD-related HA
  - Cervical instability, aggravated by posture
  - Temporomandibular joint disorders (TMD)
  - Compression of spinal cord or brain
- POTS-related HA/migraines
- MCAS-related HA/migraines

(Martin, 2014; Castori, 2015)

HA = headaches
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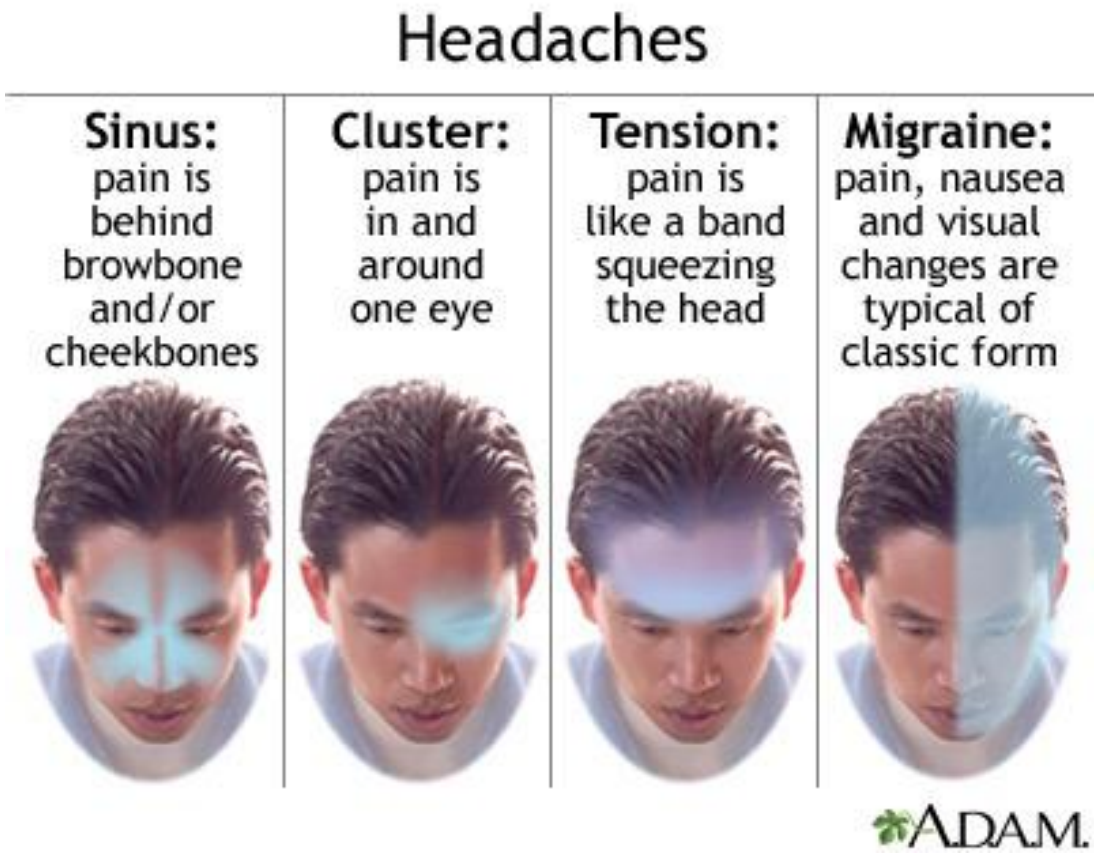
Types of Headaches: MD Perspective



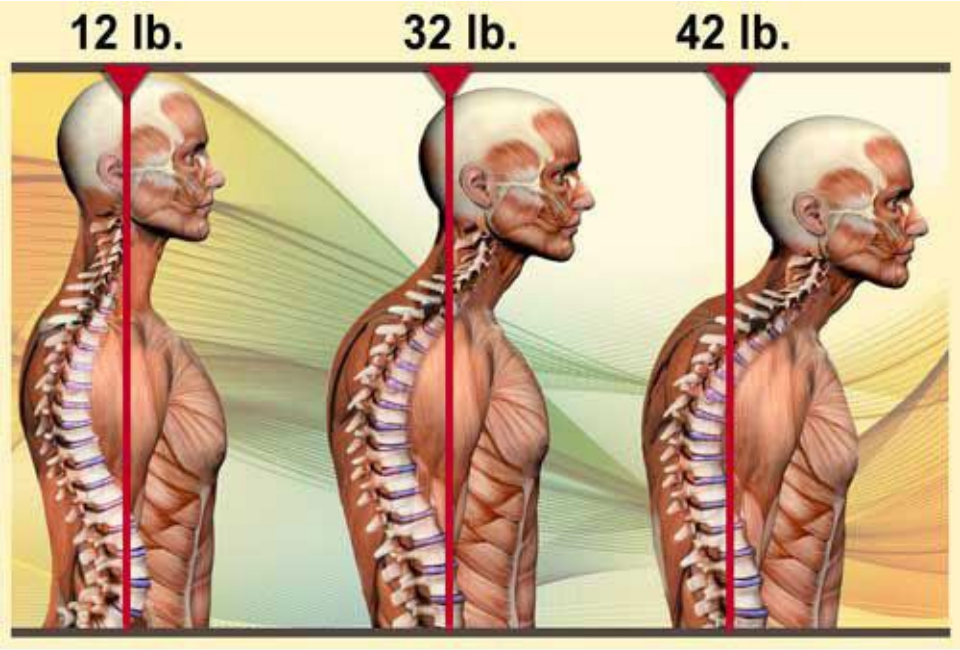
Types of Headaches: PT Perspective

- Musculoskeletal HA from muscle spasm/trigger points, nerve compression, joint irritation
- POTS headaches due to autonomic nerve dysfunction or inadequate blood flow to brain
- Migraines from neuroinflammation (MCAS) or central sensitization (or look-alike from SCM trigger point)
- Facial pain due to TMD
- Central nervous system involvement (Chiari, cord compression, inadequate blood flow to the brain, etc.). These are MUCH less common than the above types of HA

Posture handout

Effects of Poor Posture and/or (Mild) Instability

- Excessive forces on joints and muscles
- **Muscle guarding & trigger points (TrP)**
- Compression of nerves in the neck
- Compression of spinal cord structures



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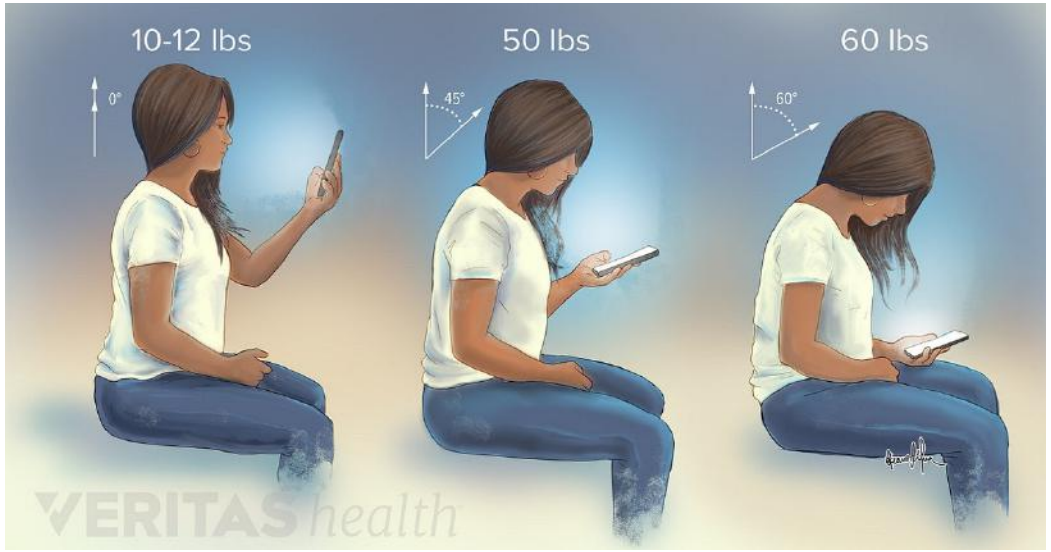
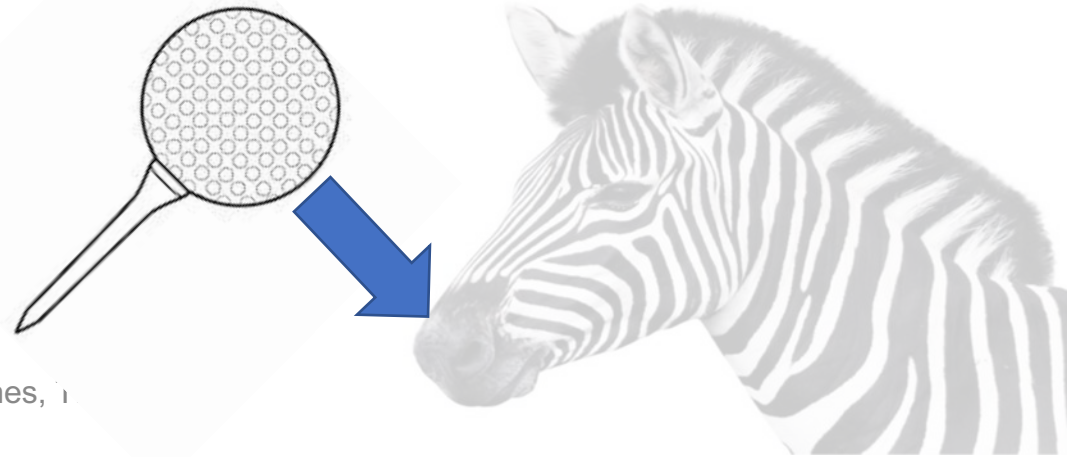


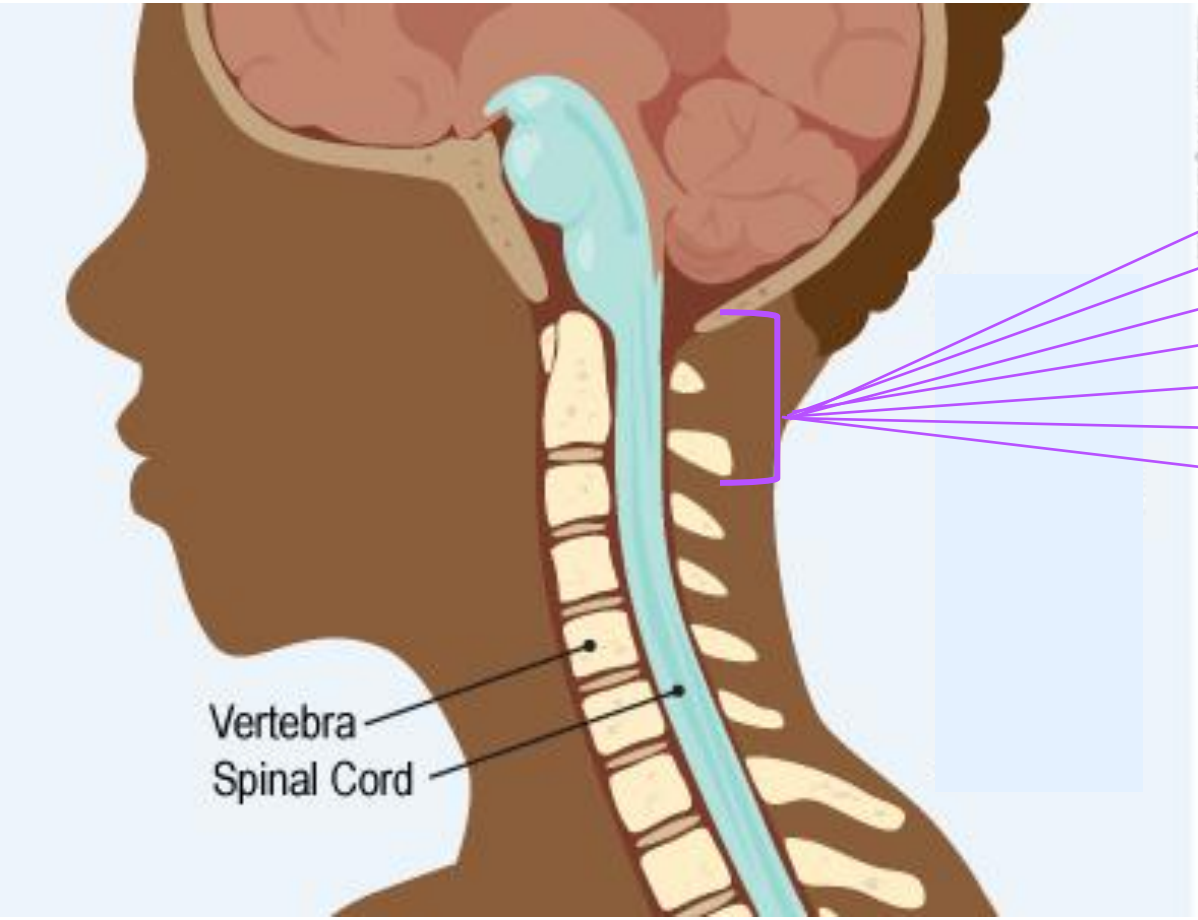
https://www.spine-health.com/conditions/neck-pain/text-neck-treatment-and-prevention



Cervical Instability Headaches

HSD 112: Cervical Instability

Cervical instability handouts



- Cord/brainstem compression
- Cranial nerve compression
- CSF blockage, Chiari
- Vertebral or carotid artery occlusion
- C1-C2 spinal nerves
- Joint capsules
- Trigger points and muscle spasm

All of these problems can cause headaches

Musculoskeletal
Vascular
CNS

(CFS=cerebrospinal fluid)

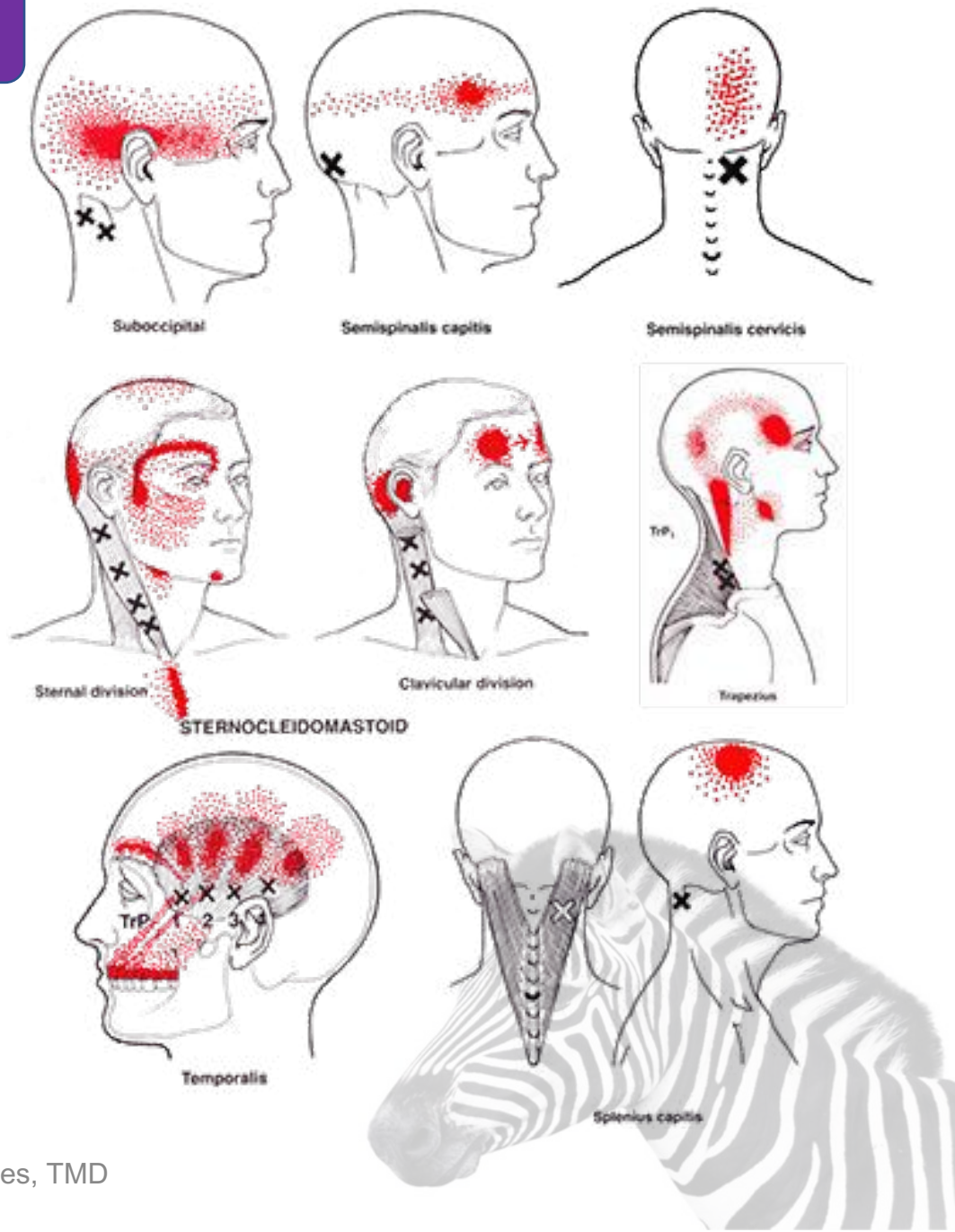
Headache Trigger Point handout

Trigger Points (TrP)

- Created when superficial muscles are overworked because of:
  - Unstable joints
  - Poor posture
  - Poor body awareness (proprioception)
  - Weak/lazy deep neck stabilizing muscles

Excellent resources on TrP:

- Valerie DeLaune, Pain Relief with Trigger Point Self-Help (2011)
- Valerie DeLaune, Trigger Point Therapy for Headache and Migraine: Your Self-Treatment Workbook for Pain Relief (2008)

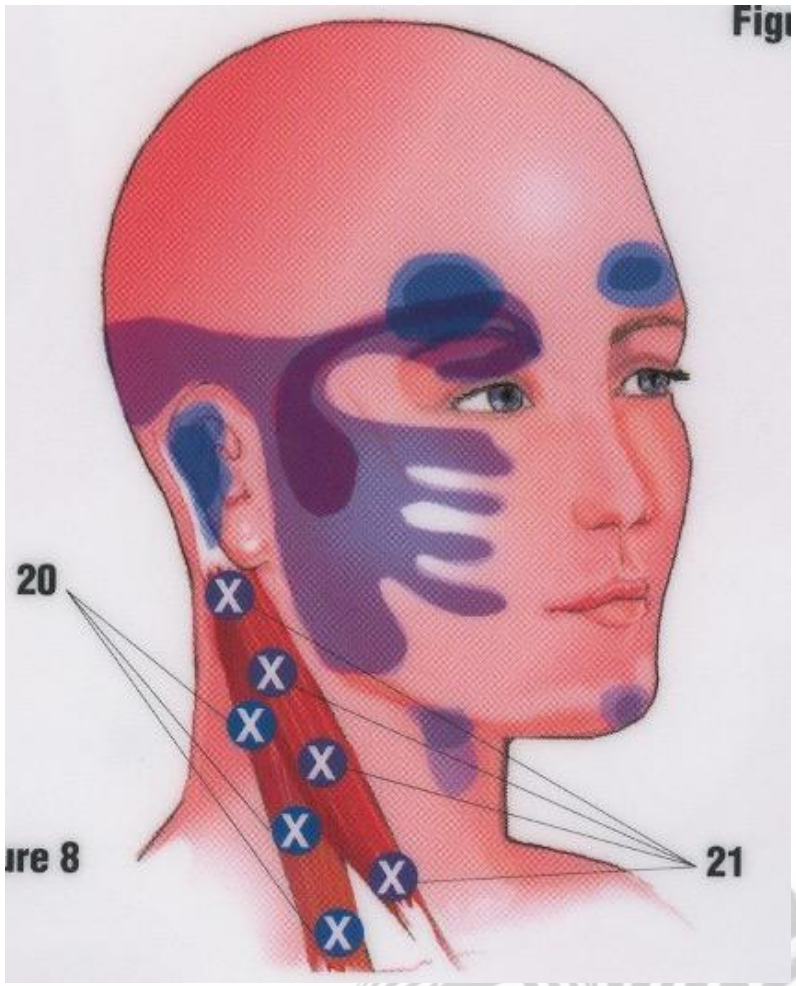


Headache Trigger Point handout

SCM Trigger Points

- Other symptoms:
  - Ear ache, ear fullness, ringing in the ear
  - Dizziness and balance problems
  - Blurred vision, unilateral tearing/redness, drooping eyelid
  - Sinus pain or congestion on one or both sides.
  - Sore throat or dry cough
  - Nausea
- Aggravating factors:
  - Whiplash, cervical instability, poor motor control
  - Forward head posture, forward shoulders
  - Chest breathing
  - Prolonged neck rotation, flexion or extension

(All trigger point information from Travell & Simons)

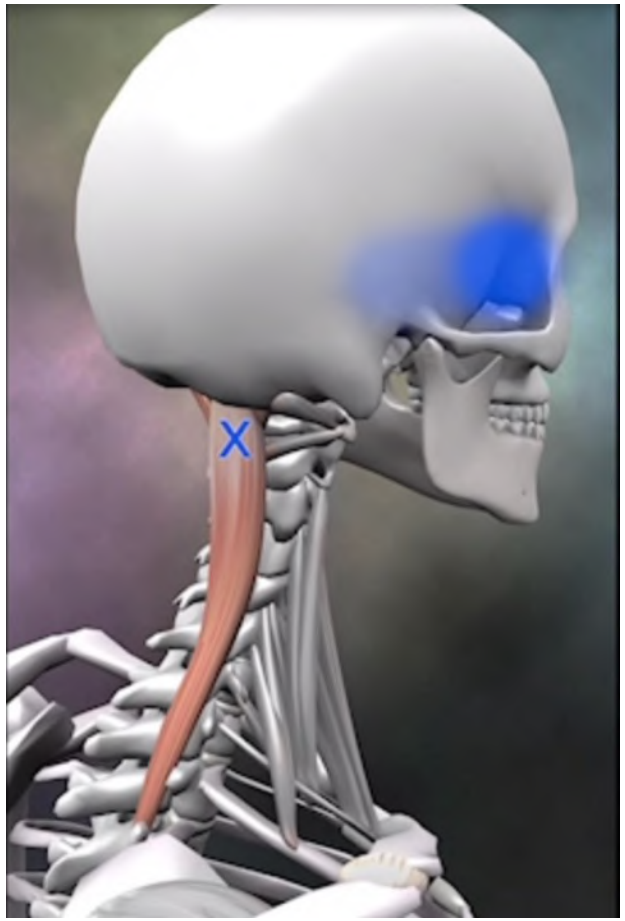


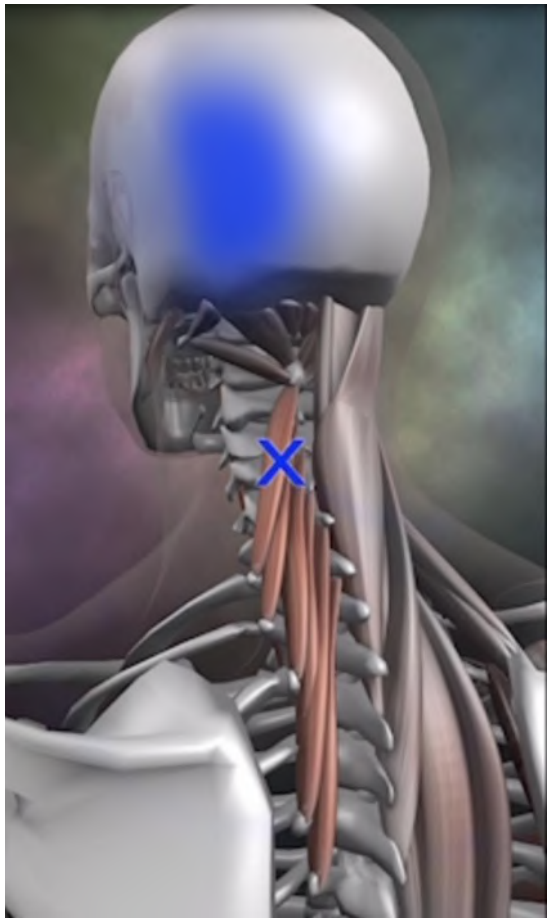
Upper Trapezius TrP

- Symptoms other than headache:
  - Neck and upper back pain, but no neck stiffness
- Causes/perpetuating factors:
  - Whiplash injury or instability
  - Holding arms up, e.g., typing, working at a counter, assembly work
  - Tight chest muscles pulling shoulders forward
  - Shoulder tension from stress
  - Carrying a heavy purse or backpack or wearing a heavy coat
  - Bra straps pulling on the shoulders

TrP diagrams from TriggerPoint app, by Real Bodywork

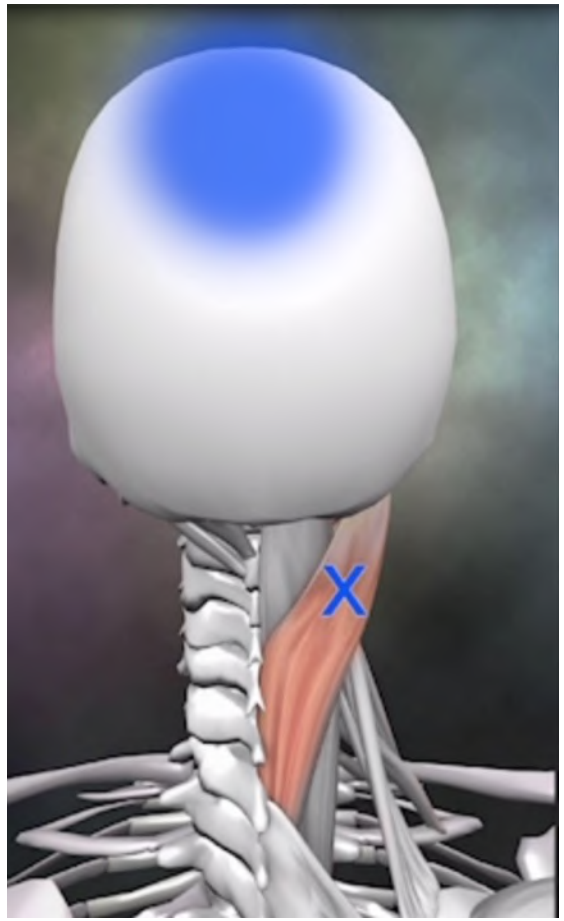
Semispinalis Capitis & Cervicis

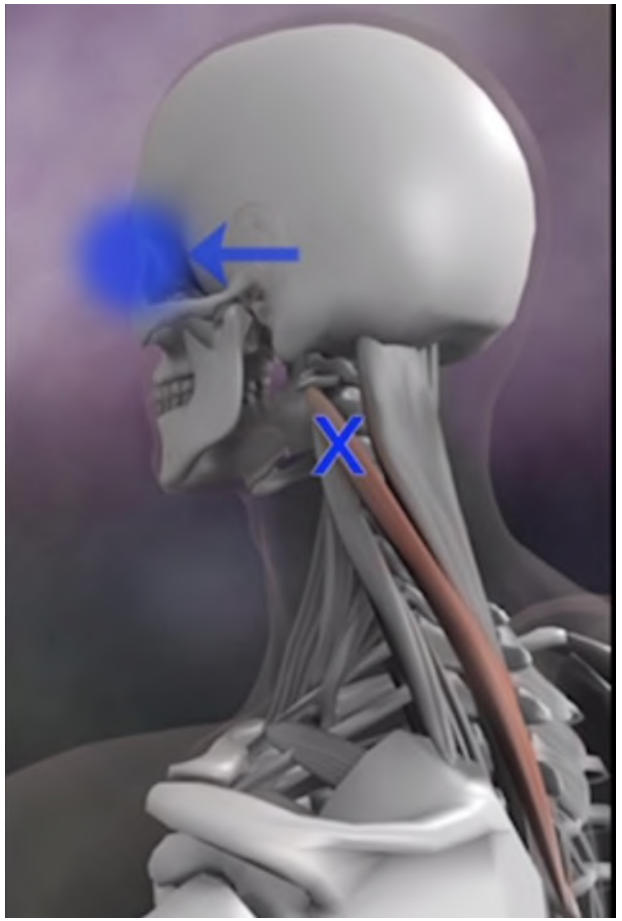




- Symptoms other than headache:
  - Neck pain and stiffness
  - Painful to rest head on pillow
  - Numbness, tingling or burning pain over the base of the scalp
- Causes/perpetuating factors:
  - Cervical instability
  - Injury, especially car accident
  - Forward head posture, rounded shoulders
  - Prolonged neck flexion – e.g., reading

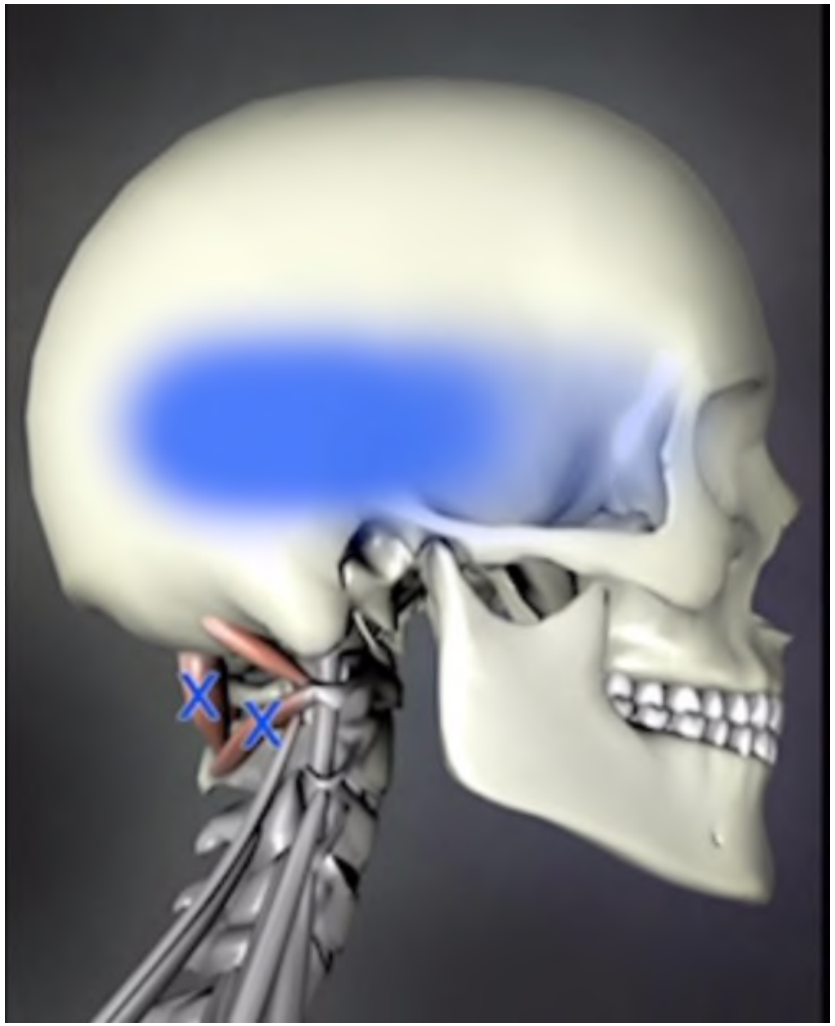
Splenius Capitis & Cervicis





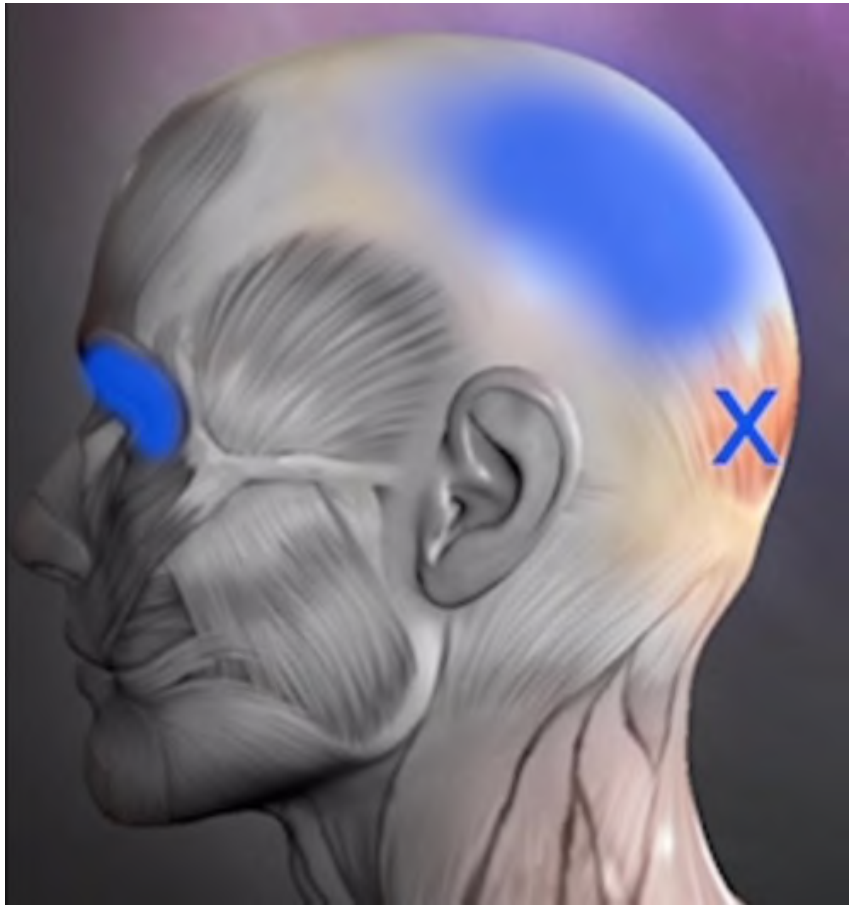
- Symptoms other than HA:
  - "Ache inside the skull", retro-orbital pain
  - Unilateral blurred vision
  - Stiff neck
- Causes/perpetuating factors:
  - Cervical instability
  - Forward head or hunched posture
  - Poorly fit or prescription glasses
  - Whiplash-type injury
  - Heavy lifting/pulling

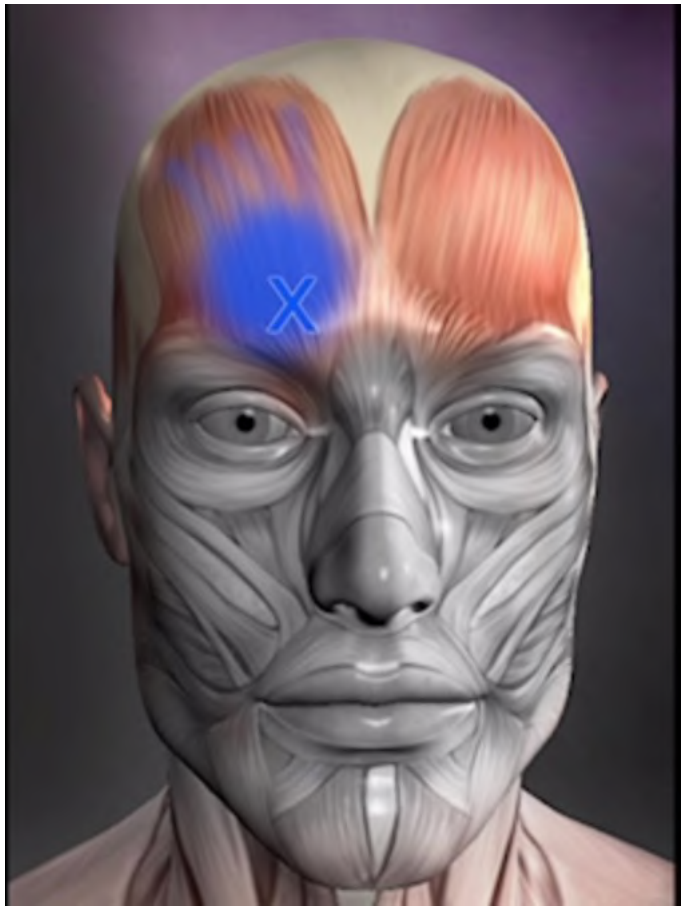
Suboccipital Muscles

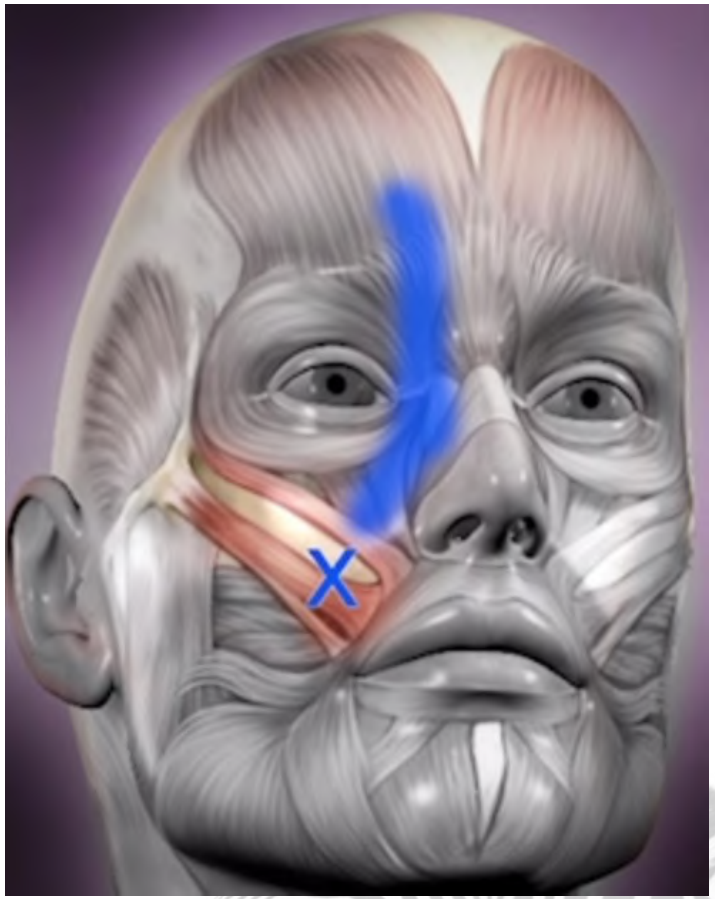


- Symptoms other than headache:
  - Pain laying head on pillow
  - Difficulty turning head to see in ‘blind spot’ while driving
- Causes and perpetuating factors:
  - Forward head posture
  - Vision problem or poorly fitting glasses
  - Turning of head to one side
  - Trauma to head or neck
  - Upper cervical instability

Occipitofrontalis & Zygomaticus

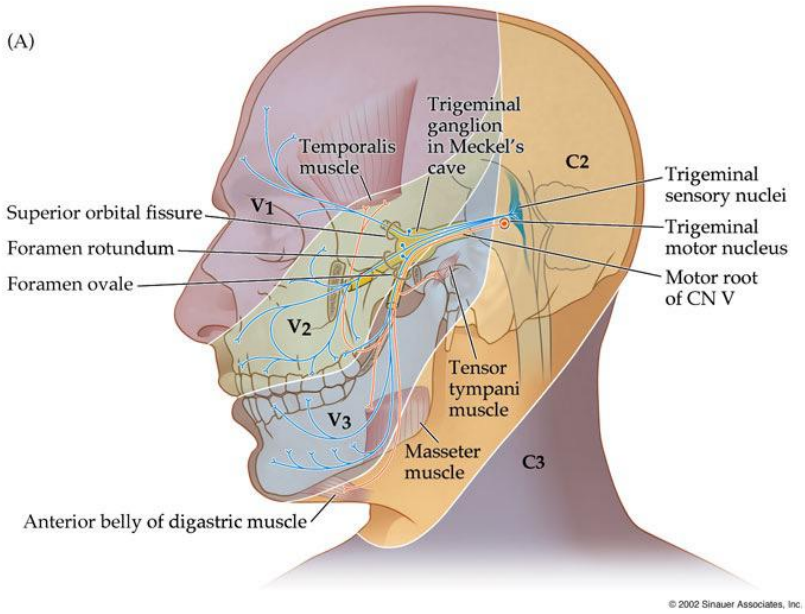


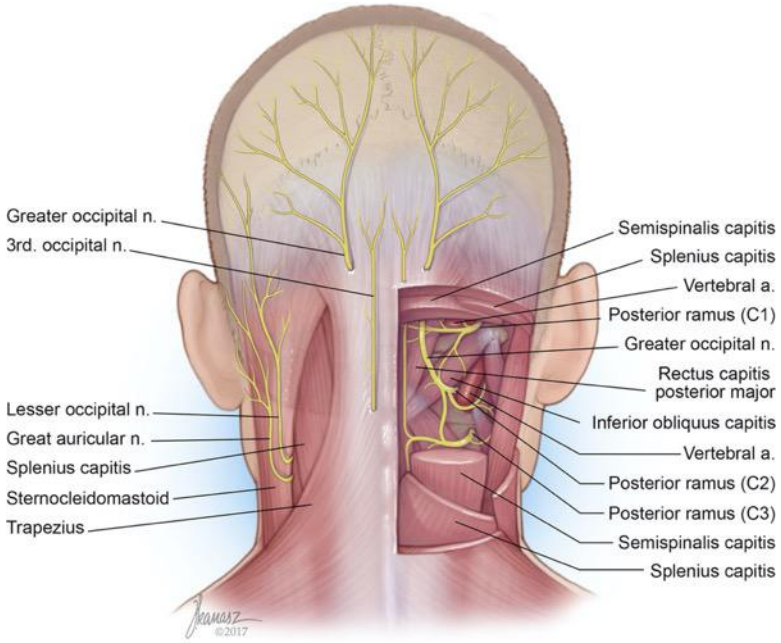




Peripheral Nerve-Related Headaches

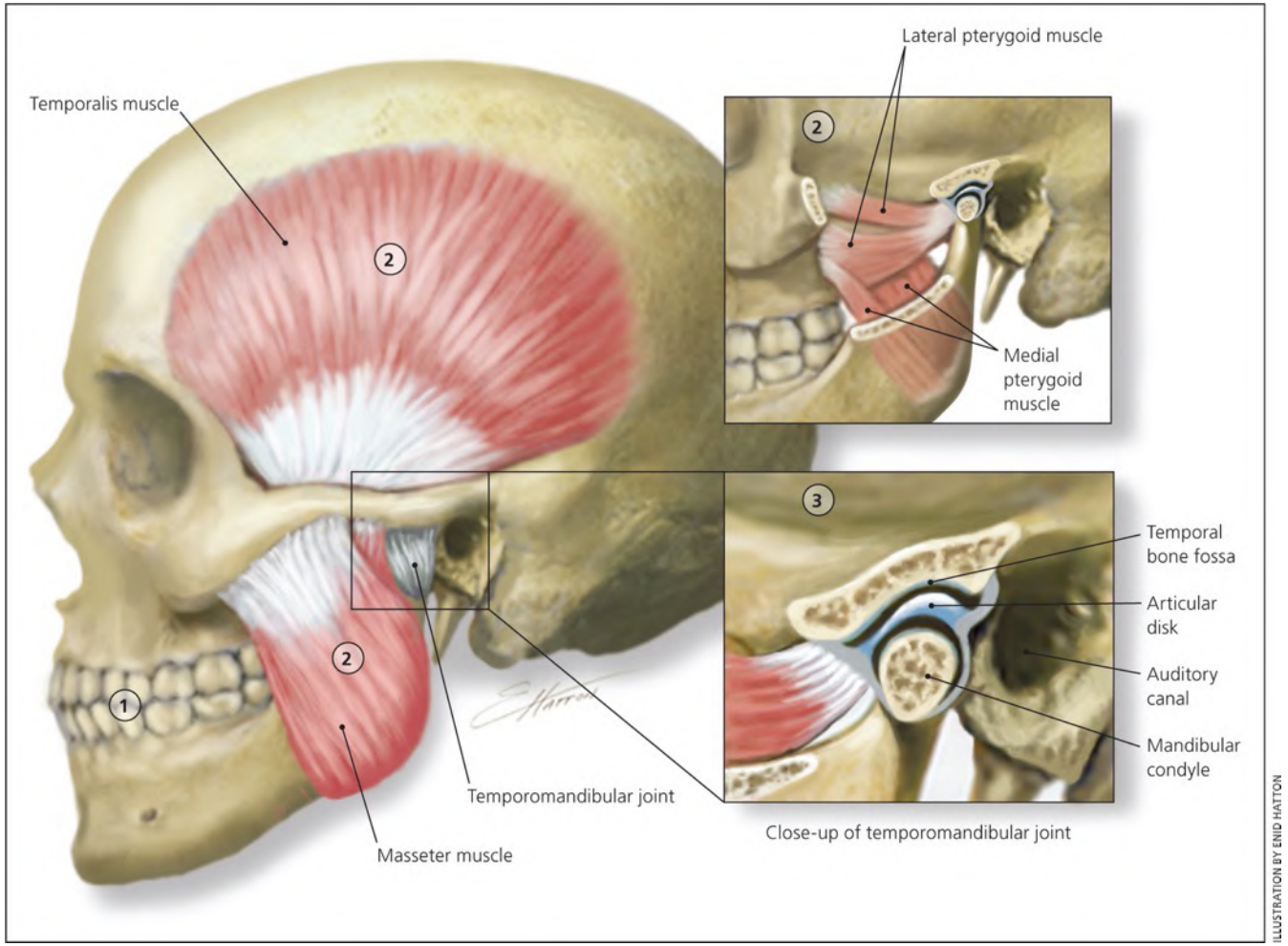
- Often called ‘occipital neuralgia’
- Compression of suboccipital nerve in neck fascia
- Or compression of C1, C2, C3 nerve roots at the upper neck joints
  - Due to instability, poor posture, poor motor control





Temporomandibular Joint

TMD handout



- Contributing factors
  - Hypermobility irritating joint
  - Poor proprioception and motor control of TMJ
  - Stress causing mm tension and trigger points
  - Poor posture
  - Habits, such as clenching
  - Mouth breathing (https://youtu.be/CBYwxndys2E)
  - Poor coordination or motor control of jaw muscles

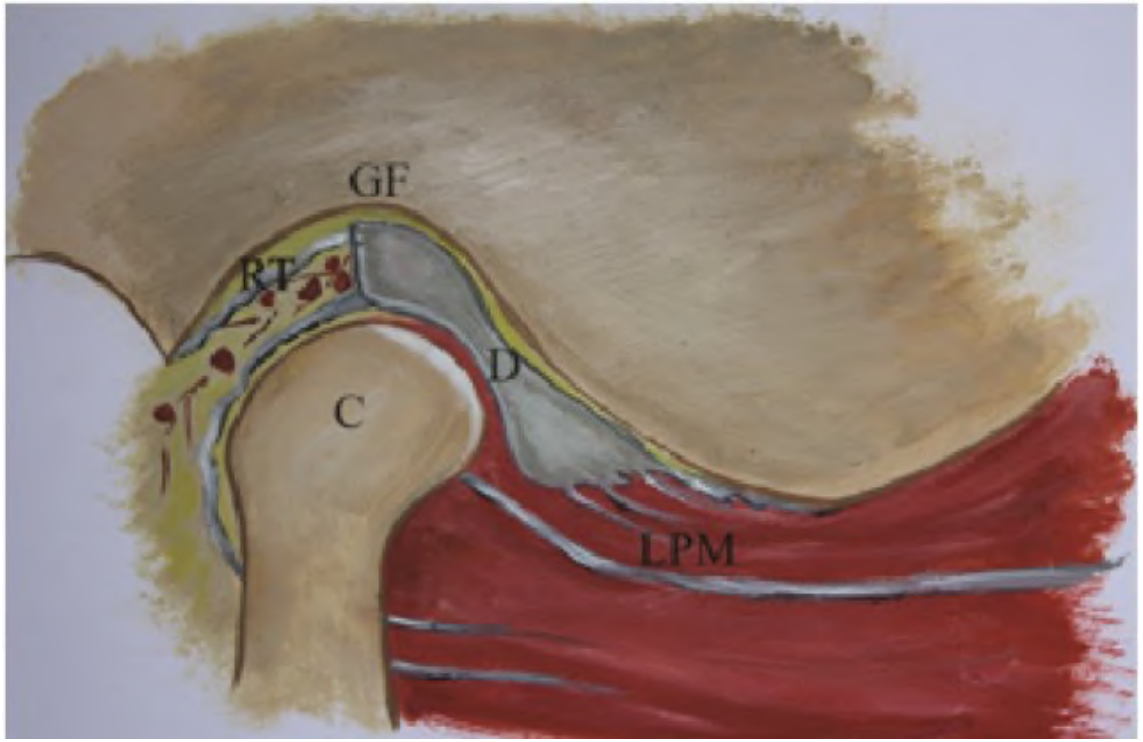
HSD109: Breathing

(Gauer, 2015)

Gauer, 2014, at https://www.aafp.org/afp/2015/0315/p378.pdf

TMD handout

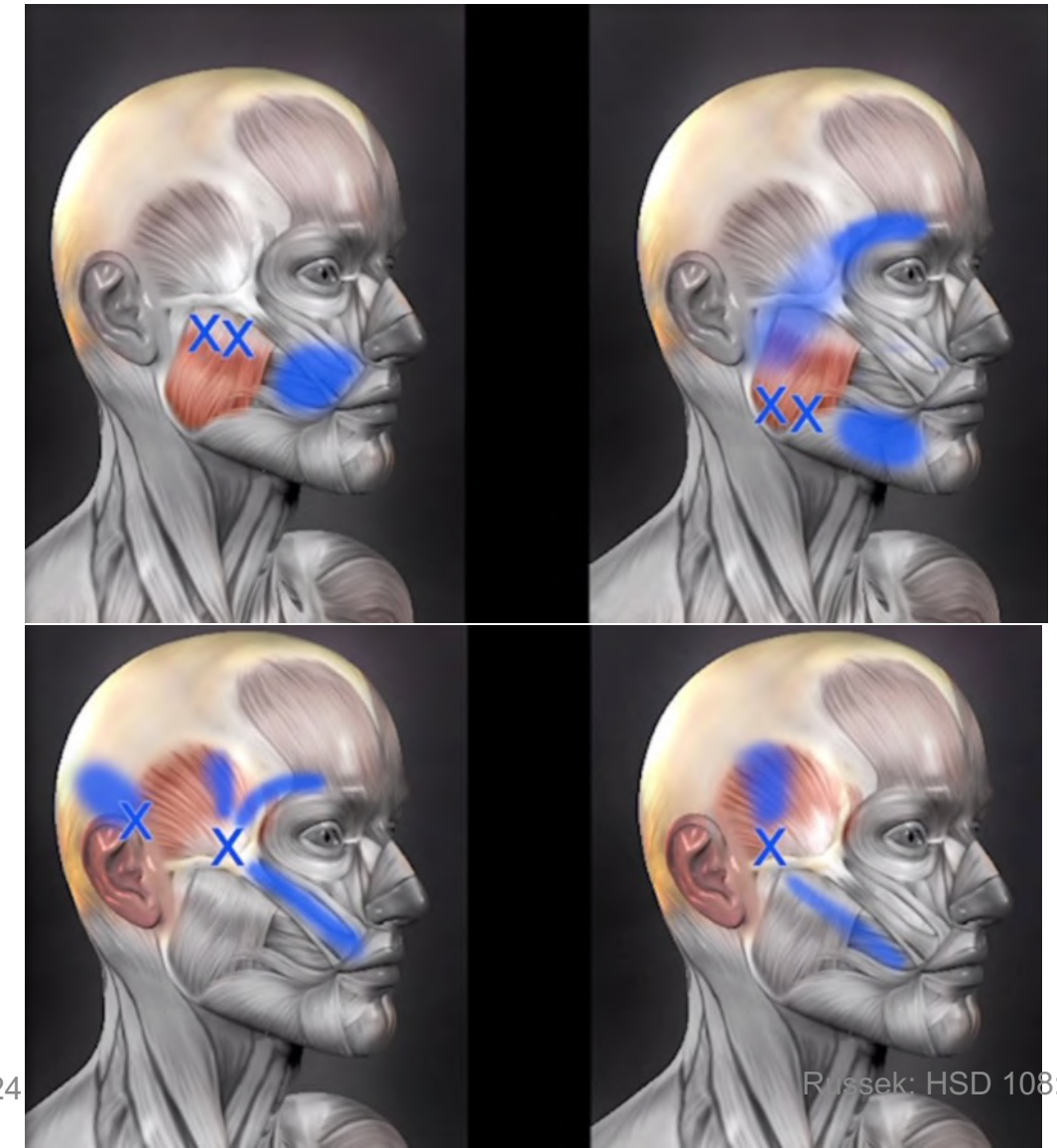
Temporomandibular Disorders



GF-glenoid fossa; C-mandibular condyle; D-articular disc; RT-retrodiscal tissue; LPM-lateral pterygoid muscle.
Talmaceanu, 2018

- Connective tissues holding disc are fragile and sensitive
- Disc subluxation/dislocation due to instability, aggravated by muscle spasm
  - Subluxation causes clicking of disc
  - Disc dislocation causes locking or limited opening range
- Lateral pterygoid may be overactive due to tense clenching muscles or mouth breathing; subluxes disc

Masseter & Temporalis



- Symptoms other than pain:
  - Tinnitus
  - Toothache, sensitive to hot/cold
  - Limited mouth opening
    - Inability to fit 2 knuckles in
  - Teeth do not seem to meet correctly
- Causes/perpetuating factors
  - Clenching jaw (bruxism), grinding teeth at night, chewing gum/ice
  - Muscle tension from stress
  - Dental work, opening mouth wide
  - Forward head posture
  - Proprioception deficits

Lateral & Medial Pterygoids

Lateral Pterygoid

Medial Pterygoid

- Symptoms other than pain:
  - Mouth and pharynx pain
  - Trouble swallowing
  - Earache
  - Teeth do not seem to meet correctly
  - Sinusitis
- Causes/perpetuating factors
  - Clenching jaw (bruxism), grinding teeth at night, chewing gum/ice
  - Mouth breathing
  - Dental work
  - Muscle tension from stress
  - Forward head posture
  - Poor proprioception

Managing Musculoskeletal HA

- Identify the sources of pain
  - Psychosocial factors as well as tissue sources
- Address the contributing factors, not just symptomatic tissues
  - E.g., TrP often develop to provide stability, inactivating a TrP without providing alternative stability is ineffective or harmful
- Use caution with muscle relaxers and Botox injections (Castori, 2012)
  - These eliminate the compensation mechanism, but don't fix the cause.
  - Botox may increase instability.

Decrease Perpetuating Factors

- Poor body awareness (proprioception)
- Poor motor control and strength (especially of deep neck flexors)
- Inappropriate postures
  - Forward head posture or ‘text neck’
  - Poor work ergonomics – both static and motions
  - Sleep positions
  - Dental work
- Stress & anxiety
- Breathing incorrectly (using neck muscles instead of diaphragm)

HSD105: Posture and Joint Protection

Posture handout

Sleep handout

TMD handout

Breathing handout

Managing TMJ Problems

TMD handout

- The mnemonic “RTTPB” for proper resting position for your TMJ:
  - **R** – Relax: Stop what you are doing. Allow the tension in your body to be released.
  - **T** – Teeth apart: Say the word "Emma." Keep jaw in this slightly opened position.
  - **T** – Tongue on the roof of your mouth, just behind your upper two front teeth.
  - **P** – Posture: Imagine two strings. One string pulls straight up from the crown of your head to the ceiling; the second string pulls up and out from your breastbone.
  - **B** – Breathing: Diaphragmatic (from your abdomen).
- To decrease pain and inflammation in the TMJ: ice, heat, topical analgesic rubs
- Appropriate exercise
- Stress management, to decrease muscle tension, self-massage of jaw muscles
- Sometimes, a dental appliance (mouthpiece) for night-time.

(Shaffer, 2014; Gauer, 2015)

TMD handout

TMD Self-Care

Self-massage can be helpful. Here are some video suggestions. Stop doing any technique that is uncomfortable or painful.

- This video is specifically designed for TMJD discomfort to relax the jaw muscles: Racheal Richards Jaw Relaxation (https://youtu.be/ABDaeO1Z6Ds)
- Face massage for relaxation mind and jaw: Racheal Richards Jaw Relaxation, Headache Relief and General Anxiety Relief (https://youtu.be/bNVu4-SpQp8)
- Rachel Richards 2 minute quick jaw relaxation Technique: (https://youtu.be/oQsFSqDafOA)
- This is a guided meditation specifically designed for TMJ relaxation and pain relief. (https://youtu.be/AeNAcYnDvFY)

TMD handout

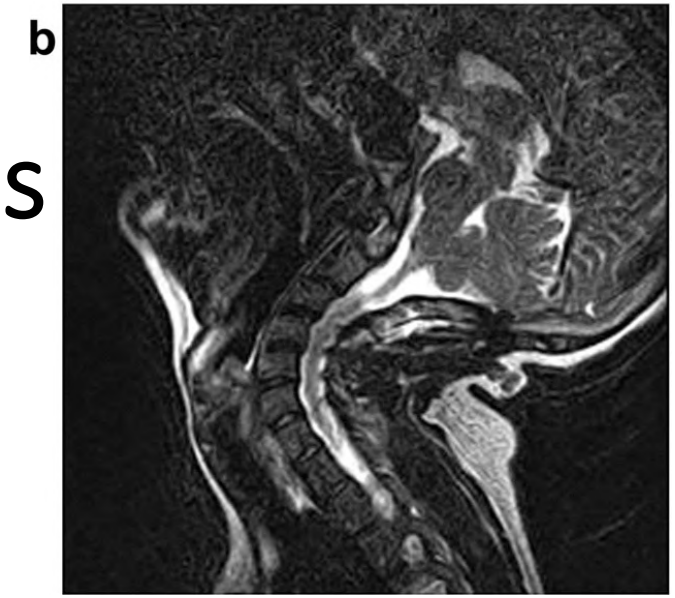
Disc Relocation Maneuver

- Open until you hear the first click, then slowly close your mouth bringing your front teeth tip-to-tip (your jaw will be jutted forward slightly).
- If you can touch tip-to-tip without hearing the closing (reciprocal) click, you have ‘relocated’ the disc.
- Gently pull your jaw backwards to draw the disc back, so it is properly positioned when your mouth is closed.
- To keep the disc in place, don’t open your mouth further than you can with your relaxed tongue still touching the top of your mouth.
- LR Note: This is something I have found effective; there is no systematic evidence for it.

Dental Appliances

- Stabilization, or flat plane splint: Covers all upper teeth decrease grinding. But does not prevent clenching.
- Anterior biteplane: fits on upper jaw, contacting six lower front teeth. Prevents clenching and grinding. Used only night-time.
- Nociceptive Trigeminal Inhibition Tension Suppression System (NTI-tss): fits on upper front teeth to prevent clenching and grinding. But can stress those teeth.
- Repositioning splint: moves lower jaw forward or backward to recapture disc or improve TMJ alignment. Can cause permanent damage to TMJ.
- Drug-store splints and mouthguards are typically not helpful.
- https://tmj.org/living-with-tmj/treatments/splints/

Central Nervous System Headaches



https://onlinelibrary.wiley.com/doi/full/10.1002/ajmg.c.31549

- Much less common than musculoskeletal headaches
- Possibilities:
  - Compression of the spinal cord by severely unstable spine
    - Craniocervical instability (CCI), cervical medullary syndrome
  - Brainstem sinking into the spinal cord
    - Chiari malformation type I
  - Intracranial hypertension or hypotension, cerebrospinal fluid leak
  - Tethered cord

(Henderson, 2017)

- These problems usually present with more neurologica signs:
  - 'Hard' neurological findings, unsteady gait, worsening coordination, difficulty forming words, HA worse when coughing or straining (Valsalva), visual or hearing changes, difficulty with quickly reversed movements (e.g., grip-release)
- See a specialist if you suspect HA associated with central nervous system

Questions?

POTS-Related Headaches

See HSD 102 for more on POTS

- Headaches and migraines are common in POTS: 41-96%
- Migraines most common in POTS
- Coat-hanger HA
- Sleep-disturbance HA

- POTS is commonly overlooked in patients with migraine

- (Cook, 2018; Wig, 2019; Fedorowski, 2019; Iser, 2022)

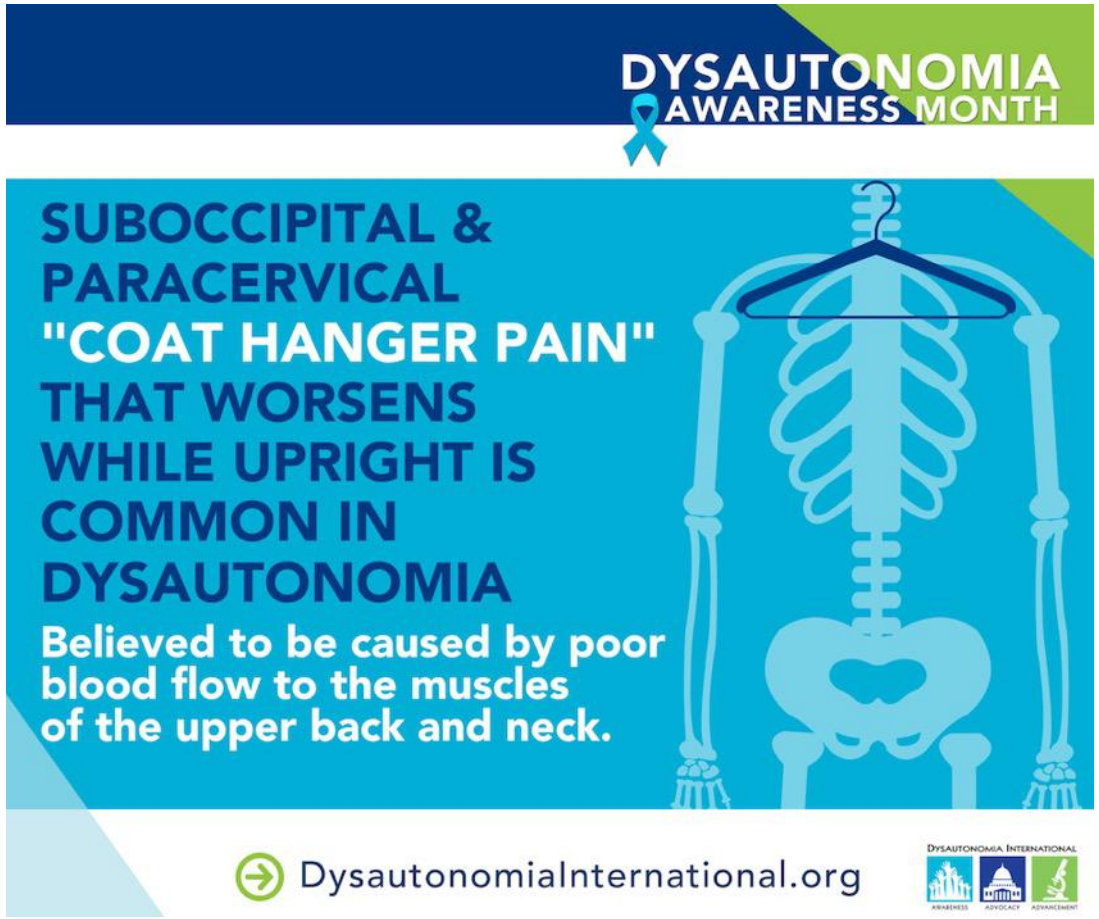
Treating Migraine with POTS

Wig, 2019

Table 2.—Treatment for Migraine and POTS Patients

Steps	Overlapping Treatment	Differentiating
1. Lifestyle modifications Avoid triggers	• Increase water intake >2-3 L/day[35,38] • Increase salt intake >10-12 g/day[39] • Sleep hygiene[35,36] • Routine meal schedules[36] • Graded aerobic exercises[35,36] • Postural counter manoeuvres that use the skeletal muscles as a pump to improve venous return (eg, standing with legs crossed, squatting, and sitting in the knee-chest position)[40]	• Caffeine and artificial sweeteners are avoided in POTS, whereas in migraineurs caffeine may be used in acute attacks within reason due to its vasoconstriction properties, but it may trigger migraine in excess or caffeine withdrawal. Artificial sweeteners are avoided in migraine[43]
2. Complementary and alternative therapies	• Relaxation training, cognitive behavioral therapy, biofeedback, and acupuncture[36,41] • Melatonin[35,42]	• Nutraceuticals: B2, coenzyme Q10, magnesium, butterbur, feverfew (M)[37] and Vitamin B12, licorice root, and Vitamin C (P)[44-46]
3. Others		• Devices: (Neurostimulation, transcranial magnetic stimulation)[38] (M) • Procedures (botulinum toxin and nerve blocks)[36] (M)

”Coat-Hanger Headaches”



- Pain in distribution of coat-hanger: occiput, neck, shoulders
- Present in 59-93% of people with POTS
- Aggravated by orthostatic changes: standing or sitting.
- Relief after 5-20 min recumbent.
- May precede syncope (passing out)
- Occurs if hypotension is NOT compensated by increased HR.

(Martin, 2014; Khurana, 2018)

Managing Coat-Hanger Headaches

POTS Checklist handout

- Use usual POTS management strategies:
  - Avoid triggers, e.g., large carb meals, heat, hot showers, etc.
  - Hydration
  - Redirecting blood flow: lying supine with feet up, squat, cross legs, etc.
- Avoid medications that increase orthostatic hypotension
  - E.g., beta blockers
- Use medications that increase BP
  - E.g., fludrocortisone, midodrine, droxidopa, pyridostigmine

- (Khurana, 2018)

Sleep Disorder Headaches

See HSD 107 for more on sleep problems in HSD

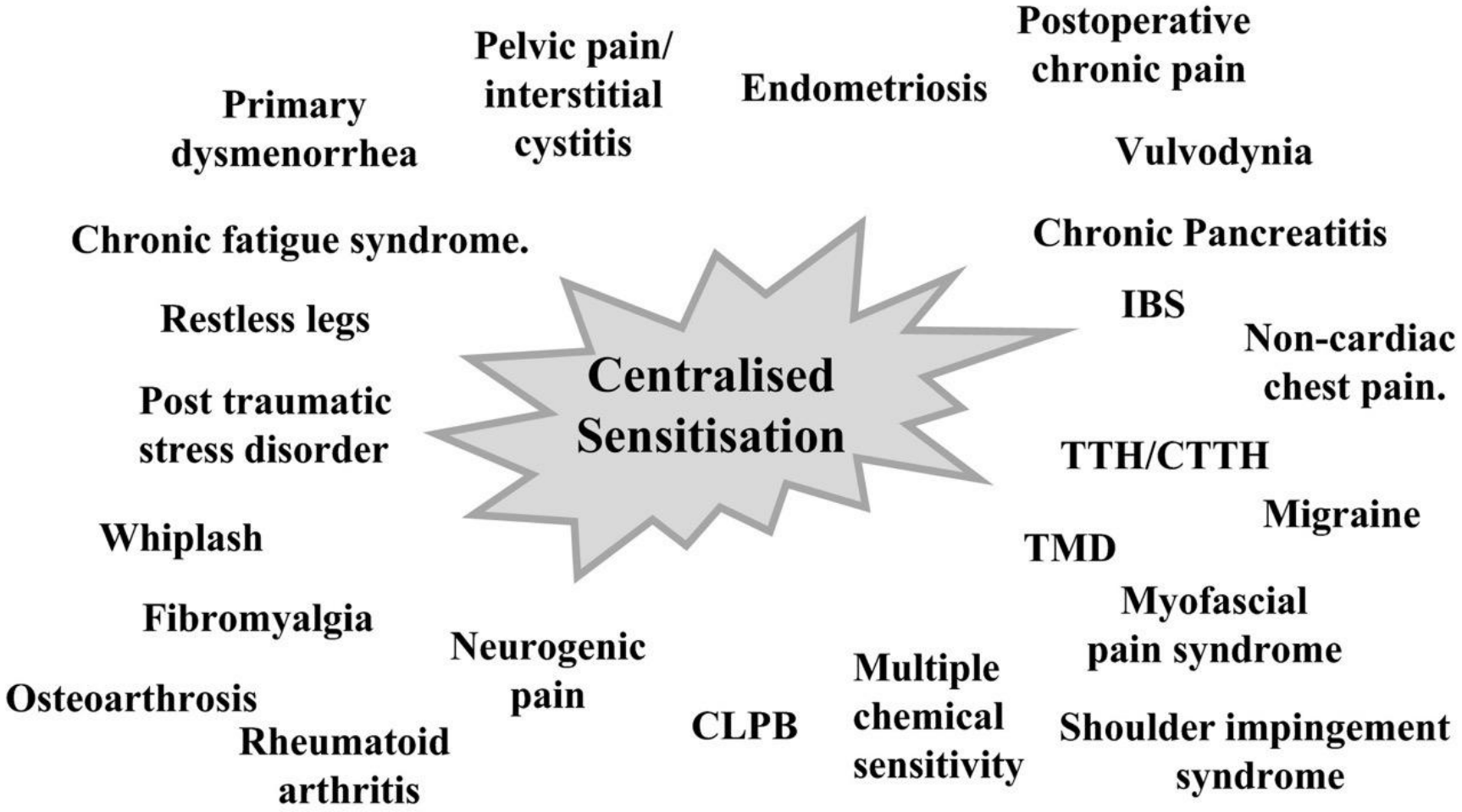
- Disrupted sleep can cause or aggravate headaches
- May be due to POTS:
  - POTS ‘events’ during the night disrupting sleep: tachycardia associated with adrenaline rush
  - Poor temperature control: feeling too hot and/or too cold
  - Anxiety
  - Restless leg syndrome
  - Needing to go to the toilet from drinking lots of fluids during the day
- May be due to HSD:
  - Sleep disordered breathing (e.g., sleep apnea), which is common in HSD
  - Discomfort in bed due to HSD
  - Clenching or grinding teeth while sleeping

Sleep handout

- https://www.potsuk.org/sleep
- https://americanheadachesociety.org/wp-content/uploads/2018/05/Sleep_Disoders_and_Headache_Toolbox.pdf

Curable Chronic Pain handout

Central Sensitization



MCAS causes central sensitization
(Wirz, 2017)

https://onlinelibrary.wiley.com/doi/full/10.1002/ejp.1140

MCAS Self-Care handout

Mast Cell Activation and Migraines

See HSD 102 for more on MCAS

- HA/migraine reported in 63% of people with MCAD (Afrin, 2017)
- Migraines are a neuro-inflammatory process associated with mast cell activity and excess histamine in the CNS

See HSD 106 for more on histamine

  - Migraineurs have decreased serum diamine oxidase (DAO)
  - Migraines respond to DAO supplements that reduce histamine absorption in the gut (Izquierdo-Casas, 2018; Izquierdo-Casas, 2019)
- Triggers for MCAD and migraines are very similar
- Migraines and MCAD are both common in central sensitization

(Ramachandran, 2018; Conti, 2018; Arendt-Nielsen, 2017)

Migraine & MCAS Triggers

See HSD 102 for more on MCAS

Migraines:

- **Stress**
- **Changes in sleep schedule**
- **Alcohol (especially red wine)**
- **Diet: histamine, MSG, chocolate, cheese, dairy, artificial sweeteners, cured meats**
- **Strong smells**
- **Sunlight**
- Dehydration
- Hormones
- Caffeine
- Weather changes

- (https://americanmigrainefoundation.org/resource-library/top-10-migraine-triggers/)

Mast Cell Activation:

- **Stress**
- **Fatigue**
- **Alcohol (especially red wine)**
- **Diet: ripe cheese, dried meat or sausage, tomato, nuts, pickled foods, cured meats fish, food additives**
- **Strong smells**
- **Sunlight**
- Exercise
- Medications (NSAIDs, antibiotics, opioids)
- Insect and other venoms
- Infections (viral, bacterial, fungal)
- Mechanical irritation, friction

- https://tmsforacure.org/symptoms/symptoms-and-triggers-of-mast-cell-activation/

Histamine Intolerance is Part of MCAS

- MCAS involves histamine intolerance – your body over-reacting to histamine
- Headaches & migraines are very common in histamine intolerance
- Histamine may be released by mast cells, or eaten in foods
- Some people lack the enzyme that normally breaks down histamine in the gut (diamine oxidase - DAO)
- Good overview: https://www.entandallergy.com/blog-posts/details/your-mystery-food-sensitivity-might-actually-be-a-histamine-intolerance#

See HSD 106 for more on DAO

Reese, 2018; Comas-Baste, 2020

Histamine in Foods

See HSD 106 for more on MCAS and diet

Foods that have been reported to have higher levels of histamine:

- Alcohol
- Eggplant
- Pickled or canned foods – sauerkrauts
- Matured cheeses
- Smoked meat products – salami, ham, sausages….
- Shellfish
- Beans and pulses – chickpeas, soy flour
- Long-stored nuts – e.g peanuts, cashew nuts, almonds, pistachio
- Chocolates and other cocoa based products
- Seitan
- Rice vinegar
- Ready meals
- Salty snacks, sweets with preservatives and artificial colourings

https://www.histamineintolerance.org.uk/about/the-food-diary/the-food-list/

Foods that have been reported to have released histamine (histamine releasers):

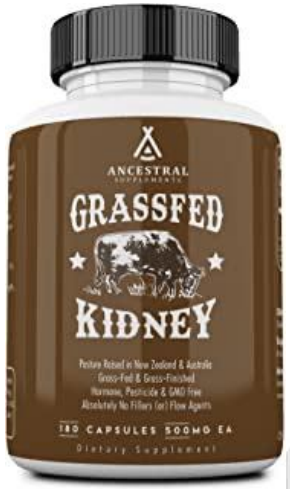
- Most citrus fruits – lemon, lime, oranges…
- Cocoa and chocolate
- Walnuts, peanuts
- Papaya, pineapples, plums, kiwi and bananas
- Legumes
- Tomatoes
- Wheat germ
- Most vinegars
- Additives – benzoate, sulphites, nitrites, glutamate, food dyes

Foods that have been reported to block the diamine oxidase (DAO) enzyme:

- Alcohol
- Black tea
- Energy drinks
- Mate tea

Managing Histamine

HSD106: GI in HSD, POTS, MCAS



Food Intolerances App

Low FODMAP Diet, Histamine Intolerance & more

The app Food Intolerances was developed to help everyone who has been diagnosed with a food intolerance and helps you answer the often difficult question: What can I still eat? The food lists range from essential goods to exotic products and enable you to add more variety to your diet. The app also covers food additives, and offers multiple profiles so you can adapt it exactly to your needs.

Lactose intolerance

Lactose intolerance is a very common condition. Lactose can be found in dairy products and many processed foods. Our app indicates the lactose content accompanied by detailed remarks that help you choose suitable foods.

Food Intolerances

App available for iOS and Android

Download on the App Store

GET IT ON Google Play

Share website

- Minimize histamine containing foods
  - Avoidance diet for 4 weeks
  - Add back foods one by one
- Take DAO supplements
  - People with migraines are twice as likely to have DAO deficiency
  - Research shows DAO decreases migraines in people with low DAO

Izquierdo-Casas, 2018, 2019

- Take over-the-counter antihistamine medications
- Prescription antihistamines

Caffeine and Headaches

- Primarily works as an “analgesic adjuvant” amplifying benefits of pain medications
  - Caffeine improves absorption of other pain medications by decreasing stomach pH (increasing acidity in the stomach)
- Also works alone to decrease migraines and tension headaches
- However,
  - Caffeine withdrawal can trigger migraines and tension headaches
  - Abstinence from caffeine can decrease frequency of migraines
- Other fun caffeine facts:
  - Caffeine also increases gastric motility (movement of food through the gut), which improves medication absorption
  - Caffeine decreases pain relieving effects of transcutaneous electrical nerve stimulation (TENS)

Lipton, 2017

Menstrual Migraines

- Menstrual migraines (MM) are reported to be longer, more severe and more resistant to treatment than other types of migraine
  - “Pure MM” occur only on day 1 ± 2 (i.e. days − 2 to + 3) of menstruation
  - “Menstrually related migraine” are worse during menses, but occur at other times
- Are believed to be worse in people with MCAS and POTS
- Management generally the same as for other migraines
- May also consider hormone treatment
  - Often estrogen with progesterone, continuous throughout the month
  - But women with migraines are at increased of blood clots risk using hormones – doctor needs to balance risks and benefits.

Cupini, 2021

Managing Migraines (in general)

- **Identify and avoid triggers**
  - For migraines, and for other HA that can trigger migraines
- Behavioral Rx: **relaxation, cognitive behavioral therapy, biofeedback**
  - Juva biofeedback device: 1 year free: https://www.juvahealth.com
- Neutraceuticals: **vit B2**, **Mg++,** CoQ10, butterbur, feverfew
- Non-invasive neuromodulation (new approaches, not commonly available)
- Acupuncture studies inconclusive
- Invasive, surgical treatments after all other options tried
- (Botox with caution! It can be safe in EDS-knowledgeable hands, but can cause neck instability if the provider is not careful)

Puledda, 2018;

Botox: https://www.neurokc.com/wp-content/uploads/2018/05/Botox-Tx-for-Chronic-Daily-Headache-in-Hypermobile-patients-AAN-2018-Poster.pdf, https://www.mdsabstracts.org/abstract/increased-risks-of-botulinum-toxin-injection-in-patients-with-hypermobility-ehlers-danlos-syndrome-a-case-series/

In Summary….

- People with HSD, POTS, and MCAS are vulnerable to many different kinds of headaches; some are specific to or more common in HSD/POTS/MCAS
- Generally:
  - Hypermobility causes HA and TMD due to muscle trigger points, joints (both neck and TMJ), nerves, and sleep disturbance
    - Pressure on the brain or spinal cord is much less common, but possible
  - POTS causes HA and migraines due to neurological factors, sleep disturbance, inadequate blood flow to head and neck
  - MCAS causes migraines due to immune cell reactivity, histamine sensitivity, and 'central sensitization'
- Figure out what CAUSES your HA, migraines, & TMD and prevent, when possible, rather than just taking medication to treat the symptoms
  - A physical therapist who specializes in HA and TMD can help you figure it out
- Use caution with Botox, muscle relaxer medications, and manipulations

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The Effects of Mouth Breathing

Breathing handout

HSD 109: Breathing

- https://youtu.be/CBYwxndys2E
- Changes tooth alignment
- Changes tongue position and use of muscles in the throat and neck
- Leads to forward head
- Compromises health due to loss of benefits of sinus filtration.

Questions?