Vestibular Migraine: A Medical and Therapeutic Approach

Aniket Natekar, MD, MSC
Lauren Nidiffer, PT, DPT, NSC
Disclosures

- I’m still too broke for this to be a big thing
- Maybe one day I will have something to write here
Objectives

• Learn basics of migraine and vestibular migraine
• Discuss treatment and management from medical perspective
• Rehab interventions for vestibular migraine
Introduction

- Migraine: 2\textsuperscript{nd} leading cause of disability in the world, previously was 6\textsuperscript{th} according to WHO for many years
- Incidence: 2.2\% 1 year prevalence – most see PCP for headache management
- Total Cost: Approximately $78 billion annually for people, about $8500-9500 per person for chronic migraine and $2000 per person with episodic migraine
- Employers lose about $13 billion annually in lost/impaired work days ($8 billion for lost days)
- 4\textsuperscript{th} leading cause of ER visits in US
Migraine Stigmas

• Often seen as pain-seeking patients, difficult or “needy” patients → less attention from medical professionals, negligence by nursing staff → under-treatment of pain
  • Worse for minorities/POC/transgender
• Symptoms not taken as seriously by society/insurance companies and employers → not thought of as organic or physical disease → continues in vicious cycle leading to undertreated patients → everyone suffers
Migraine without Aura

• At least 5 attacks in lifetime
• Headache lasts at least 4-72 hours: Both treated and untreated
• At least 2 of 4 characteristics: unilateral, pulsing quality, moderate to severe pain intensity, aggravated by routine physical activity
• During the headache, has at least one of following: Nausea and/or vomiting, photophobia AND phonophobia
Migraine with Aura

- Recurrent attacks lasting minutes, unilateral fully reversible visual/sensory or other CNS symptoms that develop gradually and followed by headache/migraine symptoms
- Need at least 2 attacks in lifetime
- Auras: Visual, sensory, speech/language, motor, brainstem, retinal
- At least 3 of 6: At least one aura spreads over 5 mins, at least 2 auras occur in succession, each aura lasts 5-60 mins, at least one aura unilateral, at least one aura is positive, aura unaccompanied or followed by headache
Vestibular migraine

• Need at least 5 attacks in lifetime
• Current or past history of migraine with or without aura
• Vestibular symptoms of moderate or intense severity between 5 minutes to 72 hours
• At least half of episodes associated with at least one of 3 migrainous features
  • Headache with at least 2/4 characteristics
    • Unilateral
    • Pulsating
    • Moderate or severe intensity
    • Aggravated by routine physical activity (i.e. walking around or chores)
  • Photophobia or phonophobia
  • Visual aura
• Can’t be accounted by another diagnosis
Continued..

- Vestibular symptoms are broad and many different types
  - Spontaneous vertigo
    - Internal vertigo: false sense of self-motion
    - External vertigo: false sensation of visual surround is spinning or flowing
  - Positional Vertigo: occurring after changing head position
  - Visual-induced vertigo: triggered by complex or large moving stimulus
  - Head motion-induced vertigo: disruption of spatial orientation
Characteristics

• Moderate: Interfere but don’t prevent daily activities
• Severe: Daily activities can’t be continued
• Duration is variable: 10% last few seconds, 30% last a few minutes, 30% last hours, 30% last several days
  • Shortest acting occur during head motion, visual stimulation, or changing position
  • Most resolve within 72 hours
• One symptom sufficient during single episode → associated symptoms can occur before, during or after episodes
Additional Criteria

• Transient auditory symptoms, nausea, vomiting, prostration, susceptibility to motion sickness → can be seen in other vestibular symptoms → not part of diagnostic criteria
• Very few have symptoms prior to onset of headache → not regarded as aura
• Can be confused for migraine with brainstem aura → brainstem aura involves visual, sensory, or dysphasic aura symptoms → less than 10% of vestibular patients meet criteria
Comparison of Meniere’s disease

• Can see Meniere’s disease in migraine patients
• Vestibular migraine: Can have fluctuating hearing loss, tinnitus, and aural pressure → hearing loss doesn’t get profound
• Meniere’s disease: Photophobia and auras common in attacks → may only have vestibular symptoms present in the earliest stages of disease → if hearing loss documented by audiometry → Meniere’s disease is diagnosed even during vestibular attacks
• Can have overlap of migraine and Meniere’s disease
Treatments

- Tricyclic Antidepressants: Have best evidence to treat → need to be used as preventive therapy → warn patients about side effects → fatigue, dry eyes, dry mouth, difficulty urinating → rarely arrhythmias → not recommended in people above 65 or have cardiac conditions

- SNRIs: Also good options for treatment → duloxetine and venlafaxine are best options → have lots of side effects → weight gain and sexual dysfunction most determinantal

- Calcium channel blockers: Not as much evidence but decent option → can be used if there is concomitant HTN → may cause hypotension

- Beta-blockers: Also decent option → same as CCB

- Topiramate: Great option for treating migraine → can treat vestibular symptoms too → has many side effects → can cause weight loss → helpful for many migraine patients

- Lamotrigine: Great at treating vestibular symptoms → has some side effects → watch out for SJS rash
Non-pharmacologic treatments

• Not Ohio Diet: Mediterranean diet → helps with reducing inflammation → weight loss can help headache and all other conditions and symptoms

• Mountain Dew Syndrome: Tell patients to stop drinking Mountain Dew or pop → drink water → help with dizziness and vestibular symptoms

• Exercise: Weightbearing exercises and Yoga → helps with overall health → helps with headache → can improve symptoms up to 50% of the time

• Supplements: Listen to Brain and Body Things Podcast episode with me → provides summary of supplements that can help with headache
Post-concussion headache

- Many causes of it → blunt force, non-penetrating head trauma, concussion, assault, sports injuries → any severity of TBI can cause it
- Complicated TBI: Associated with CT abnormalities → hematoma, subarachnoid or subdural bleed, midline shift, fractures
- Uncomplicated TBI: No CT findings
- Headache is most common symptom after head injury → associated with difficulty with concentration, photophobia, phonophobia, cognitive issues, memory issues
Uncomplicated TBI

• Symptoms resolve usually within 3 months
• Normally don’t treat with medications
• Requires rest and PT/OT/Speech
• Risk factors: Cis-woman gender, age, psychiatric history, history of chronic pain syndromes
  • Women: More likely to have headache, fatigue
Pathophysiology

- Post-concussion syndrome: Autonomic nervous system damage → white matter tracks between cortex and vagal nerve → affects parasympathetic and sympathetic systems → symptoms similar to depression
- Also affects cerebral blood flow, BP, heart rate → dizziness, headache, confusion, issues with concentration, orthostatic intolerance
- Increased cerebral blood flow → headache, vision issues, dizziness → exercise intolerance
- Vagal nerve damage → disproportionate HR and BP increase → exercise intolerance
- Features very similar to those seen in PTSD and depression
Treatment

- Mild TBI: 80-90% self-limiting within 3 months → most have improvement within first 4 weeks
- Physical rest recommended for first 24-48 hours → slowly incorporate into regular life
- Remove restrictions when not having symptoms at rest
- Headache: Amitriptyline → can treat headache symptoms → has anti-histamine properties → can reduce inflammation
- DHE, metoclopramide, and occipital nerve blocks → abortive therapy
- Other medications: propranolol, indomethacin
- Non-pharmacologic treatments: cervical physical therapy, vision therapy, vestibular rehab
- Low level exercise: Tend to recover faster
Fun fact

- If headache persists → usually becomes migraine
- Treat with conventional migraine treatments
- Can be harder to treat due to etiology of headache
- Has high rates of medication overuse headache
Summary

• Headache medicine is very complex and has range of diseases and treatment options
• Vestibular migraine requires interdisciplinary approach to treat condition
• Post-concussion syndrome usually self-limiting and rarely extends full time
• Many great therapy approaches to treat symptoms and condition
• You guys are amazing and we really value you guys
• If any are interested, we are going to try to get therapy with us for headache clinic
Vestibular Migraine and Rehab Implications

• Vestibular Migraine is the 2\textsuperscript{nd} most common cause of vertigo in adults
• Vestibular Migraine comorbidities:
  • 3x more likely to have BPPV
  • 2-3x more likely to have Meniere’s Disease
  • 2-5x more likely to report motion sickness
Assessment

- May be visually sensitive
  - Oculomotor testing, Optokinetics, DVA, HIT, VOR cancellation
    - Testing may be WNL but provoke symptoms
- Positional testing of BPPV
  - Frequently returning BPPV – thinking potential of VM?
- Cervical spine mobility assessment
  - ROM, JPET
- Balance testing
  - mCTSIB, FGA
- Endurance
  - 6 minute walk test
- Vital assessment – dysautonomia screening
  - OH testing, POTs screening
Rehab interventions

- Symptom and trigger tracking
- Symptom management and lifestyle education
- Autonomic Nervous System Regulation
- Balance retraining
- Vestibular retraining
  - Visual Acuity
  - Habituation
- Posture and Cervical spine ROM and strengthening
Symptom Tracking

• Basic calendar
  • Keep it simple
  • Good day versus not as good day
• Migraine Buddy App
  • Free version and paid version
  • Paid version can track weather and has additional learning programs
  • Log sleep information, attack information, health events, hormonal cycles
  • Provides reports about frequency
  • Also has information about migraine under “insight” tab

The 4 Phases of a Migraine Headache

PRODROME
(embodement, premonitory phase)

- Problems concentrating, irritability, depression
- Difficulty speaking and reading
- Trouble sleeping, yawning
- Nausea
- Fatigue
- Sensitivity to light and sound
- Food cravings
- Increased urination
- Muscle stiffness

AURA

- Seeing bright flashing dots, sparkles or lights
- Blind spots in your vision
- Numb or tingling skin
- Speech changes
- Ringing in your ears (tinnitus)
- Temporary vision loss
- Seeing wavy or jagged lines
- Changes in smell or taste
- A “funny” feeling

HEADACHE

- Sensitivity to light, noise and odors
- Nausea and vomiting, stomach upset, abdominal pain
- Loss of appetite
- Feeling very warm (sweating) or cold (chills)
- Pale skin color (pallor)
- Feeling tired
- Speech changes
- Dizziness and blurred vision
- Tender scalp
- Diarrhea (rare)
- Fever (rare)

POSTDROME
(migraine hangover)

- Being unable to concentrate
- Feeling depressed
- Fatigue
- Not being able to understand things
- Feeling euphoria

Picture from Cleveland Clinic
Trigger tracking

- Stress
- Neck tension (trigger and symptom)
- Food
- Alcohol
- Dehydration
- Sleep
- Over exertion
- Caffeine
- Bright lights
- Loud Noises
- Smells

- Hormones
- Weather
- Medications
SEEDS

- Sleep
- Exercise
- Eating
- Drinking
- Stress management

- Important not to overwhelm the patient, introduce recommendations and use motivational interviewing to see how recommendations could fit into patients current lifestyle
- Avoid placing stress or guilt on patient
Sleep Hygiene

• 7-9 hours of sleep per night
• Reduce stimuli – noise, light
  • Avoid electronics 30-60 minutes before bed
  • White, brown, pink noise
• Routine!
  • Keep similar bed time and wake time
  • Calming bed time routine
  • Exposure to natural light, early in the morning influences circadian rhythm
• Avoid
  • Strenuous exercise 2-3 hours before bed
  • Heavy or spicy meals 2-3 hours before bed
  • Caffeine 3-4 hours before bed
  • Naps after 1 pm or >1 hour
• Sleep study if needed
Exercise

• Encourage movement
• Motivational interviewing
  • Best type of aerobic exercise
  • How will this fit in their schedule?
• Moderate intensity exercise and yoga is recommended at least 3 times per week to reduce intensity, frequency, and duration of migraine attacks
  • Level B evidence
Eating

• Important not to skip meals
• Balanced meals
• Possible tracking for food triggers
• Discussing food can be tricky
  • Be careful discussing food elimination with patients who have had disordered eating
  • REMEMBER – food is more than fuel. Food is also eaten for pleasure. Food can have emotional, cultural, and sentimental attachment.
    • It is not as simple as telling someone to “eat healthy”
  • May need referral to a registered dietician for proper education
Drinking

• Hydrate!
  • General rule of thumb –
    • Half of body weight in ounces of water per day
      • Consider comorbidities causing fluid restrictions
    • Alcohol and caffeine require increased water
Stress Management

- Exercise
- Hobbies
- Breathing
  - Quality of breathing
  - Importance of exhale being longer than inhale for parasympathetic break (ex. inhale 4’ exhale 8’)
  - Box breathing
- Grounding
  - 5 senses
    - 5 things you can see, 4 things you can feel, 3 things you can hear, 2 things you can feel, 1 thing you can taste
- Progressive muscle relaxation
- Counseling
- Support groups
  - VEDA (vestibular.org)
ANS regulation

• Trauma informed care
• Educate patient on central sensitivity
  • Provide tool to regulate nervous system
  • UP-regulation
    • Exercise, movement
    • Singing
  • DOWN-regulation
    • Calm breath work
    • Music
    • Progressive muscle relaxation
• Educate patient on affective pain mechanisms
  • 3 root emotional causes of pain
    • Anger, depression, anxiety
Balance

- Use mCTSIB to drive balance exercises
- Consider gradually increasing vestibular challenge with balance exercise
- May benefit from sensory up weighting before doing visual exercises
  - Work on eyes closed on foam for HEP before tolerating visual exercises
Vestibular retraining

• Treat for BPPV as indicated
• Gaze stability
  • VOR exercise
  • Gradually increase as tolerated
  • Seated > standing > dynamic surface > gait
  • x1 viewing, x2 viewing
  • Add a busy background (cautious with visually induced vertigo)
• Screen for Occupational Therapy needs for vision exercises
• Habituation
  • Optokinetic videos for visually induced vertigo
    • Gradually increase tolerance
  • Motion Sensitivity Quotient
    • Guide for movement based habituation
Cervical spine

- Cervical range of motion and stretching
  - Flexion, extension (upper and lower cervical spine), side bending, rotation
- Deep anterior neck flexor strengthening
- Posterior chain/postural strengthening
  - Assess scapular mobility
- Somatic exercises – breath coordination and spinal and rib mobility
- Ergonomics
- Sleep posture
Cervical spine

- Gentle cervical spine manual therapy
  - Suboccipitals
  - Upper traps
  - Scalenes
  - Temporalis
  - SCM
  - Masseter
  - Cervical paraspinals
  - Intra-oral release – pterygoids
- Joint mobilization
- Teach self massage
  - Utilize tools like Theracane
Social Media Support for Vestibular Migraine

- Migraine Diet
  - @thedizzycook
  - @the.migraine.dietitian

- Physical Therapists
  - @thevertigodoctor
  - @the.headache.pt
  - @drdalybalance

- Education
  - @migrainedisorders
  - @the_migraine_life

- Psychology
  - @dremilykostelnik
Questions?

Lauren.Nidiffer@ohiohealth.com
Aniket.Natekar@ohiohealth.com
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