DISCLOSURES

- Consultant for Advanced Bionics
- Research support provided by American Neurotology Society and the Triological Society

OVERVIEW

- Classic picture
- Diagnosis
- Treatment Approach

**Meniere’s Disease**

- Vestibular Neuritis
- Labyrinthitis
- Vestibular Schwannoma (Acoustic Neuroma)
IMPORTANT THEMES

• Largely clinical diagnosis. Careful clinic history is key.

• Consistency/agreement in language essential.
  - "Dizzy" vs. Vertigo: "sensation of self motion when no self motion is occurring"

• Temporal characteristics matter and the condition evolves.

• Often cannot be made on first presentation alone.

MENIERE’S DISEASE

• Incidence 3.5 to 500 per 100,000

• Female to male ratio 1.3:1

• Peak incidence ages 40 to 60 years
CLASSIC PICTURE...

- Recurrent random, spontaneous vertigo
  - Nausea/emesis...debilitating
  - Not provoked
  - No positional/body movement triggers

- Episodic
  - 20 min – 2-3 hours (up to 12-24 hours)
  - NOT Constant nature, lasting days
  - NOT Very short spells lasting seconds

- Fluctuating, unilateral ear fullness, roaring tinnitus, hearing loss
  - NOT constant tinnitus
  - NOT ear pain, drainage
CLASSIC PICTURE...

• Recurrent random, spontaneous vertigo
  - Not provoked
  - No positional/body movement triggers
• Episodic
  - 20 min – 2-3 hours (up to 12-24 hours)
  - NOT Constant nature, lasting days
  - NOT Very short spells lasting seconds
• Fluctuating, unilateral ear fullness, roaring tinnitus, hearing loss
  - NOT constant tinnitus
  - NOT ear pain, drainage

DIAGNOSIS

• Questions to Ask
  - “Describe what you are experiencing without the word ‘dizziness’…”
  - Duration of episodes
    - Seconds – minutes – hours – days – constant?
  - Tinnitus
    - Fluctuating vs constant vs temporally distinct?
  - Evolution over time?
    - Prior treatments and impact
    - Exclude: otalgia/otorrhea. Other neurologic changes/deficits

• “Dizziness Diary”
  - Sleep
  - Stress
  - Diet
  - Alcohol
  - Caffeine
  - Other factors
DIAGNOSTIC DILEMMA

- Suspect Migraine Vestibulopathy if...
  - Symptom duration outside range of Meniere’s
  - Lack of true vertigo/hearing loss/tinnitus
  - Light sensitivity = trigger
  - Strong history of motion intolerance
  - Meets diagnostic criteria for migraine
- High prevalence of migraine in general: Many be concurrent!

PHYSICAL EXAM

- Largely excludes alternative etiologies
- Cranial nerve exam
- Inspect signs/symptoms of stroke
- Otologic exam: no acute infectious process or chronic ear disease (cholesteatomas)
- Head thrust: may see catch up saccade on affected side
- Romberg, Fakuda marching test usually normal

MENIERE’S HEARING LOSS

- Fluctuating initially
  - Low to mid-frequency sensorineural hearing loss
  - May return to normal
- Over time...
  - Permanent hearing loss in affected ear
  - Progresses to higher frequencies over course of disease
  - Over 20 years, 81% develop moderate-to-severe hearing loss
  - 1-2% progress to profound hearing loss
MENIERE’S DISEASE

- Diagnosis - Classification Committee of the Barany Society
  - Definite MD (not purely clinical diagnosis)
    - Two or more spontaneous attacks of vertigo, each lasting 20 min to 12 hours
    - Audiometrically documented low- to mid-frequency sensorineural hearing loss in the affected ear on
      at least one occasion before, during or after one of the episodes of vertigo
    - Fluctuating aural symptoms (hearing, tinnitus, or fullness) in the affected ear
    - Other causes excluded
  - Labs, neuroimaging, vestibular function testing/other electrophysiologic tests
    not required

NATURAL HISTORY

- “What to Expect”
  - Clinical course highly variable
  - Attacks may be clustered, separated by
    long periods of remission
  - Burns out in many
    - 57% after 2 years
    - 71% after 8 years
  - Majority present with unilateral disease
    - 25%-50% eventually demonstrate bilateral involvement, on average over 7.6 years

MENIERE’S QUALITY OF LIFE IMPACT

Arroll et al., 2012

Chronic Illness Group
PATHOPHYSIOLOGY
• Incompletely understood!
• Imbalance in inner ear fluid volumes
• Disruption of endolymph homeostasis
• Histologic hallmark = “endolymphatic hydrops”

MENIERE’S DISEASE
Lifestyle Changes
Medication
Surgery and/or Ablative

Overall Goal: Control of Symptoms ≠ Cure
Special attention to “Dizziness Diary”
MENIERE’S DISEASE

Lifestyle Changes

Medication

Surgery and/or Ablative

No consensus on time before escalating to next level.
Personal preference: 2-4 months
No de-escalation unless symptom free for years

MENIERE’S DISEASE

• Lifestyle Modification
  - Low sodium diet
    - Average “American diet” 3.5 milligrams
    - Meniere’s Target = <1,500 mg daily
  - Limit caffeine
    - ≤2 cups of coffee/day or equivalent
  - Stress reduction
    - Adjust work/home life
    - Meditation
    - Mindfulness

MENIERE’S DISEASE

• Lifestyle Modification
  - Low sodium diet
    - Average “American diet” 3.5 milligrams
    - Meniere’s Target = <1500-2000 mg daily
  - Limit caffeine
    - ≤2 cups of coffee/day or equivalent
  - Stress reduction
    - Adjust work/home life
    - Meditation
    - Mindfulness
MENIERE'S DISEASE

• Medication – Abortive
  - "Emergency Kit"
    - Diazepam (Valium) 2 mg q 6 hours pm SL
    - Ondansetron (Zofran) 4mg/8mg ODT q 8 hours
    - Avoid meclizine – not preventative, independent risk factor for falls

• Break Cycle of Attacks
  - Medrol Dosepak – methylprednisolone
    - 1 pack 6 days

MENIERE'S DISEASE

• Medication – Maintenance
  - HCTZ/triamterene (Dyazide/Maxide)
    - 37.5/25 mg daily, am
  - Acetazolamide (Diamox)
    - Escalation OR if significant overlap with migraine
    - 250 mg BID
  - Betahistine – H3 Agonist
    - Vasodilatory effects?
    - 8-16 mg TID (must be compounded in US)
MENIERE’S DISEASE

Lifestyle Changes

Medication 80%-90% resolution
Surgery and/or Ablative

50% word recognition by conventional metrics
Ultimately, this is the patient’s decision!

Persisted Symptoms?
Usable Hearing
No Usable Hearing

Non-Vestibular Ablative
Thymectomy
eradical injection
Endolymphatic Sac Surgery
Persistent Symptoms?

- Usable Hearing
- No Usable Hearing

**Vestibular Ablative**

Must ensure contralateral side is not hypofunctional!

**ROLE OF VESTIBULAR PT**

- Plays a role after ablative therapy to drive central vestibular compensation
- May be helpful for inactive or end-stage disease
- Not helpful in management of acute attacks

**OTHER OTOLOGIC CONDITIONS**
VESTIBULAR NEURITIS

- Sudden onset vertigo
  - 24 hours – 72 hours (up to week), yielding to disequilibrium
  - Resolution at 1-2 months (or more)
- No associated hearing loss/tinnitus
- Often associated URI, presumed viral etiology
- Treatment
  - Acute only: diazepam, ondansetron
  - Prednisone or methylprednisolone taper
  - No synergistic benefit of antivirals established
  - Counsel on elevated risk of BPPV

LABYRINTHITIS

- Serous or suppurative
- Otologic (otitis media or cholesteatoma) or meningitic infection progressive to labyrinth
  • Hearing loss, high frequency sensorineural
  • Fever, otalgia, otorrhea
- Treatment
  - Myringotomy tube
  - Mastoidectomy
  - Culture-directed antibiotics
  - Antiemetics, anti-nausea
  - Corticosteroids

VESTIBULAR SCHWANNOMA (ACOUSTIC NEUROMA)

- Benign, slow growing tumor of CN VIII
- Uncommon cause of vertigo, >imbalance
- Slow growth - vestibular compensation
- High frequency sensorineural hearing loss, speech discrimination out of proportion
- Symptoms not typically episodic
- Gold standard for diagnosis gadolinium enhanced MRI of the internal auditory canals (IAC)
SUMMARY

• Meniere’s
  - Largely clinical diagnosis
  - Evolves over time: complete clinical picture may not be clear initially
  - Low sodium diet, diuretic therapy sufficient for most
  - Other otologic conditions may share some features, but are temporally distinct
  - Referral important for hearing evaluation, hearing rehabilitation, escalation of therapy

QUESTIONS?

THANK YOU!