Evaluation and Management of Dizziness

OHSU Primary Care Review
February 8, 2016

Objectives

1. Develop a systematic approach to dizziness of vestibular origin
2. Know when to use and not to use vestibular suppressants
3. Recognize common and not so common conditions
4. Identify and manage patients at risk for injurious falls

Disclosure

I have no financial relationship with a commercial entity producing health-care related products and/or services.

Dizziness and vertigo

• Specialists don’t always agree on their meaning
• Patients use the terms interchangeably
• Description of symptoms without either is very helpful

Dizziness is common

• Life-time prevalence of dizziness 20-30%
• Life-time prevalence of vestibular vertigo 7.8%
• Chief complaint in ambulatory care visits 1.7%
• Chief complaint in ER visits 2.5%

Components of balance

• Eyes
• Ears
• Musculoskeletal
• Brainstem
• Cerebellum
• Cerebral cortex

Components of balance
Causes of dizziness

• Ear: BPPV, Meniere’s disease, vestibular neuritis, labyrinthitis, SSCD, vestibular schwannoma
• Brain: CVA, VBI, seizure, MS, migraine, Parkinson’s, tumor
• Med: Hypotension, EtOH, arrhythmia, DM, hypothyroid, med side effects
• Psych: Anxiety, panic attack, somatization, malingering
• Other: Concussive, cervical

Systematic approach

1. Get a good history
2. Look for nystagmus
3. Consider the top three vestibular diagnoses

Good history of dizziness

• Timeline: Acute or gradual, episodic or continuous
• Description of symptoms without “dizziness” or “vertigo”
• Triggers or exacerbating factors, esp. positional changes
• Duration of the worse symptoms
• Hearing loss, or other associated symptoms

Nystagmus

• Repetitive, involuntary eye movement
• Described by the quick-phase direction, ie right-beating nystagmus
• Quick-phase directed at stronger ear

Top 3 vestibular diagnoses

• Benign paroxysmal positional vertigo (BPPV)
• Vestibular neuritis / labyrinthitis
• Meniere’s disease

BPPV

• Sudden, brief vertigo triggered by changes in head position
• Caused by particles in semicircular canal
• The most common cause of vertigo
• The most treatable cause of vertigo
Labyrinth and otoconia

Response of semicircular canal

Canalithiasis vs Cupulolithiasis

Types of BPPV

• Posterior canal 90%
• Lateral canal 8%
• Anterior or combo 2%

Dix-Hallpike test

• Should be performed even if history is atypical
• Positive test sufficient for diagnosis of posterior canal BPPV
• Negative test does not rule it out (sensitivity 48-88%)
• Repeated testing by clinician or patient may be necessary
• Failure to diagnose BPPV may lead to costly work up
**Natural remission of BPPV**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Upper Range</th>
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<tbody>
<tr>
<td>Posterior</td>
<td>39 days</td>
<td>&gt; 6 months</td>
</tr>
<tr>
<td>Horizontal</td>
<td>16 days</td>
<td>2.5 months</td>
</tr>
<tr>
<td>Horizontal (apo)</td>
<td>13 days</td>
<td>35 days</td>
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**Epley maneuver**

**Effectiveness of Epley maneuver**

- Supported by Cochrane systematic review of 5 RCTs
- Odds ratio 4.2 (CI 2.0 - 9.1) for resolution of vertigo
- Supported by 5 other meta-analyses
- Recommended first-line therapy in clinical practice guidelines by both AAO-HNS and AAN

**Vestibular suppressants?**

- Antihistamines (meclizine, promethazine)
- Benzodiazepines (diazepam, lorazepam)
- Masking dizziness but balance still disturbed
- Drowsiness, cognitive deficits, DUI, risk of falls (esp. in elderly)
- Not recommended as substitute for repositioning maneuver in clinical practice guidelines

**Caveats of Epley**

- Some are not good candidates: limited neck range of motion, Down syndrome, low back dysfunction, spinal cord injury, morbid obesity, etc.
- Your mileage may vary
- Recurrent BPPV happens
- 6% conversion from posterior canal to horizontal canal BPPV
Omniax chair

Referral to PT or ENT

- PT: Epley and other therapeutic maneuvers
- PT: Rehabilitation of balance, prevention of falls
- ENT: Surgery for persistent or frequently recurrent BPPV

Semont maneuver

Indications for surgery

- Persistent or recurrent BPPV in the same posterior canal
- Good hearing and vestibular function in contralateral ear
- Medically stable
- 100% cure of BPPV with occlusion of posterior canal
- 7% risk of hearing loss > 10dB
- 22% risk of vestibular hypofunction

Vestibular neuritis / Labyrinthitis

- Acute vestibular loss ± hearing loss
- Severe vertigo (hours - days)
- Slow resolution of imbalance (weeks - months)
- 2nd most common cause of vertigo
- Infectious, inflammatory, or idiopathic
- Wide range of sequelae: Complete recovery - Disability
Anatomy of the ear

Diagnosis of vestibular neuritis

- History: Acute, severe vertigo with long recovery
- Exam
  - Spontaneous horizontal nystagmus → unaffected ear
  - Positive head impulse test → affected ear
- Main differentials:
  - Stroke: Focal neurologic deficits
  - BPPV: Hallpike with torsional nystagmus
  - Meniere’s disease: Recurrent episodes with hearing loss, tinnitus

Head impulse test

Treatment of vestibular neuritis

- Vestibular loss ± recovery ± compensation (weeks - years)
- Acute Rx:
  - Antiemetic: ondansetron, promethazine
  - Vestibular suppressant: diazepam, lorazepam, meclizine
  - Steroid: dexamethasone, prednisone, methylprednisolone
- Chronic Rx: Time is on our side
- Watch for BPPV as sequelae of vestibular neuritis

Vestibular suppressants

- Masking dizziness but balance still disturbed
- Drowsiness, cognitive deficits, DUI, risk of falls (esp. in elderly)
- Interfere with CNS compensation, prolong recovery
- Not a substitute for vestibular rehabilitation

Vestibular rehab

- Mainstay of treatment
  - To improve balance
  - To prevent falls
  - To treat BPPV as sequelae of vestibular neuritis
- Outcome after 6-12 weeks
  - Goals achieved
  - More time needed
  - No more can be done
- Vestibular rehab will improve function but does not always resolve dizziness.
Meniere’s disease

- Episodic vertigo
- Fluctuating or progressive sensorineural hearing loss
- Tinnitus
- Ear fullness or pressure

Endolymphatic hydrops

Hydrops and Meniere’s disease

Natural history of Meniere’s

- Acute attacks → remission → recurrent attacks
- Burnt-out phase
  - Episodic vertigo replaced by perpetual imbalance
  - Poor hearing
- Bilateral disease 15%

Treatment of Meniere’s

- Acute Rx
  - Antiemetic: ondansetron, promethazine
  - Vestibular suppressant: diazepam, lorazepam, meclizine
- Maintenance Rx
  - Low sodium diet: 2000mg/d, not always necessary
  - Diuretic: HCTZ/triamterene 37.5/25mg qd
  - Betahistine: 16mg tid
- Advanced Rx
  - Intratympanic dexamethasone or endolymphatic sac surgery
  - Intratympanic gentamicin or labyrinthectomy
- End-stage Rx: Vestibular rehab

Vestibular suppressants

- Masking dizziness but balance still disturbed
- Drowsiness, cognitive deficits, DUI, risk of falls (esp. in elderly)
- Interfere with CNS compensation, prolong recovery
- Not indicated for routine prophylaxis of vertigo
- Not indicated for chronic imbalance without vertigo
Systematic approach

1. Get a good history
   - Timeline: Acute or gradual, episodic or continuous
   - Description of symptoms without “dizziness” or “vertigo”
   - Triggers or exacerbating factors, esp. positional changes
   - Duration of the worse symptoms
   - Hearing loss and other associated symptoms

2. Look for nystagmus: Spontaneous, positional, or with head impulse

3. Consider the top three vestibular diagnoses
   - Benign paroxysmal positional vertigo (BPPV)
   - Vestibular neuritis / labyrinthitis
   - Meniere’s disease

BPPV

- Brief vertigo with changes in position
- Hallpike should be done if possible even if history is atypical
- If Hallpike is positive, treat with Epley or refer to PT
- Negative Hallpike does not rule out. Repeat or refer
- Screen for existing, fluctuating or worsening hearing loss
- Avoid vestibular suppressants, except for temporary relief of severe symptoms

Vestibular neuritis / labyrinthitis

- Severe vertigo for hours to days
- Main differentials: Stroke, BPPV, Meniere’s disease
- Screen for existing, fluctuating or worsening hearing loss
- Supportive therapies ± steroid
- Refer to PT for vestibular rehab
- Avoid chronic use of vestibular suppressants
- Watch for subsequent BPPV

Meniere’s disease

- Recurrent episodic vertigo minutes to hours
- Main differentials: BPPV, migraine
- Screen for existing, fluctuating or worsening hearing loss
- Initial therapies: Low-sodium diet, diuretic
- Refer to ENT for confirmation, long-term management
- Avoid vestibular suppressants, except for temporary relief of severe, episodic symptoms

Superior semicircular canal dehiscence

- Noise-induced dizziness
- Pressure-induced dizziness
- Autophony
- Conductive hearing loss
- Conductive hyperacusis

Just a few more things
Perilymph fistula

- Traumatic perilymph fistula
  - Trauma or iatrogenic injury to middle ear and inner ear
  - Profound hearing loss as well as vertigo
  - Urgent middle ear exploration indicated to control vertigo
- “Spontaneous” perilymph fistula
  - Pressure-induced vertigo ± hearing loss, without clear antecedent trauma
  - Rule out SSCD, Meniere’s disease, vestibular migraine, CNS lesion, etc.
  - Middle ear exploration not usually confirmatory or helpful

Vestibular migraine

A. At least 5 episodes with vestibular symptoms\(^1\) of moderate or severe intensity\(^2\), lasting 5 min to 72 hours\(^3\)
B. Current or previous history of migraine with or without aura according to the International Classification of Headache Disorders (ICHD)\(^4\)
C. One or more migraine features with at least 50% of the vestibular episodes\(^5\):
  - headache with at least two of the following characteristics: one-sided location, pulsating quality, moderate or severe pain intensity, aggravation by routine physical activity
  - photophobia and phonophobia\(^6\)
  - visual aura\(^7\)
D. Not better accounted for by another vestibular or ICHD diagnosis\(^8\)

Consensus document of the Bárány Society and the International Headache Society, 2012

Vestibular migraine syndrome

- Dizziness not better accounted for by other diagnoses
- Current significant headache or past history of migraine
- Hypersensitivity to normal sensory stimuli
  - Hyperacusis
  - Photophobia
  - Motion sensitivity
  - Visual sensitivity
- Response to migraine therapy

Thank you!