**22. Dizziness by Rui Jiang**

**Overview:**

**Common Causes of dizziness (**adapted from Table 1 of Molnar and McGee)

|  |  |  |  |
| --- | --- | --- | --- |
| **Causes** | **Emergency room (n=907) (%)** | **Primary care, elderly (n=1708) (%)** | **Specialized dizziness clinic (n=125) (%)** |
| **Peripheral Vestibular Disease** \* | 32 | 40 | 38 |
| **Orthostatic syndrome** | 15 | 10 | -- |
| **Multiple sensory deficits \*\*** | -- | 8 | 13 |
| Psychiatric | 2 | 6 | 9 |
| Infection | 4 | 4 | -- |
| Central Neurologic (serious) | 5 | 4 | 5 |
| Drug – related | 5 | 3 | -- |
| Cardiac (serious) | 4 | 2 | 4 |
| Unknown | 22 | 16 | 9 |

\*Peripheral vestibular disease includes benign positional vertigo, vestibular neuronitis, Meniere disease.

\*\*Multi-sensory deficits is most common in the elderly. Commonly includes decreased vision, vestibular disease, peripheral neuropathy, poor perfusion of the brain, and orthopedic disorders.

**Pathophysiology:**

* *Benign positional vertigo:* 
  + Caused by abnormal movement of endolymph due to detached otoliths that settles in the most dependent portion of the inner ear, usually the posterior semicircular canal.
* *Meniere disease:*
  + Poorly understood pathophysiology
  + Most commonly thought to be due to increased endolymph pressure, leading to breaks in the intralabyrinthine membranes, and subsequently vertigo.
* *Vestibular neuronitis* (also known as viral neuronitis, acute vestibulopathy, epidemic vertigo, and acute labyrinthitis)
  + Caused by spontaneous mononeuropathy of the vestibular division of the eighth cranial nerve on one side. Mostly thought to be virally mediated.

**Clinical findings** (adapted from Table 2 of Moinar and McGee)

|  |  |  |
| --- | --- | --- |
| **Questions** | **Purpose** | **Answers: suggested diagnoses** |
| What do you mean by “dizzy?” | Further elicit historical points without prejudicing a particular diagnosis | Vertigo, light-headedness, disequilibrium |
| What brings on the dizziness? | Ascertain the type | Turning my head: vertigo  Rolling over in bed: vertigo  Standing up: presyncope  Stress: psychiatric  Walking: disequilibrium or multiple sensory deficit  Darkness or uneven ground: disequilibrium or multiple sensory deficit |
| How long does the dizziness last? | Helpful to subtyping vertigo | Less than 1 min: BPPV  Hours: Meniere  Days: Vestibular neuritis |
| What other symptoms have you had? | Helpful to evaluating for serious causes and subtyping vertigo | Other neurologic: central vestibular disease  Hearing loss/tinnitus: Meniere disease  Palpitations: cardiac arrhythmia  Fever: infection  Viral prodrome: vestibular neuronitis |
| Any recent toxic exposures or medication changes? | Helpful in evaluating for precipitating causes | Gas heat in cold winter months: carbon monoxide poisoning  Recent medication changes: untoward effect of medication |

**Special Maneuvers (see Appendix below)**

* *aDix Hallpike maneuver:* designed to reproduce **peripheral vertigo**
  + Positive test must have 3 components
    - Reproduces the patient’s vertigo and nystagmus
    - Has a latency period of several seconds to a minute before the vertigo and nystagmus are provoked
    - The vertigo and nystagmus resolve in <1 minute.
* *bSpine roll:* designed to detect lateral or horizontal canalithiasis
* *cHead impulse test:* designed to **distinguish central and peripheral causes**
  + ONLY perform in patients with sustained vertigo!
  + Peripheral disease is suspected when patient has abnormal test results
* **Other tests:**
  + *Orthostatic hypotension:* check for anemia, electrolytes, and renal function
  + *Meniere:* audiometry, syphilis testing
  + *Suspected posterior fossa disease:* truncal ataxia, skew deviation, saccadic pursuit, and direction-changing nystagmus, MRI

**Treatment**

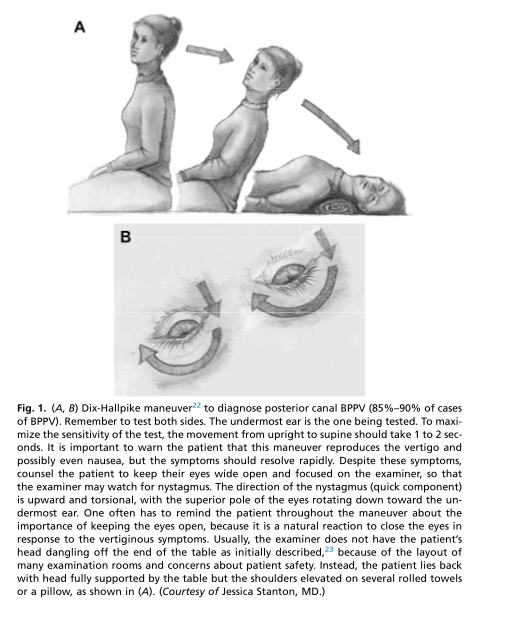
* *BPPV:*
  + dEpley maneuver: designed to move the patient through sequential positions to rid the affected canal of the abnormal otoliths, move them back into the saccule. Effective to resolve symptoms in 1 week for 74% of patients treated.
    - Indicated in patients with positional vertigo and a positive Dix-Hallpike test. Not shown to be very effective with positive spine roll.
  + Self-administered canalith repositioning can be done at home with instructions (can refer to youtube)
  + Medications: literature strongly advises against antihistamines and benzodiazepines because they increase rates of falls and urinary retention in older adults.
    - **Meclizine:** H1 antagonist. Start at 25mg, and can go up to 100mg daily in divided doses.
* *Meniere disease:*
  + Referral to audiologist or otolaryngologist as hearing loss may worsen over time.
  + Vestibular rehabilitation: physical therapy that allows patient to improve central nervous system compensation.
  + Sodium restriction
  + Thiazide diuretics
* *Vestibular neuronitis:*
  + Difficult to treat, but usually resolves with time. Steroids did not show to help significantly with symptoms.
* *Light-headedness:* usually involves mediation adjustment or treatment of underlying cause.
* *Multiple sensory deficits:* can use physical therapy, home evaluation for environment changes as well giving assistive devices to patients can help.

**Prognosis:**

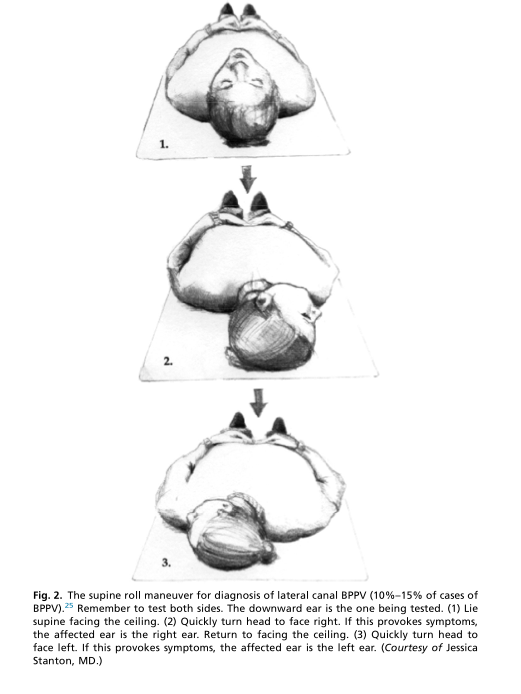
* Follow up in 1 month. Most dizziness will resolve in 1 month.
* For BPPV, if symptoms do not resolve, can repeat Epley maneuver again.
* Must consider patient’s safety! Evaluate whether their job situation is safe, and see if there is family support for the patient.

**Appendix for Dizziness:**

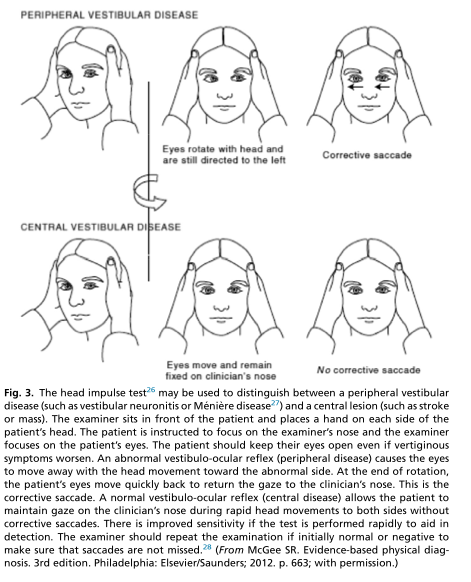
(a)



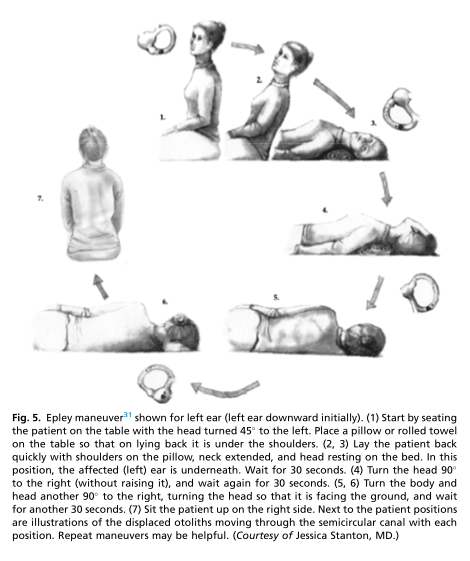
(b)



(c)



(d)



Reference:

Molnar, A. and McGee, S. (2014). “Diagnosing and Treating Dizziness.” *Medical Clinics of North America*. 98:583-596.