Dizziness is VERY Common

- Dizziness is the chief complaint in 2.5% of all primary care visits.
- 30% lifetime prevalence of dizziness requiring medical attention
- Older people have more dizzy problems

Estimated percentage of ambulatory care patients in whom dizziness was a primary complaint (Sloane, et al., 1989).

Dizziness is an imprecise term

- Vertigo (sensation of motion)
- Lightheaded
- Ataxia
- Confusion

Because “Dizziness” is an imprecise term, a major role of the clinician is to sort patients.

Diagnostic Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otological</td>
<td>Meniere’s disease</td>
</tr>
<tr>
<td>Neurological</td>
<td>Migraine</td>
</tr>
<tr>
<td>Medical</td>
<td>Low BP</td>
</tr>
<tr>
<td>Psychological</td>
<td>Anxiety</td>
</tr>
<tr>
<td>Undiagnosed</td>
<td>Post-traumatic vertigo</td>
</tr>
</tbody>
</table>

Question

- Which category is associated with the most dizziness?
  1. Inner ear disorders
  2. CNS problems (e.g. Stroke)
  3. Blood pressure
  4. Psychological problems
  5. Undiagnosed

Answer 1

- It depends on your specialty
  1. Inner ear disorders (about 50% of ENT, 30% in general)
  2. CNS (about 25% of neurology, 5% everyone else)
  3. Blood pressure (30% of family practice, 5% everyone else)
  4. Psychological problems (15% to 50%)
  5. Undiagnosed (up to 50%)
Tertiary care heuristics: multiple causes of dizziness, overlapping signs/symptoms

- Complete history (questionnaire)
- Examination (otological, neurological, some medical, some psychiatry)
- Pick off easy ones – BPPV, Menieres, Orthostatic hpn.
- Have a plan to deal with the rest

Otologic Dizziness

- BPPV (benign paroxysmal positional vertigo) -- about 50% of otologic, 20% all
- Meniere’s disease -- about 20%
- Vestibular neuritis and related conditions (15%)
- Bilateral vestibular loss (about 1%)
- Fistula and related conditions

Positional Vertigo

The most common syndrome

- Benign Paroxysmal Positional Vertigo (BPPV)
  - Orthostatic hypotension
  - Central positional nystagmus
  - Low CSF pressure syndrome

Benign Paroxysmal Positional Vertigo (BPPV)

61 Y/O man slipped on wet floor. LOC for 20 minutes.
In ER, unable to sit up because of dizziness
Hallpike Maneuver: Positive

Benign Paroxysmal Positional Vertigo (BPPV)

- 20% of all vertigo
- Brief and strong
- Provoked by change of head position (Bed spins)
- Definitively diagnosed by Hallpike test

BPPV Mechanism: Utricular debris migrates to posterior canal

New: Mechanism of Latency and fatigue
- Hydrodynamic advantage is less in ampulla
- Margination -- fatigue


Epley Maneuver for BPPV
- Move debris out of posterior canal by gravity
- Each position for 30 seconds.
- Three repetitions
- 75-90% cure rate

Epley Maneuver Demonstration

New: Home Epley Maneuver
- Each position for 30 seconds.
- Three repetitions
- 95% cure in one week
- Need to know side

Radke et al, 1999; Furman and Hain, 2004

Educational Material
- We make heavy use of a practice DVD
- Demonstrates the Home-Epley

Results of Epley Maneuver

- There are many good controlled studies of Epley maneuver (New)
- Most authors report 75% cure from a single treatment, and >95% from repeated treatments (or Home Epley).
- The Epley maneuver is the treatment of choice for classic BPPV.


BPPV Variants

Ewald’s first law: eye movements occur in the plane of the canal being stimulated. Three canals → three vectors.

- Posterior canal
- Lateral canal
- Anterior canal

Direction Changing Horizontal Positional Nystagmus (DCPN) is seen in lateral canal BPPV

Lateral Canal (5%)

- Horizontal DCPN

Diagnosis of Lateral Canal BPPV

- Debris deposited in lateral canal
- Direction changing Horizontal nystagmus
- Can be on either side of loop
- Geotropic or Ageotropic, depending on starting location of dirigible debris.

Lateral Canal – BPPV Treatment

Roll debris out

HC – BPPV Treatment

- Log Roll: 230° rotation around longitudinal axis at 90° increments in the recumbent position. Illustrated for canalithiasis with HC.
- Performed by clinician or self treatment.
- 3 cycles of exercise. If self treatment, 3 times per day.
- Outcome: 71% cured within 1 treatment (Nuti, et al., 1998).

There are no controlled studies of HC treatment
Unilateral Vestibular Loss
Recent Advances

- Vestibular Neuritis/Labyrinthitis -- steroids
- Meniere’s disease (unusual) – low dose gentamicin
- Acoustic Neuroma (very rare) – gamma knife

Vestibular Neuritis: Case
56 y/o woman began to become dizzy after lunch. Dizziness increased over hours, and consisted of a spinning “merri-go-round” sensation, combined with unsteadiness.

Vomiting began 2 hours later, and she was brought by family members to the ER.


Vestibular Neuritis

- Viral infection of vestibular nerve – superior division mainly
- HSV-1 ?
- Disability typically lasts 2 weeks
- New: Course of Steroids
- Symptomatic Rx (meclizine, phenergan, benzodiazepine)
- These patients can still get BPPV!

Vestibular Spontaneous Nystagmus
seen with video Frenzel Goggles (about 1 week later)

Aside for how to examine for SN
Should indicate beating direction and amount – weak, moderate, strong.

- Frenzel Goggles (best)
- Ophthalmoscope (good but backwards)
- Gaze-evoked nystagmus (pretty good)

Meniere’s Disease

- Meniere’s disease
  – Uncommon disorder (1/2000)
  – Hearing loss, tinnitus, and vertigo
  – Chronic disease with high morbidity

Hydrops

Stroop M and others. Methylprednisolone, valacyclovir or the combination for vestibular neuritis. NEJM 354, July 22, 2004. 354-361
Meniere’s disease
Old treatment paradigms

- Numerous placebo treatments (e.g. vitamins, even some placebo surgery)
- Salt restriction and/or diuretic -- ineffective
- Vestibular suppressants for dizziness – after the event treatments
- Destroy inner ear for severe cases
  - 95% effective but often results in deafness

New treatment for Menieres

Low-dose Gentamicin

- 1-2 Injections into middle ear
- 80% effective
- No side effects (well almost)
- Very rapid adoption in US


Low-dose gentamicin is a remarkable advance

- Better quality of life for Meniere’s sufferer’s
- Less or no medication
- No damage to ear from treatment itself

Superior Canal Dehiscence
New appreciation for disease

- Retired plastic surgeon, complained that when he went to church, when organ was playing, certain notes made him stagger.
- Other parishioners suspected he was drunk.

Tullio

- During hearing testing, certain tones reliably induced dizziness and a mixed vertical/torsional nystagmus.
- This “Tullio’s phenomenon” could be easily reproduced at bedside


Superior Canal Dehiscence
Pressure in ear causes endolymph movement in superior canal

Tullio
Nystagmus with loud noise
Abnormal VEMP/T-bone CT (ask for direct coronals)
Valsalva – harder to see but far more reliable than Tullio

Electrical phenomena causing Dizziness – new appreciation and improved treatment
- Quick spins (1-2 seconds) – Vestibular paroxysmia.
- Causes –
  - Idiopathic (? Neuralgia, microvascular compression)
  - Vestibular nerve irritation/surgery (Moon and Hain, 2005)
- Oxcarbamazine (Trileptal) may stop them

Migraine & Vertigo: Prevalence
- Migraine:
  - 10% of U.S. population has Migraine†
  - 20-30% of women of childbearing age
- Vertigo: 35% of migraine population.*
- Migraine + vertigo (MAV):
  - ~ 3.5% of U.S. pop.
  - ~ 10% of women of childbearing age

Diagnosis of MAV
Clinical judgment
- Headaches and dizziness
- Lack of alternative explanation (normal otological exam, neurological exam, CT)
- High index of suspicion in women of childbearing age. Perimenstrual pattern.
- Family history in 50%
- Response to prophylactic medication or a triptan

Treatment of MAV
- Diet (avoid migraine triggers – basically things that taste good)
- Prophylactic medications
  - Topiramate 25 to 50 mg daily
  - Verapamil 120 mg SR
  - Propranolol and other beta-blockers
  - Tricycles (nortriptyline, amitriptyline)
  - Depakote

Question #3
- A 30 year old woman presents to your office with dizziness and headaches. You should:
  1. Refer to your local friendly neurologist
  2. Examine her, and if normal attempt migraine prophylactic treatment
  3. Get an MRI scan to be sure she doesn’t have a brain tumor.

† Lipton and Stewart 1993; Stewart et al, 1994

Answer

- 3.5% of the population has migraine and dizziness. 10% has migraines.
- There are not enough neurologists to treat all of these patients.
- It is unreasonable to perform MRI on every patient with headaches (10% of population has migraine headaches)
- Examine her, and if normal, attempt migraine prophylactic treatment

Don’t just treat and leave out the exam part – a cautionary tale

- The patient whose MRI is shown presented with dizziness, unsteadiness and headaches. His examination showed a modest positional nystagmus, as well as papilledema.
- After the papilledema was seen, he had an MRI done and was admitted immediately for neurosurgery.
- This is rare, but still you have to look.

Dizzy Update 2007
Recent Advances

- BPPV – Home treatments
- Vestibular Neuritis -- steroids
- Meniere’s disease – low dose gentamicin
- Superior Canal Dehiscence – common cause of sound sensitivity
- Quick spins – electrical type dizziness
- Migraine – topiramate treatment

More details


www.dizziness-and-balance.com