Benign Paroxysmal Positional Vertigo

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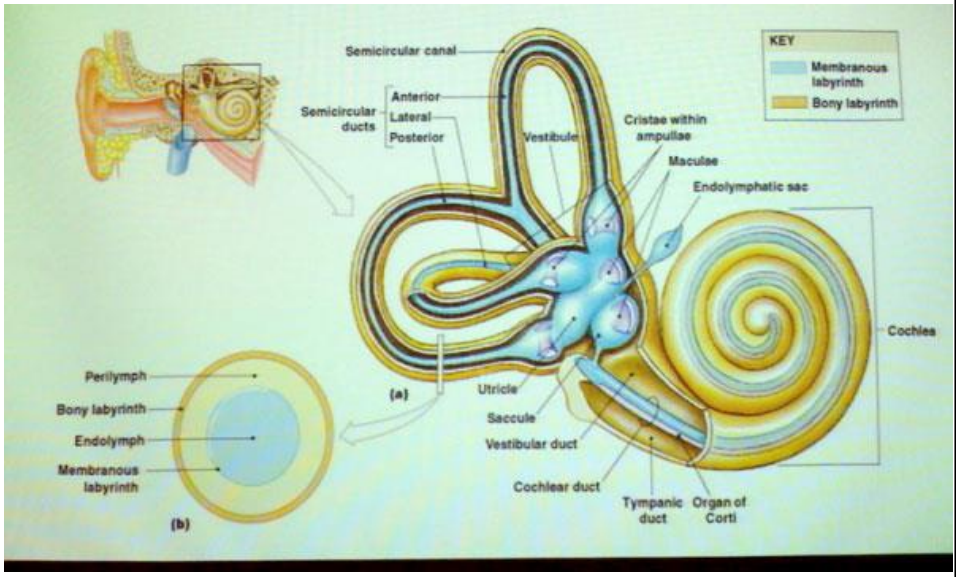
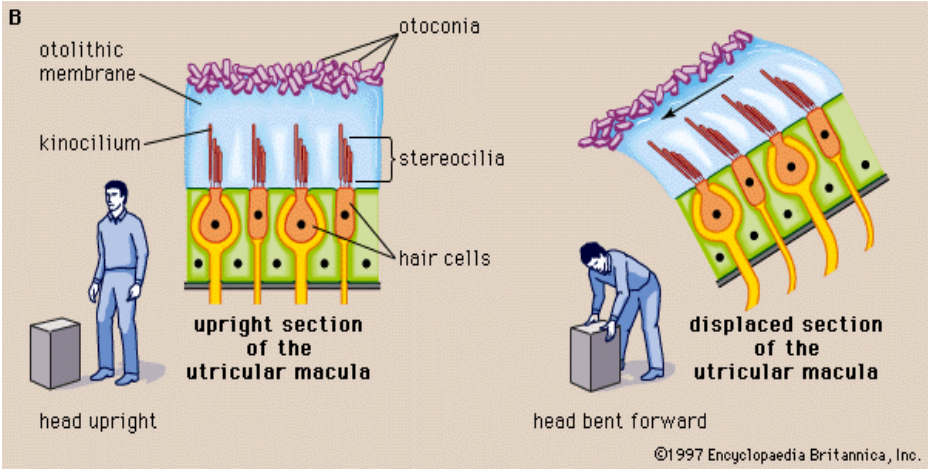
Recap



Recap



Benign Paroxysmal Positional Vertigo

- Most common cause of vertigo (#1 cause of dizziness in patients over 60 years old).
- Experienced by at least17% of dizzy clinic patients (up to 40% in some clinics)
- Incidence increases with age

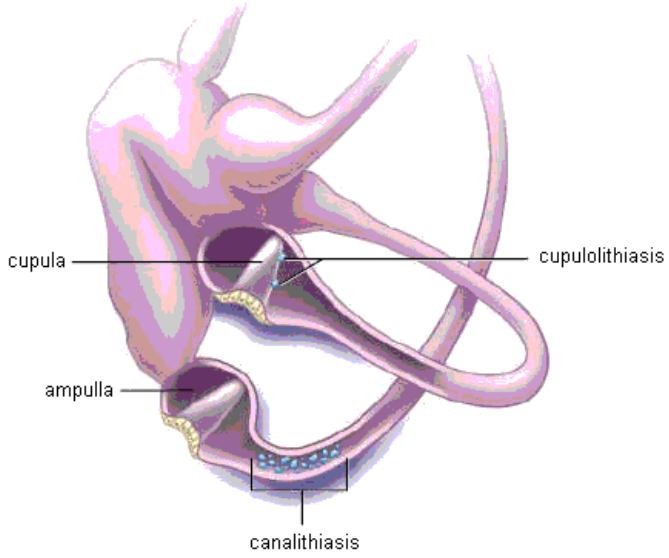
– 50% of people >70 years

– Bilateral in 15% - 20% of Patients (Bilateral or multi-canal Most common post head-trauma).

- Caused by presence of Otoconia in the semicircular Canals

- Greater incidence in women than men (1.6:1) Migraine related.

Mechanism: Canalithiasis and Cupuloithasis



Mechanisms of BPPV

	Canalithiasis	Cupulithiasis
Where are otoconia	Free floating- causing mvt of endolymph and cupula	Attached to cupula ↑ density making it gravity sensitive
Onset (nystagmus and symptoms)	10-30 seconds Subjective vertigo	Immediate Subjective vertigo
Duration	30-60s	> 60 s or as long as in position (although central adaptation may occur)
Habituation	Yes	Less so
Incidence	More common	Relatively uncommon

Video 1 & 2

https://www.youtube.com/watch?v=mXmlFPJyvZA

https://www.youtube.com/watch?v=Xx5dUvtUGbE

Canal involvement

- Identification of canal involvement depends on the direction of nystagmus.
- Initially BPPV was only believed to involve the posterior SCC (up beating torsional nystagmus).
- Anterior and horizontal canals can be involved as well.

Symptoms

- Diagnosed by positive finding on Dix-Hallpike positioning maneuver
- Key symptoms:
- Latent onset (1-30 seconds in provoking position) of rotatory-torsional vertical nystagmus (posterior and anterior canal) or horizontal (horizontal canal) nystagmus with subjective vertigo
- Short duration (posterior canal typically lasts 10-20 seconds; horizontal canal may last up to 1 minute)
- Nausea
- Patient may describe specific movements that cause attack
- Rolling in bed
- Lying down/ Getting out of bed
- Looking up
- Bending down
- Mild postural instability between attacks (fall risk is high)

BPPV

- Causes
  - 49% Idiopathic (i.e. cause unknown)
  - 18% Trauma
  - 18 % Menieres /migraine/MS
  - 15 % Vestibular neuritis
- Involvement of canal
  - Posterior: 94% (Honrubia cited in White)
  - Horizontal: ~3-12% (Korres, Hornibrook)
  - Anterior: ~2% (rarest) (Korres et al)

Diagnosis

- May trouble patient for years with periods of remission and exacerbation
- May last weeks to months with spontaneous recovery
- Highly responsive to treatment maneuvers
- Semont Liberatory Maneuver
- Gans Repositioning Maneuver
- Casani Maneuver
- Appaiani Maneuver
- Horizontal Hybrid Maneuver
- BBQ Roll Maneuver

Diagnosis

- It is important that the patient understand what to expect.
- Instruct pt. to keep eyes open and stay in the provoking position.
- Staying in the provoking position will help in reducing the symptoms.
- Start with the unaffected (based on the case history) side to minimize nausea.
- Should be performed in room light but with the use of Frenzel lenses or of infrared camera system to prevent fixation.

Tests for BPPV

- Need to get canal into orientation so that otoconia can move
- Depends on canal…
- Posterior and anterior

–Dix Hallpike, side lying, (Rose test-anterior)

- Horizontal canal

–Horizontal roll

- Normally we start with DH/ SL, then move to horizontal roll and then rose test

Nystagmus

- True +ve: presence of nystagmus +/-vertigo
- Look for:

– Nystagmus **direction (canal dependent)**
– Time to onset (**latency) (mechanism dependent)**
– **Duration (mechanism dependent)**
– **Habituation (whether it diminishes on repeat testing- (mechanism dependent)**
– **Reversal in direction on rising**

- Canalithiasis:

– otoconiacauses endolymph movement→cupuladeflection→triggers VOR and compensatory quick eye movement

- Cupulolithiasis

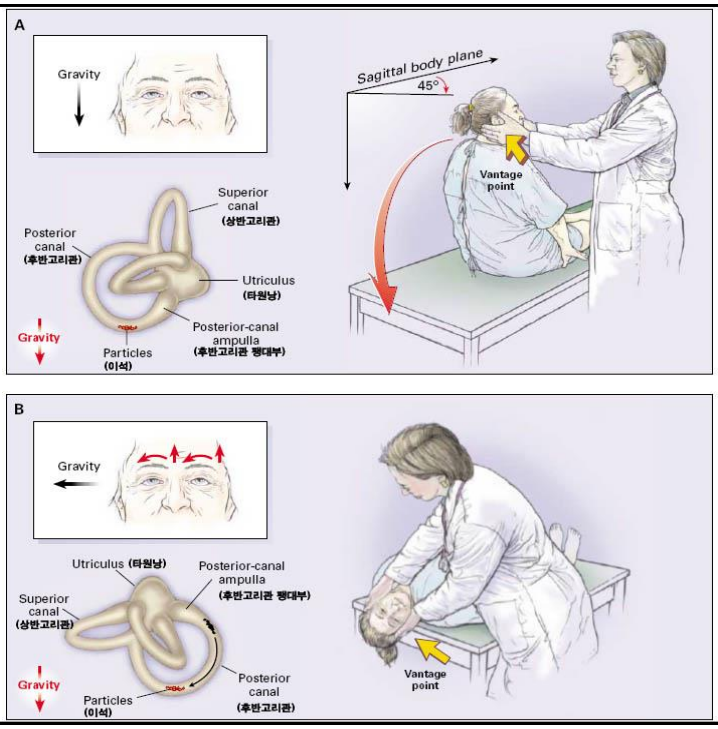
–Otoconia attached to cupula and cause sustained cupula deflection as they ‘weigh it down’

Nystagmus direction

- Posterior canal:
  - Torsional to side involved + upbeat
- Anterior canal:
  - Torsional to side involved + down beat
- Horizontal canal: (nyst both sides in unilateral)
  - Horizontal geotropic (canalithiasis)
  - Horizontal apogeotropic(cupulolithiasis)

Posterior Canal BPPV Nystagmus

- Torsional to side involved and up beat
- Usually with subjective vertigo/nausea
- Latency: 5-30 s
- Duration:
  - 5-45 s (canalithiasis)
  - 60 s + cupuloithiasis
- Reverses direction on rising
- Habituates on repeat testing (canalithiasis)



Video 3, 4, 5 & 6

https://www.youtube.com/watch?v=vRpwf2ml3SU

https://www.youtube.com/watch?v=rtS2muvjFbM

https://www.youtube.com/watch?v=g_7gQF8XMCY

https://www.youtube.com/watch?v=gYWQdZSA4FE

Absolute Contra Indications for Dix Hallpike: Humphriss 2003

- History of neck surgery
- Severe rheumatoid arthritis
- Carotid sinus syncope
- Recent neck trauma restricting movement
- Other cervical spine pathologies
- Recent eye surgery (within past 3 weeks)

Functional Neck Mobility Assessment: Humphriss

- If patient can sit for 30 s without pain or discomfort with
  - Neck torsion 45°: side lying test √
  - Neck torsion + extension: Dix Hallpike √

Other Points

- Instructions important
- Observe eyes for positional nystagmus
- Start with least suspect ear
- Ask the patient to lie down (show them the speed you want them to do this at)
- Sit on a chair to protect your back
- Support patients head and neck
- Use VNG video goggles/ Frenzels (w/o fixation)

– Video goggles allows recording of eye mvts

– Torsionalnystagmus may not be suppressed with fixation but horizontal and vertical can

Other Points 2

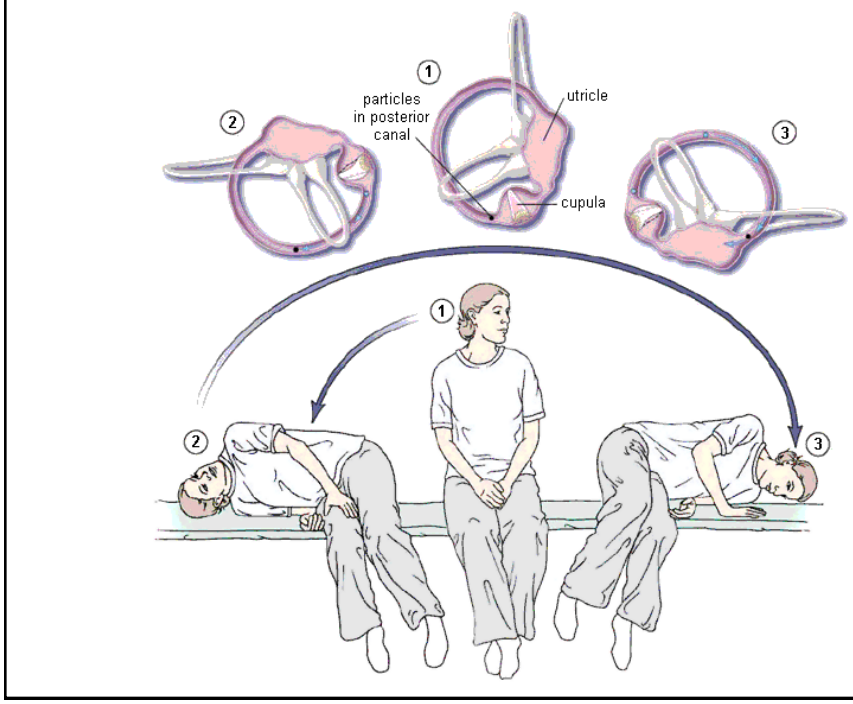
- Hold position for 60 seconds

-Occasionally central- type nystagmus comes on with a long latency

- Fairly quickly down and slowly up
- Hyperextension of neck not needed if couch can go back at 20° to horizontal
- Elderly– Two testers for safety– Modified supported DH with patients head flat on couch (Angeli et al RCT > 70 years)

Side Lying Test

When patient is unable to perform neck extension but is able to lie on their side



Other Canals: Much Rarer

- Anterior SCC BPPV
  - Torsional to side involved and down beat
- Horizontal SCC BPPV: nystagmus in both positions
  - Canalithiasis
    - Horizontal geotropic
    - Stronger response towards side
  - Cupuloithiasis
    - Horizontal ageotropic
    - Stronger response away from side of interest

Rose Test

- For anterior canal BPPV
- Head hanging position (without torsion)
- Larger neck extension obtained
- Horizontal angle of anterior canal relative to earth horizontal 20 ° larger in this position
- May trigger nystagmus when DH -ve

Horizontal Canal BPPV

- Roll manoeuvre
- Neck flexion at 30° as canal points at angle30° up from horizontal
- Should be +ve bilaterally
- Strong subjective vertigo
- Side of stronger response = side of interest for canalithiasis (opposite for cupuloithiasis)

Case history 1

- Age 44 male
- Short lived RV on turning to left in bed and bending down
- Imbalance on quick head movements
- Previous history of 2 days of RV and vomiting, then mvt evoked sx and tendency to veer to L for 6 weeks

Results

- DH right: -ve
- DH left: torsional upbeating nystagmus toward left after 10 seconds lasting for 30 seconds + vertigo

What is your diagnosis?

Diagnosis

- L sided BPPV of posterior canal presenting classically with nystagmus and vertigo
- Left sided vestibular event (e.g. neuritis)

What do you suggest for management?

Management

- Epley manoeuvre left
- Then VR if still other movement evoked imbalance

Case History: age 71

- Falling sensation when looking up/to right
- Dizziness on rolling onto right side in bed
- Past neck injury
  - Now osteoarthritis of neck: correlation between neck pain and dizziness
- Neck screen: extension and torsion → discomfort

What tests would you perform?

Vitamin D factors Associated with BPPV

- Read about ???

BPPV Finding

Canal:	Nystagmus:	Fast Phase:
Right Posterior	Torsional	Up & Right
Left Posterior	Torsional	Up & Left
Right Horizontal	Horizontal	Right (canalithiasis), Left (cupulolithiasis)
Left Horizontal	Horizontal	Left (canalithiasis), Right (cupulolithiasis)
Right Anterior	Torsional	Down & Right
Left Anterior	Torsional	Down & Left

Always Remember that
"… its only benign if you're not the one who has it!"