



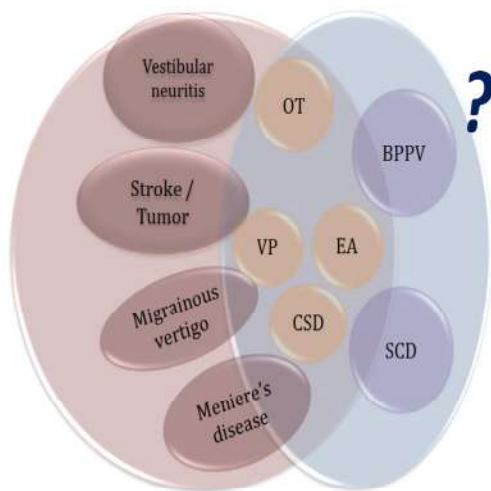
최 정 윤
서울의대

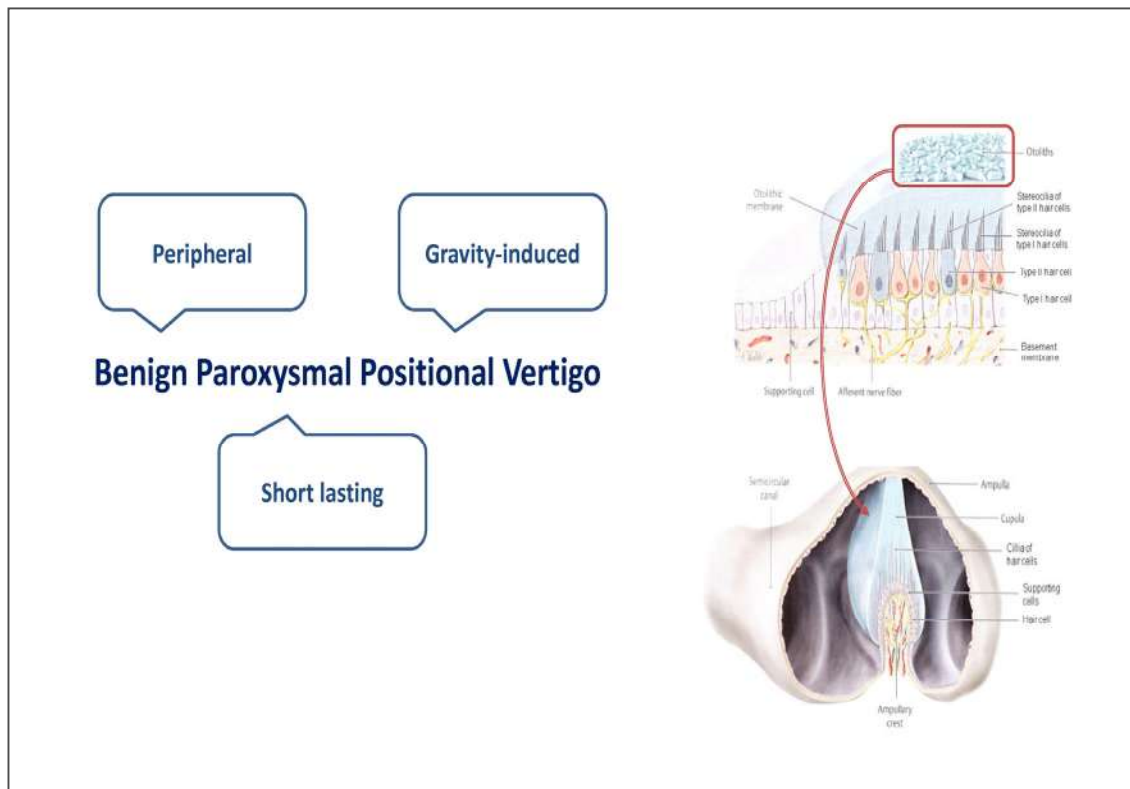
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- What is benign paroxysmal positional vertigo?
- Understanding the patterns of nystagmus in BPPV
- Typical subtypes of BPPV & their treatment
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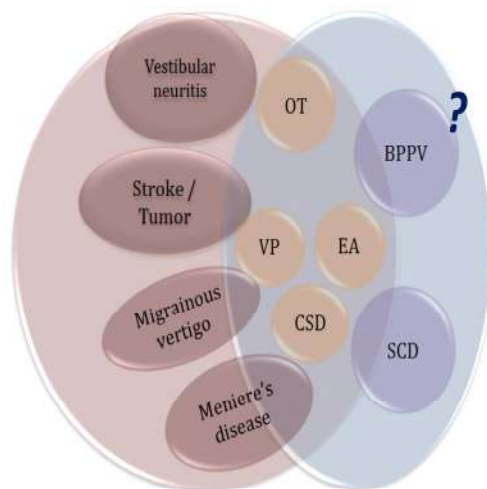
1. What is Benign Paroxysmal Positional Vertigo?

What is Benign Paroxysmal Positional Vertigo?

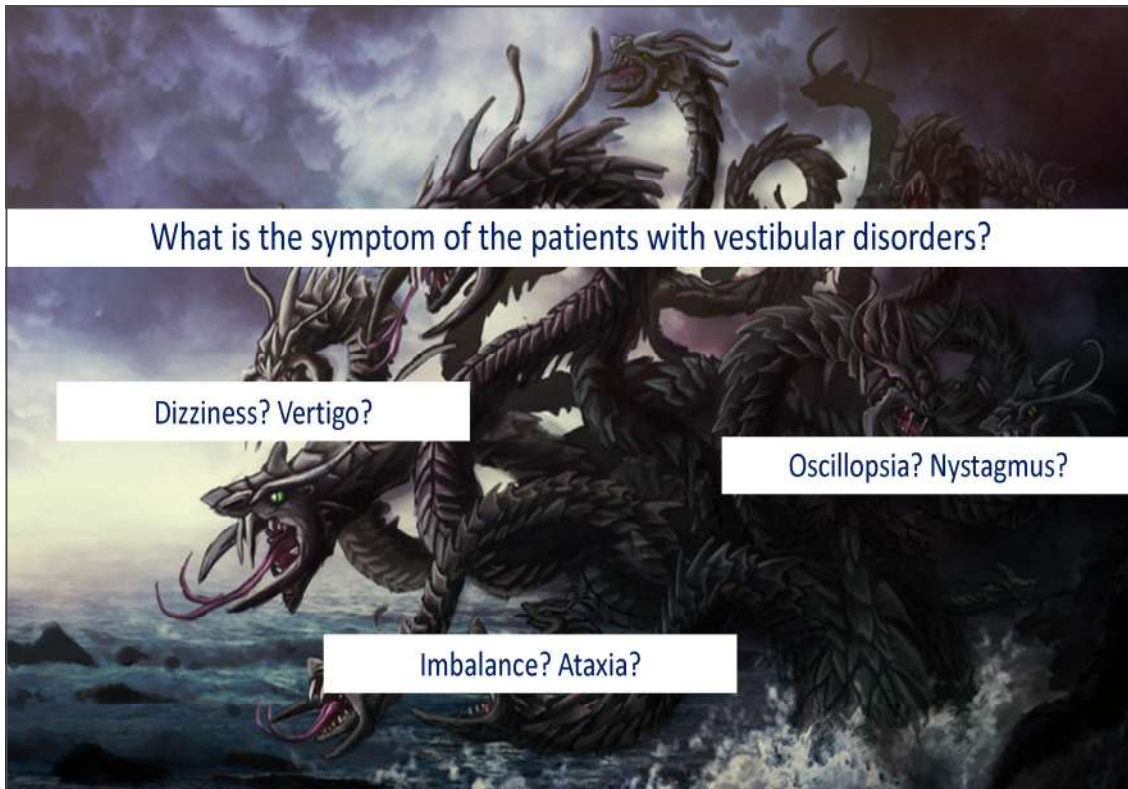




What is Benign Paroxysmal Positional Vertigo?



Detached otoconia syndrome?



Benign Paroxysmal Positional Vertigo: Epidemiology

- BPPV is the most frequent vestibular disorder.
- Its cumulative incidence in the general population amounts during lifetime to **10%**.
- The time course of BPPV is characterized by spontaneous remissions that occur typically after days to weeks and recurrences that occur in about 50% of patients.

von Brevern M, et al. 2007 JNNP

Imai T, et al. 2005 Neurology
Nunez R, et al. 2000 Otolaryn HNS

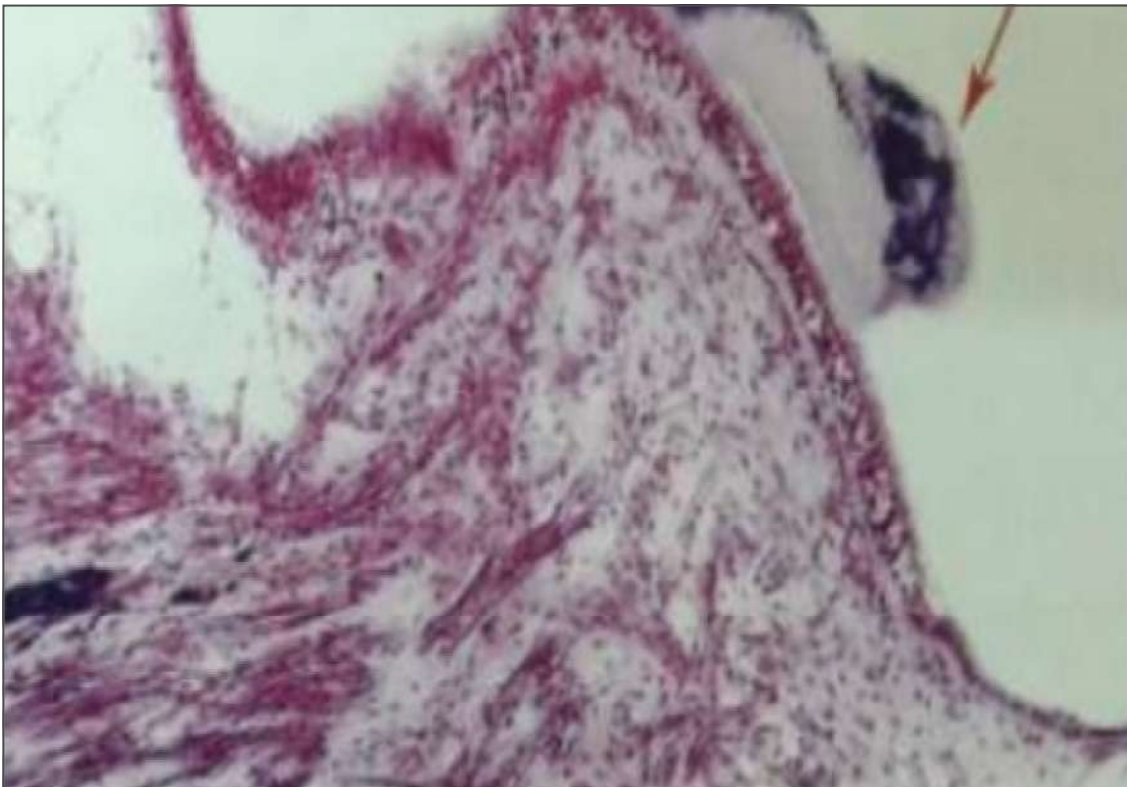
Benign Paroxysmal Positional Vertigo: Pathophysiology

- BPPV is usually thought to be caused by otoconia that are dislodged from the otolith macula beds and are trapped in a semicircular canal.
- Gravity causes them to move after changes of the head position in the plane of the affected canal (canalolithiasis).

Brandt T, et al. 1993 J Vest Res

- BPPV can be attributed to otoconia that are attached to the cupula of a semicircular canal and render it sensitive to gravity (cupulolithiasis).

Baloh R, et al. 1995 Neurology



Benign Paroxysmal Positional Vertigo: Pathophysiology

- **Particulate matter** (= maybe otoconia debris) has also been found in the posterior semicircular canal of subjects **without a history of BPPV**.

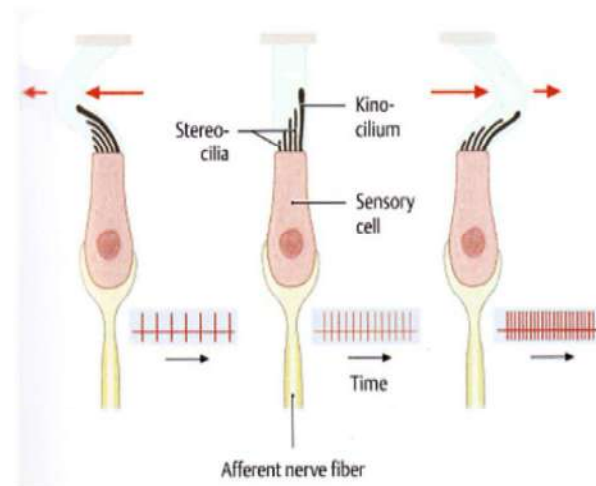
Kveton J, et al. 1994 Am J Oto

- This finding is not contradictory to the pathophysiology of BPPV.
- Physio-mathematical models:
 - the prerequisite for BPPV is a certain amount of otoconia within the affected semicircular canal reaching a “critical mass”.

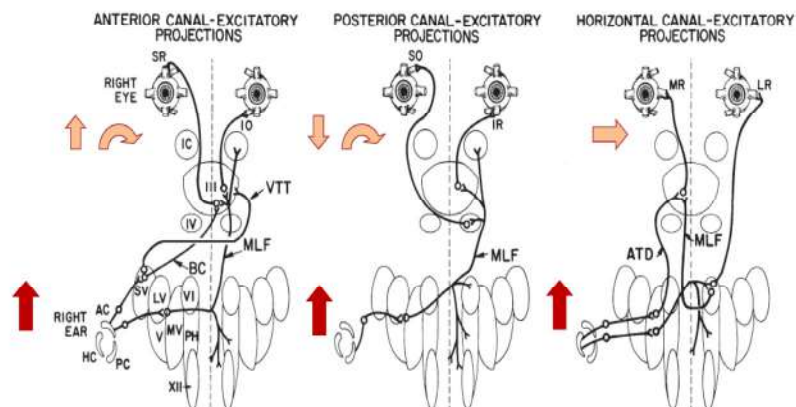
House M, et al. 1994 Aud Neurotol

2. Understanding the patterns of nystagmus in BPPV

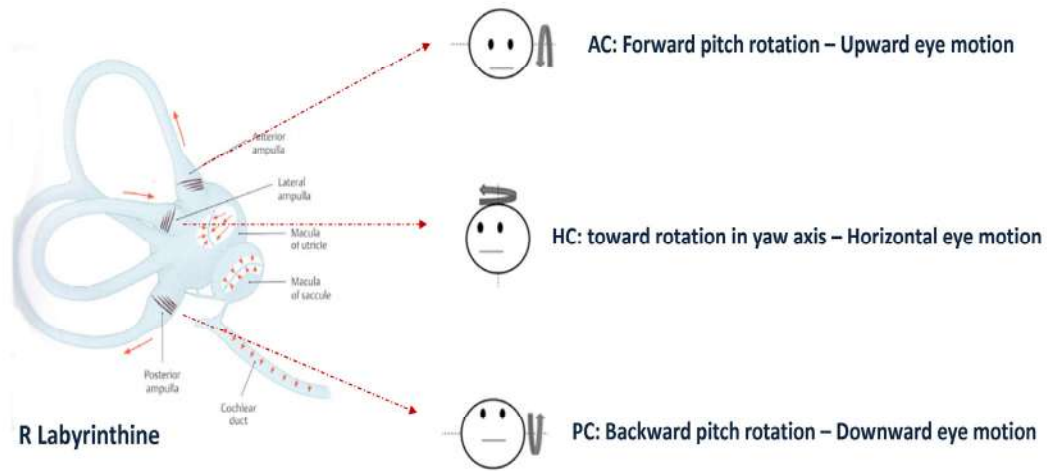
Hair cell in the cupula of the semicircular canals



Vestibulo-ocular reflex originated from three SCCs

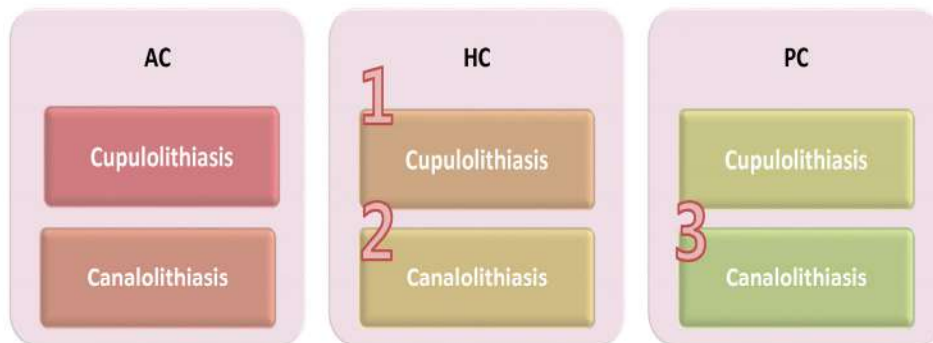


Topographical difference of the hair cell between the canals

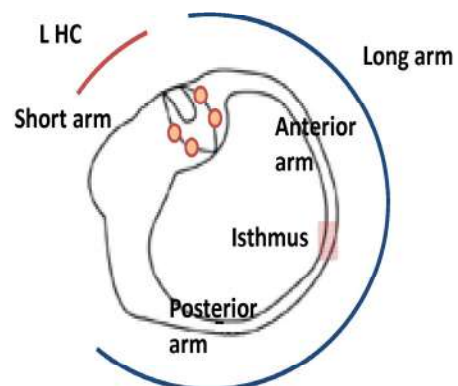
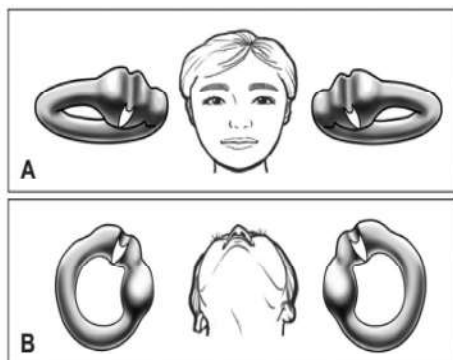


3. Typical subtypes of BPPV & their treatment

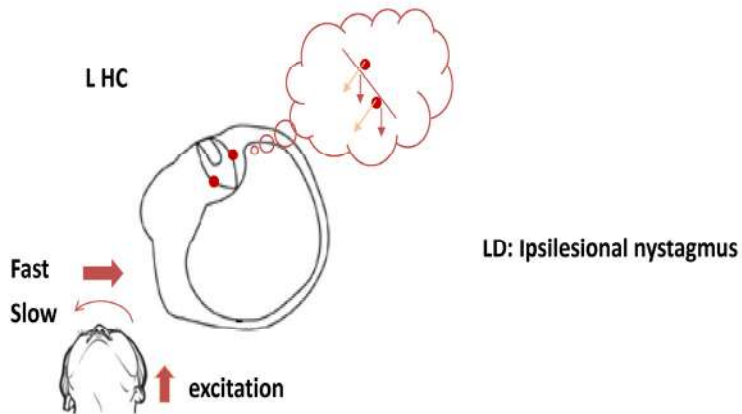
Theoretical subtypes of BPPV



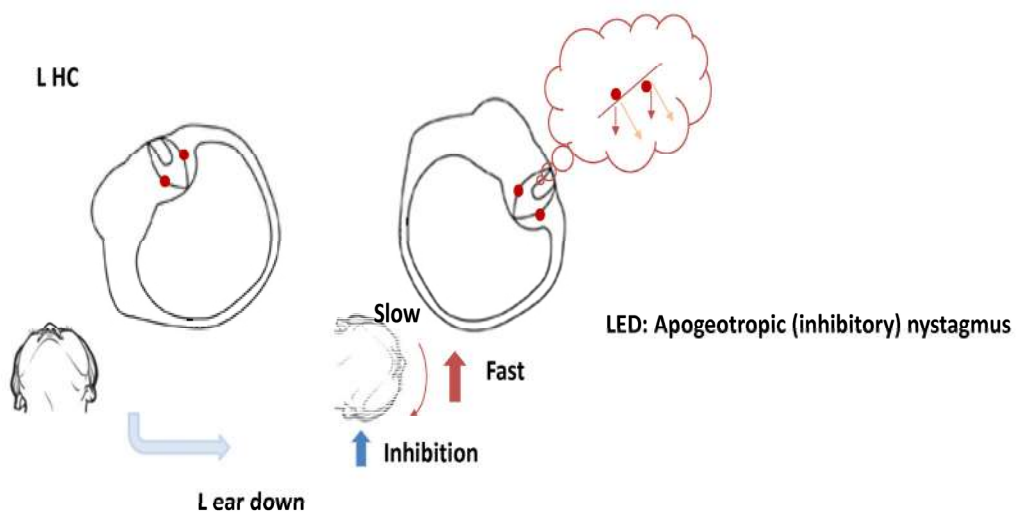
Horizontal canal BPPV - Cupulolithiasis



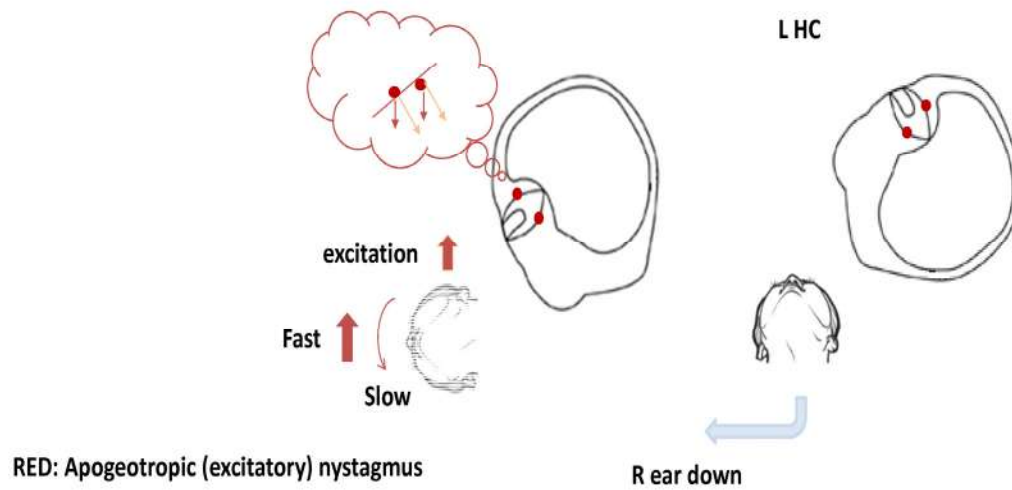
Horizontal canal BPPV - Cupulolithiasis



Horizontal canal BPPV - Cupulolithiasis

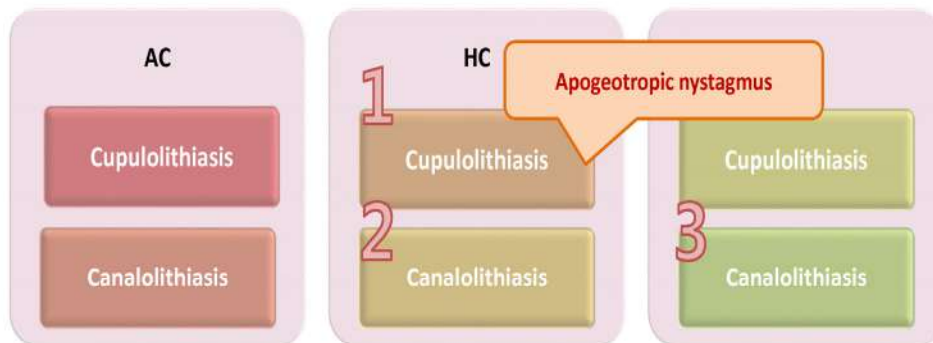


Horizontal canal BPPV - Cupulolithiasis



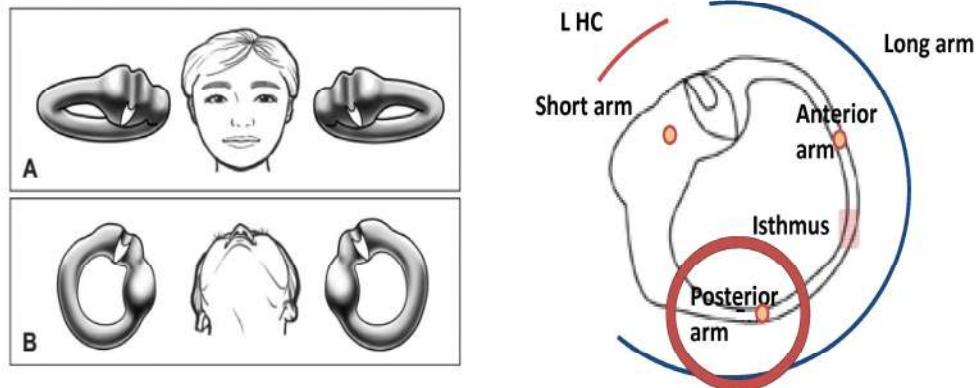
Video 3

Theoretical subtypes of BPPV

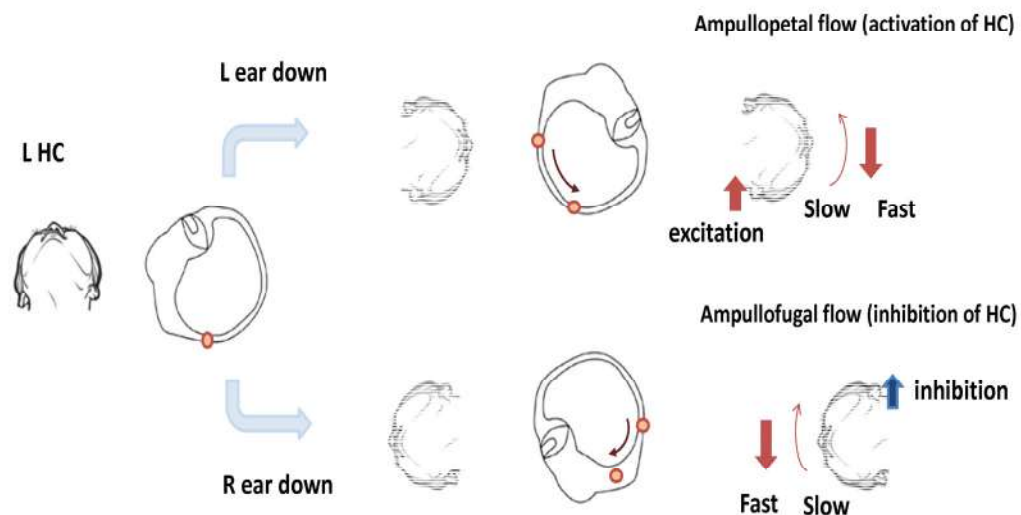


Video 8

Horizontal canal BPPV - Canalolithiasis

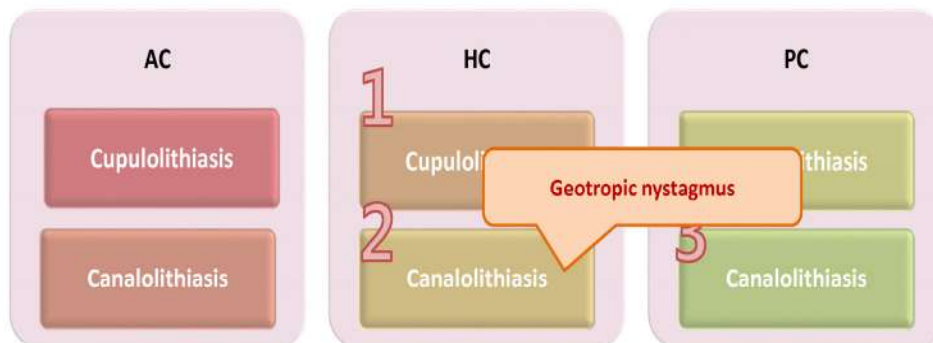


Horizontal canal BPPV - Canalolithiasis



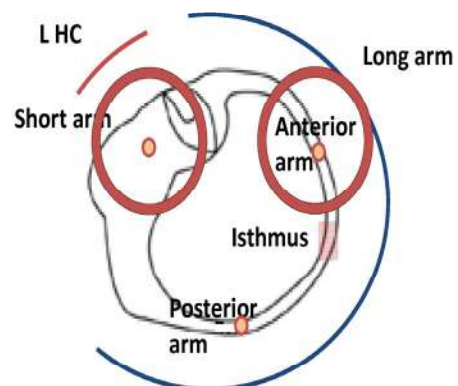
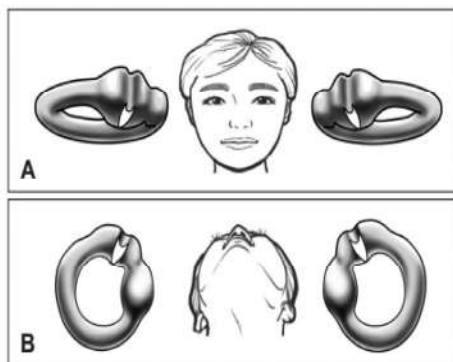
Video 2

Theoretical subtypes of BPPV

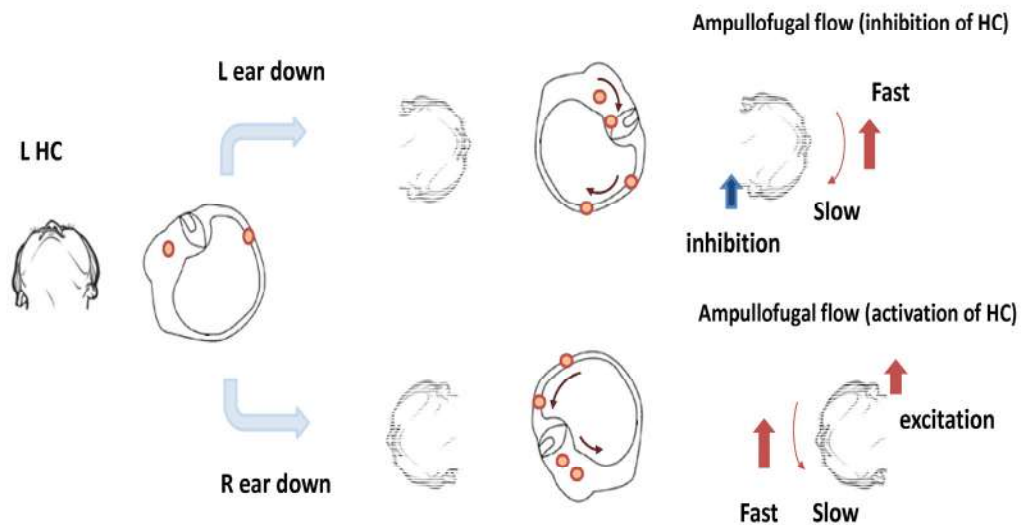


Video 7

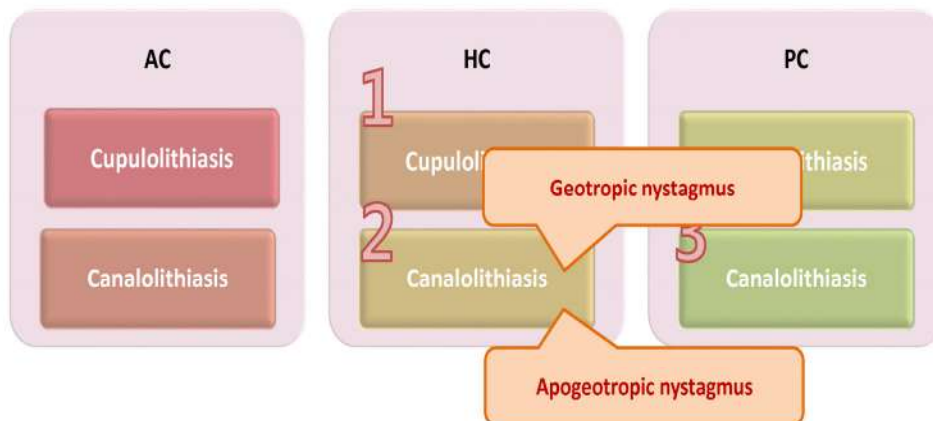
Horizontal canal BPPV - Canalolithiasis



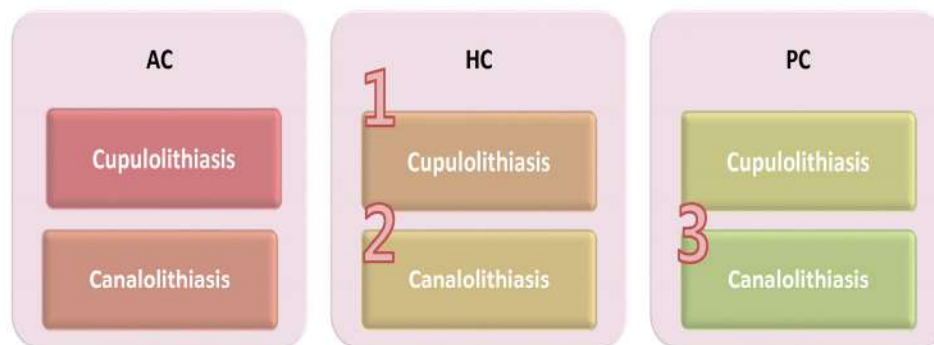
Horizontal canal BPPV - Canalolithiasis



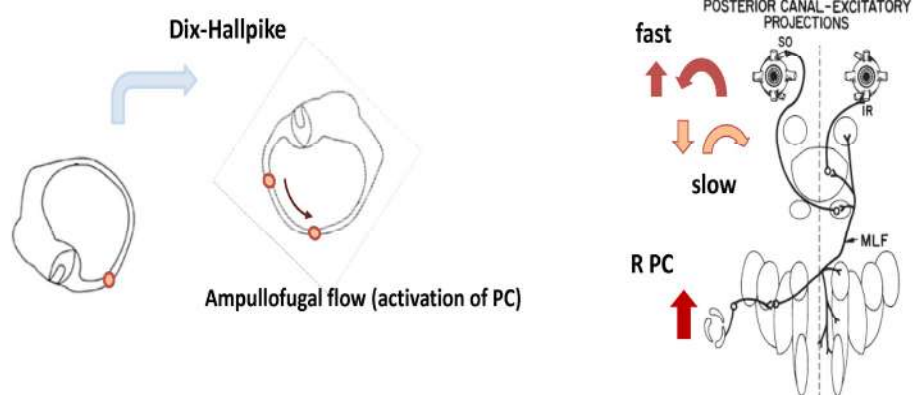
Theoretical subtypes of BPPV



Theoretical subtypes of BPPV

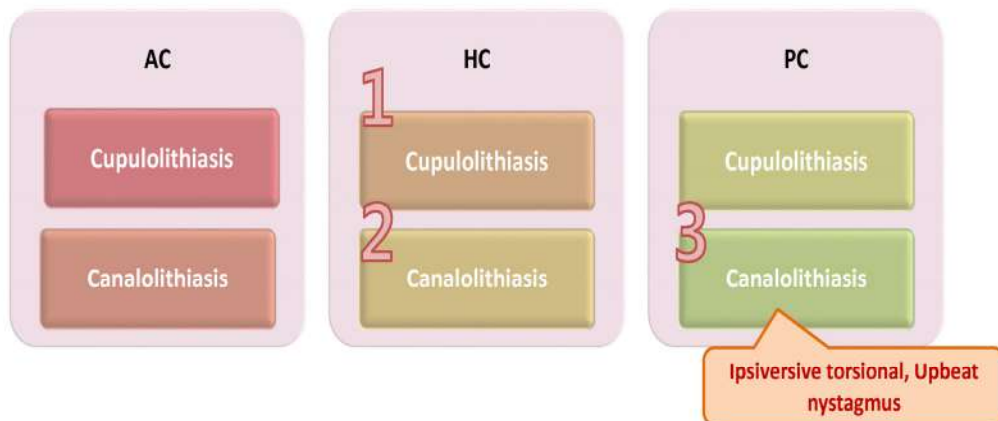


Posterior canal BPPV - Canalolithiasis



Video 1

Theoretical subtypes of BPPV



Video 4

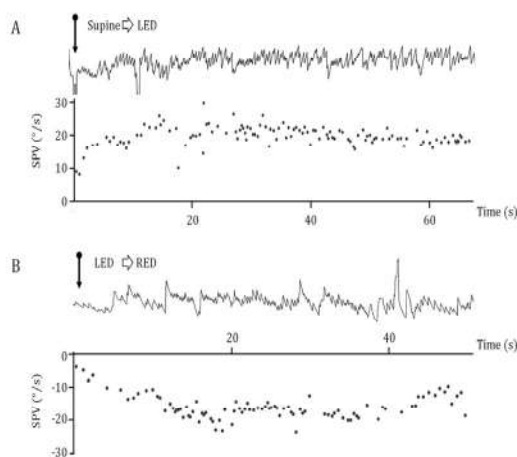
4. Light cupula syndrome



Persistent geotropic positional nystagmus after meningitis

Dizziness Center
Seoul National University Bundang Hospital

Persistent direction changing geotropic positional nystagmus



- Postulated mechanism:
- Alteration of specific gravity of the cupular or endolymph would cause horizontal nystagmus while supine head roll test. as shown in alcoholic positional nystagmus or positional nystagmus after heavy water consumption.

5. Diagnostic consideration in BPPV

Diagnosis

- The complete diagnosis includes the specification of the affected semicircular canal(s) and the pathophysiology (canalolithiasis or cupulolithiasis).
- The definite diagnosis of BPPV requires diagnostic positional maneuvers that lead to the observation of a canal-specific positional nystagmus.
- Clinical features essential for the diagnosis are the latency, direction, time course, and duration of positional nystagmus.
- Usually, further vestibular and auditory testing is indicated only when a pre-existing disorder of the inner ear (e.g. vestibular neuritis, Menière's disease) is suspected. Similarly, brain or ear imaging is not required in typical cases of BPPV.

Diagnosis

- Therapeutic positional maneuvers are highly effective for treatment of BPPV, particularly when canalolithiasis is present.
- Thus, if positional nystagmus disappears immediately after positional therapy, this strongly supports the diagnosis of BPPV.
- Such a favorable response to treatment is not mandatory for the diagnosis, and patients refractory to treatment do occur.
- However, repeated lack of response to therapy should generally prompt consideration of alternative diagnoses that may mimic BPPV closely.

Thanks for your attention