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Saturday, June 10, 2017

(Room 6)

16:30 - 17:25 WS #166: The Acutely Dizzy Patient

17:35 - 18:30 WS #178: The Acutely Dizzy Patient (Repeated)

The Acutely Dizzy Patient

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Rotorua Hospital
10th June 2017

Scope

- Targeted history
- Tips on examining the otoneurological system
- Acute vestibular syndrome
- Miscellaneous conditions
- ?Syncope

Background

- By age of 60, one third of the population has suffered a balance disorder
- Associated with falls & increased mortality

Patient 1: Mr PT

- 56 year old
- Presents with 2 day history of dizziness

- What else would you like to know?

Variable	Kroenke, et al 1992
	Primary care
Patients	100
Average age	46
Cause, percent	
Vertigo	54
BPPV	16
Vestibular neuronitis	4
Other vestibular	10
Central	10
Migraine	1
Nonspecific	10
Psychiatric disorder	16
Presyncope	6
Disequilibrium	2
Hyperventilation	1
Multicausal	13
Unknown	8

Traditional method

- Vertigo – Vestibular causes
- Pre-syncope – Cardiovascular
- Disequilibrium – Neurological causes
- Non-specific – Psychiatric/metabolic/drug effects

Triage, Timing & Triggers

- Triage (Red flags):
  - Abnormal vital signs
  - Altered mental state
  - Sudden, severe, sustained head or neck pain
  - Progressive hearing loss
  - Neurological symptoms: diplopia, focal symptoms, dysphagia
  - Cardiovascular symptoms: chest pain, dyspnoea, syncope

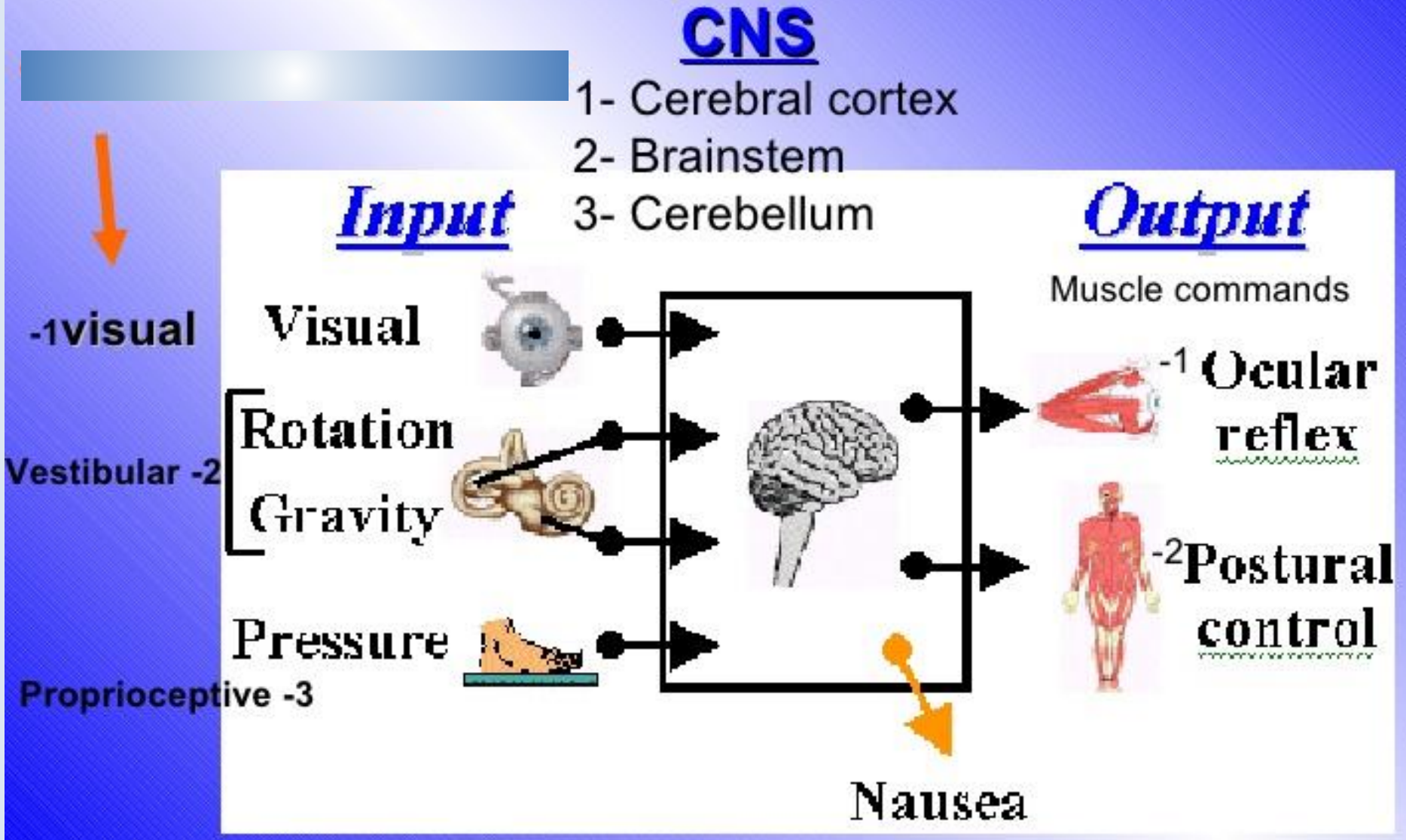
Timing

- Sudden onset/gradual
- Transient or episodic
- Continuous
- Duration
- Frequency
- Associated symptoms

Triggers

- Hanging up washing/looking at the sky/turning over in bed
- Changes in posture
- Relieving factors/avoidance behaviours

Dizziness is experienced when there is disconnect in the input-output pathway



Physical Examination

Pre-syncope

- Murmurs
- Orthostatic blood pressure changes
- (Note – not carotid bruit)

Vertigo

- Neurological deficit
- Detection of nystagmus
- Positional changes in symptoms

Disequilibrium

- Assessment of gait

Mr OT cont.

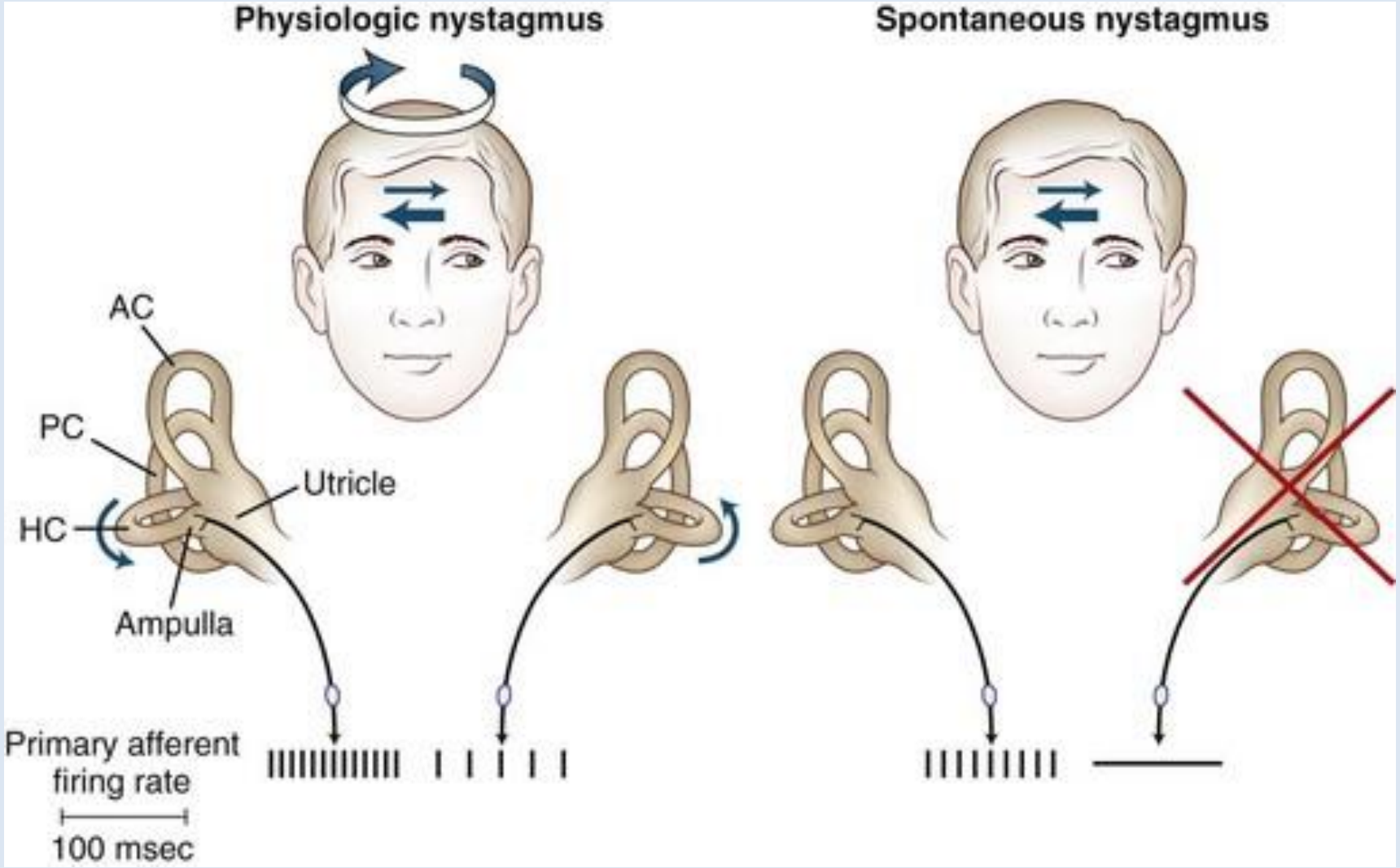
- Preceding RTI
- Gradual onset vertigo
- Now unsteady when walking and nauseous
- OE
  - Uni-directional nystagmus
  - No focal neurological deficit

Examination

Nystagmus

- Named for the fast phase
- Fast phase – reflex resetting mechanism bringing eyes back to original position
- Slow phase – movement induced by vestibular pathology
- Physiological nystagmus may be induced if gaze > 30 degrees off the midline

Labyrinth signals to central vestibular nuclei



Vestibular Neuritis Nystagmus

- Peripheral vestibular nystagmus
  - Dampened by visual fixation
  - Horizontal-rotatory
- The fast phase directed away from the affected ear
- Postural instability

HiNTS Test –

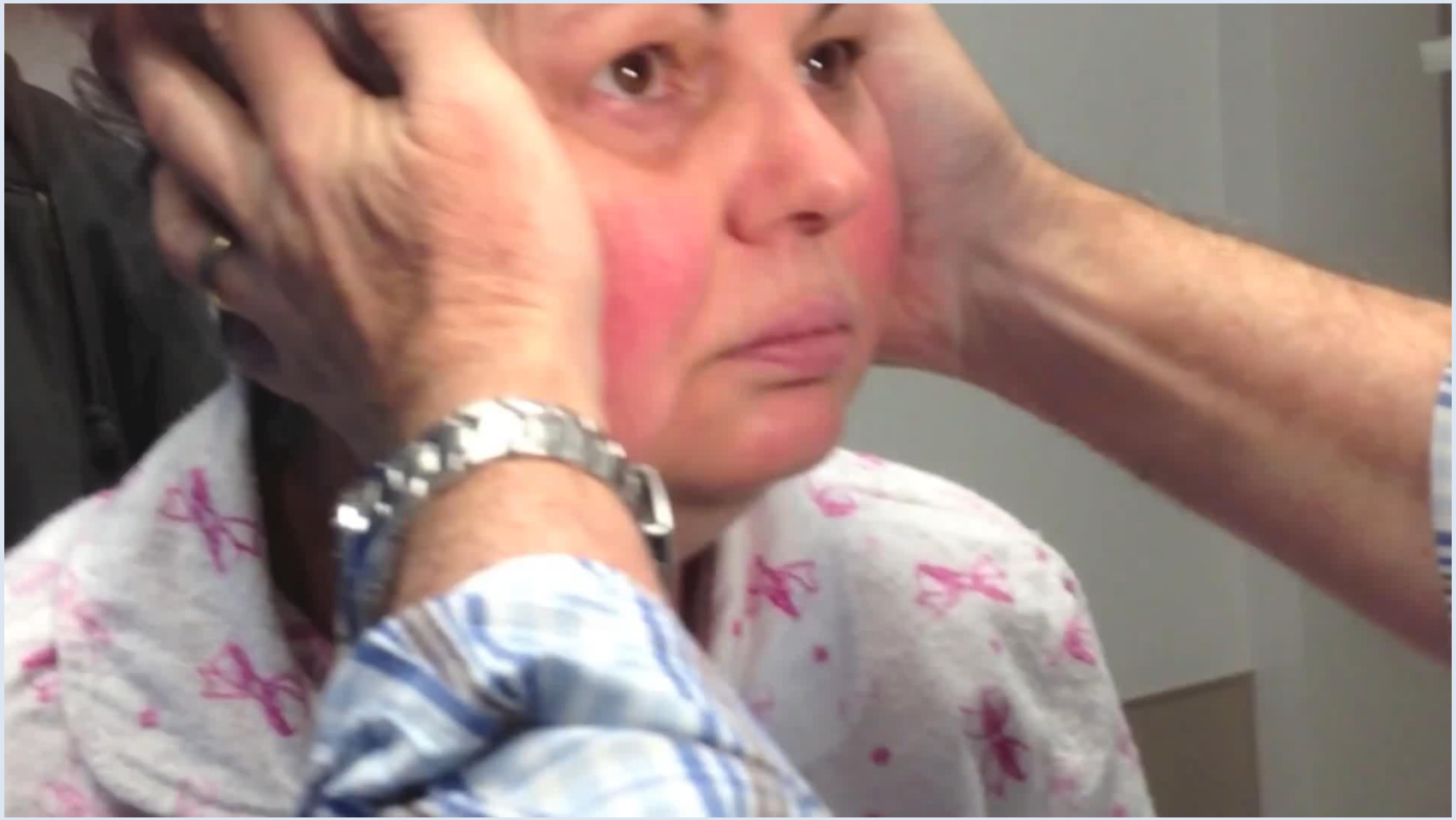
Distinguishing peripheral from central vertigo

- Ongoing vertigo and spontaneous nystagmus
- 3 components
  - Head impulse test
  - Nystagmus
  - Test of Skew

Head impulse test

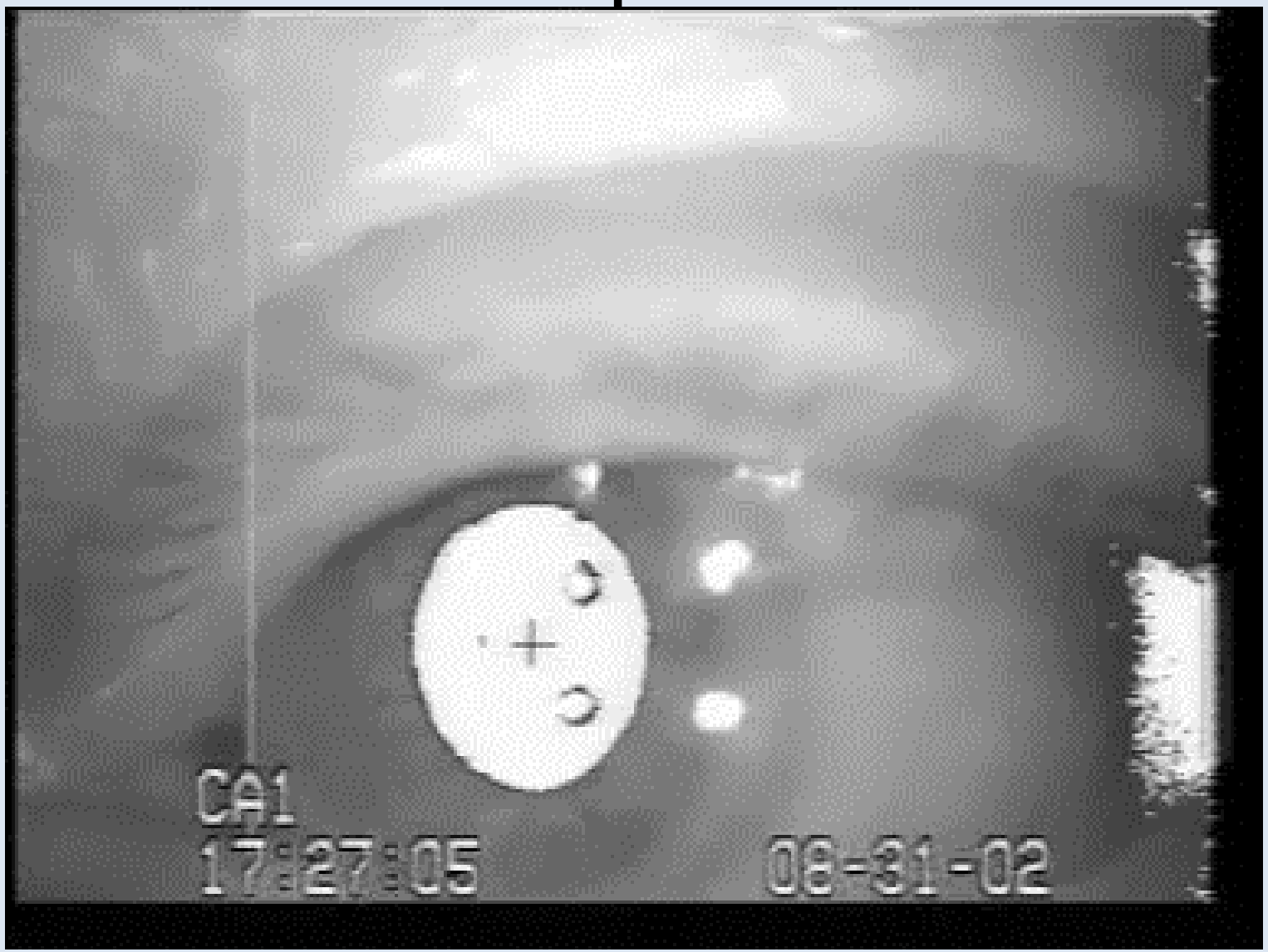
- To perform:
  - Hold onto head
  - Patient fixates on nose
  - Patient relaxed
  - Rotate head side to side slowly, then briskly to centre (30 degrees from midline)
  - Look for catch-up saccades → positive

Head Impulse Test



Frenzel Goggles

Head impulse test



Normal HiNTS

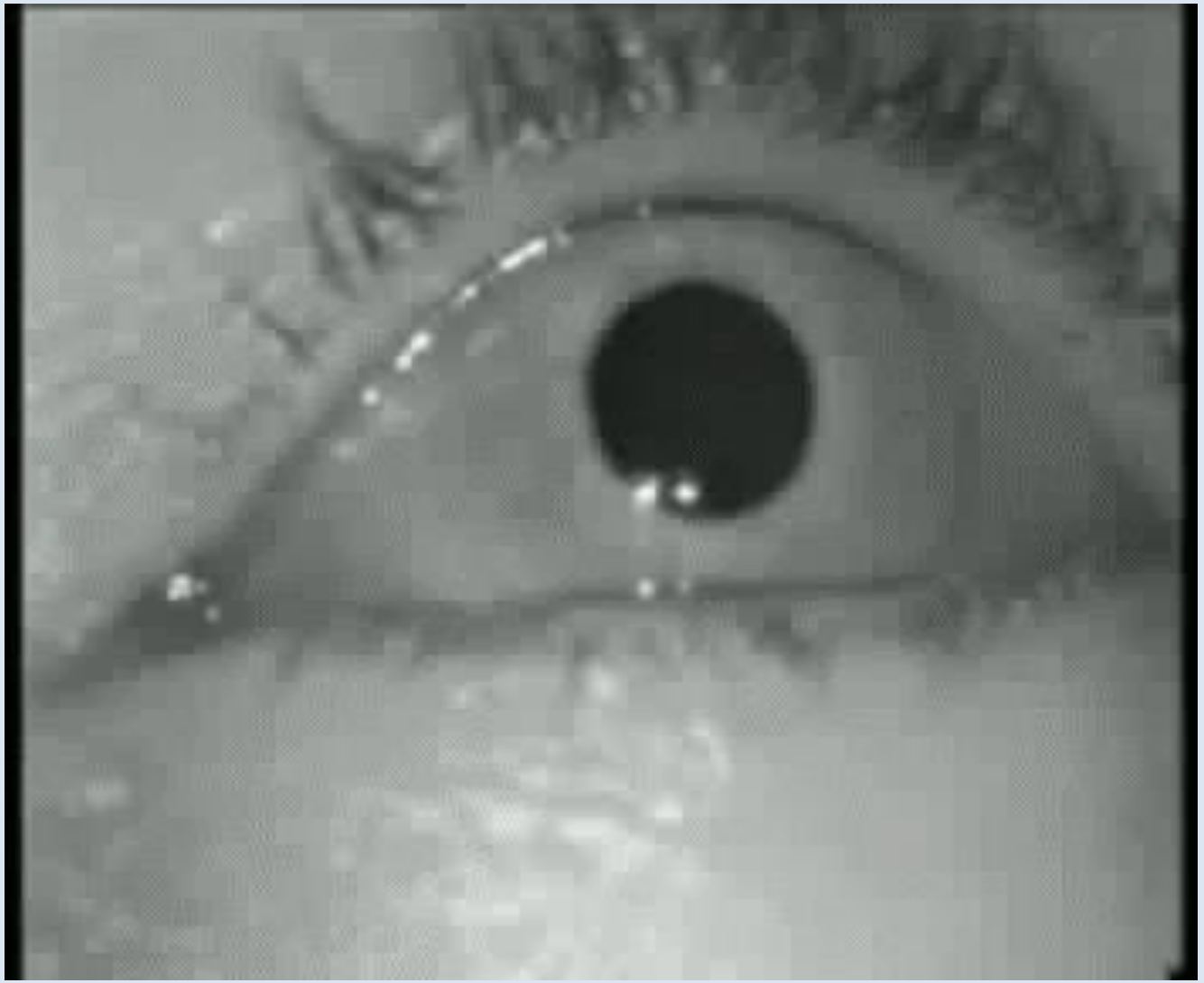
- All of:
  - Unidirectional nystagmus
  - No vertical skew
  - Abnormal head impulse test

- Diagnosis – Vestibular Neuritis

Abnormal HiNTS

- Any of:
  - Direction changing nystagmus
  - Abnormal test of stew
  - Normal head impulse test
- If any present, 100% sensitivity & 96% specificity for stroke.

Direction Changing Nystagmus



Test of Skew

HiNTS Test

- Brain imaging may be normal in the first 48 hours
- HiNTS is more sensitive for the diagnosis of acute stroke than MRI
- One Caveat – may be falsely ‘normal’ in patients with AICA stroke – these have hearing loss

Vestibular Neuritis

- Treatment:
  - 60mg for 5 days then reduce by 10mg/day

  (hastens recovery, but not long term prognosis)
- Stop symptomatic treatment ASAP (to avoid compromising long term adaption)
- Early mobilisation
- Vestibular rehabilitation

Prognosis

- Static oculomotor recovery starts within 3-4 hours (rebalancing of the vestibular nuclei)
- The majority will compensate within 6 weeks to 6 months
  - Recovery with recurrent episodes of decompensation

Compensation

- Causes of failure of compensation are:
  - Psychological disorders
  - Impairment of the other sensory inputs required for balance (vision/proprioception)
  - Use of vestibular suppressant drugs
  - Co-morbid systemic disorders

Patient 2: Mr RT

- 46 year old
- Previous basilar artery aneurysm - coiled
- Sudden onset ataxia
- Brought into surgery – left facial droop noted by reception staff

- What next?

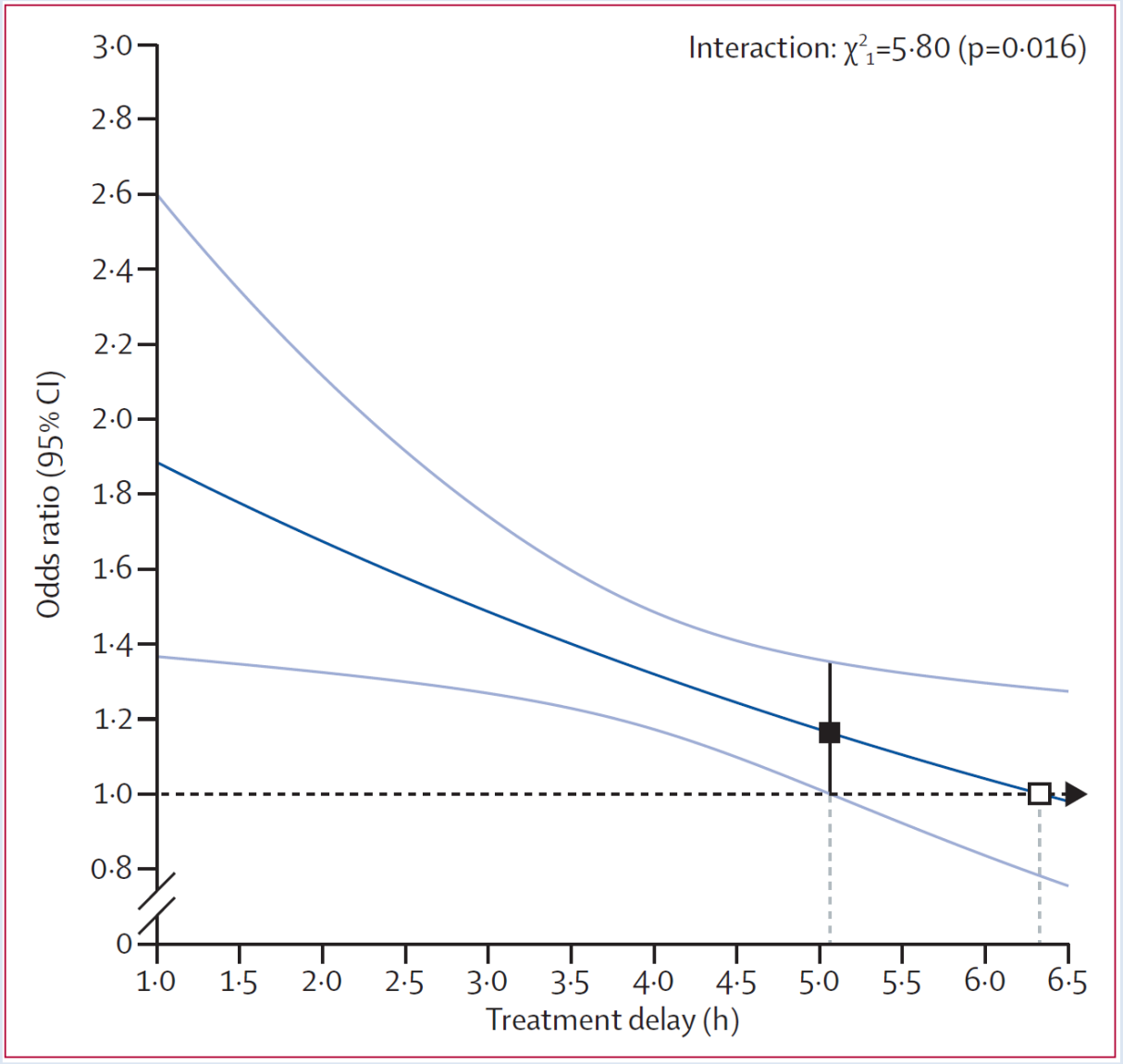
Time is brain

Each minute, the brain loses:

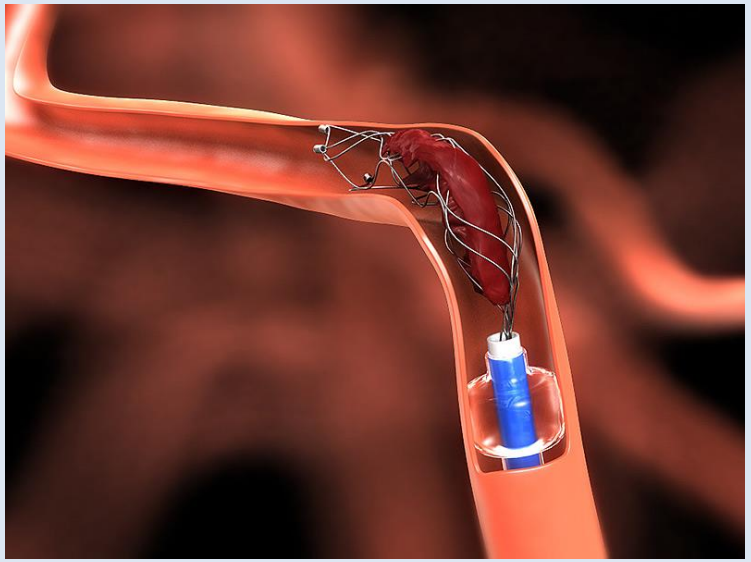
- 2 million neurones
- 14 billion synapses
- 12km of fibres

Saver JL. *Stroke* 2006; 263: 263-6

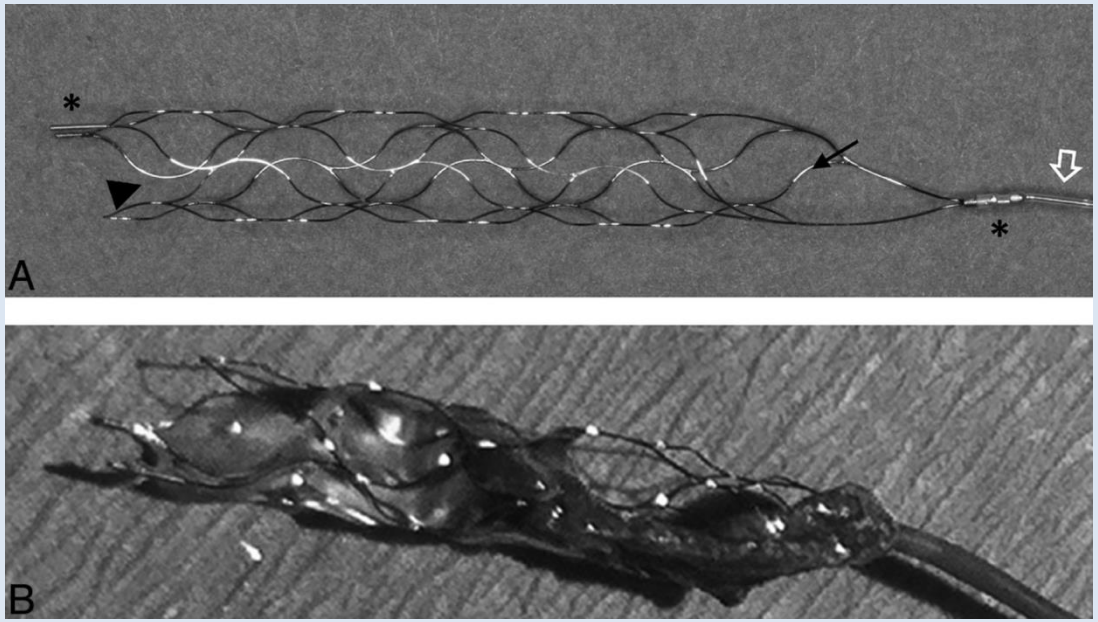
Effect of alteplase on good stroke outcome (mRS 0–1) by onset to needle



90 mins - NNT 4
180 mins - NNT 9
270 mins - NNT 14

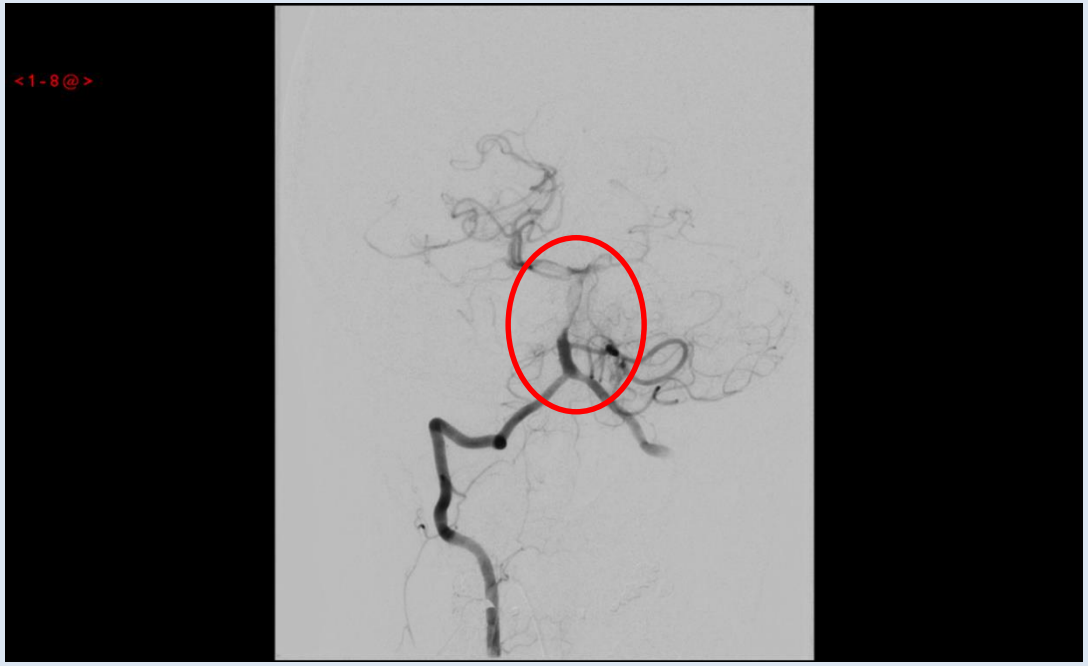


Stent Retriever Device

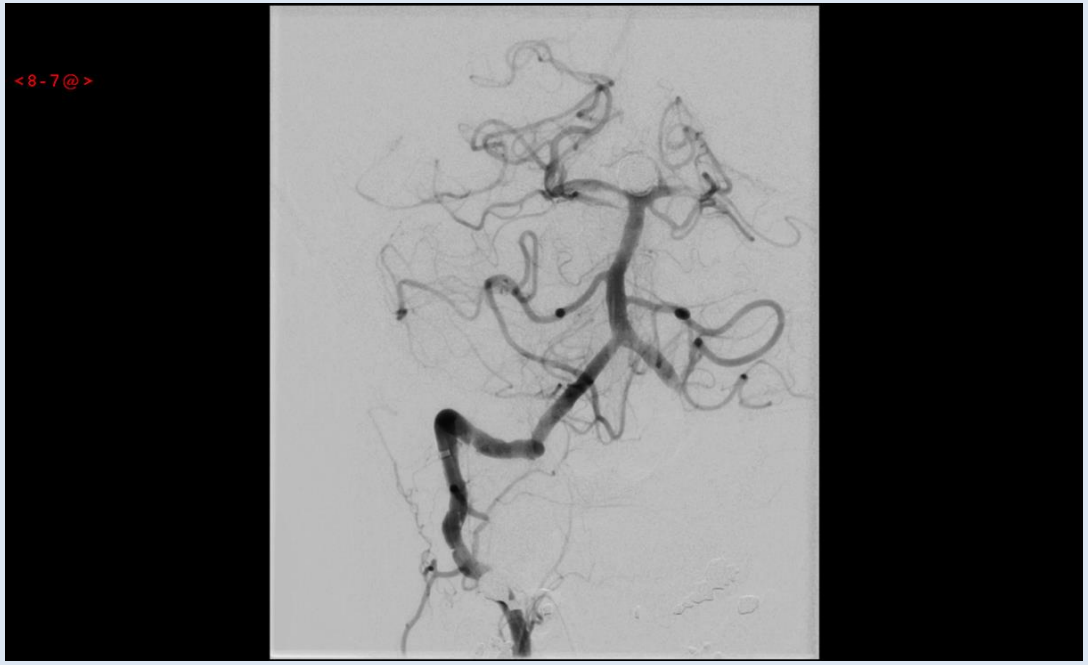


Mechanical thrombectomy

Time window – 12 hours



Before



After

Posterior circulation stroke

- Unilateral ataxia/weakness – examine properly!
- Sensory signs (?dissociated)
- Diplopia
- Visual loss
- Dysphagia
- Truncal ataxia


SIEMENS
Healthineers
MS1
Mobile Stroke Unit


SIEMENS
MAGNETOM

Patient 3: Mr JW

- Attends afternoon clinic
- Awoken from sleep with sudden onset vertigo lasting < 1 minute

- What would you like to know?

Benign Paroxysmal Positional Vertigo

- Acute vertiginous episodes triggered by changes in the position of the head relative to gravity
- Caused by canalithiasis or cupulolithiasis
- Semicircular canals:
  - Posterior semicircular canal (93%)
  - Horizontal canal (5%)
  - Anterior canal (2%)

BPPV

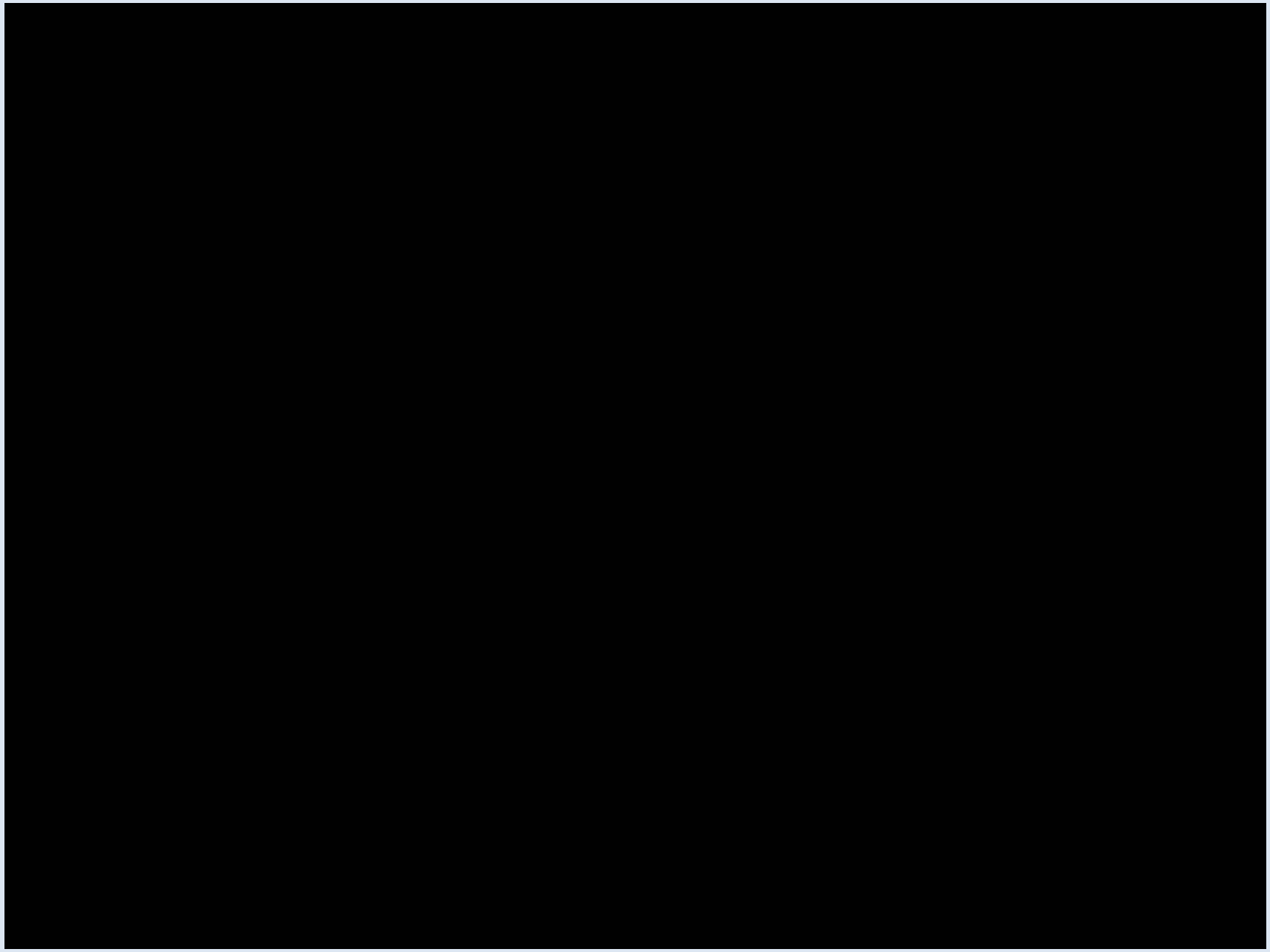
- Most common type of vertigo seen
- Causes:
  - Closed head injury
  - Vestibular neuritis (20% develop BPPV)
  - Ear Surgery
  - Prolonged bed rest

Key features

- Vertigo
  - Sudden, violent attacks triggered by head movement
  - Last <30 seconds
  - Occur in spells
  - Asymptomatic in between episodes
  - Avoidance behaviour

Dix-Hallpike

- Eyes open in centre gaze for 30 seconds
  - Upright – head turned 45 degrees
  - Rapidly recline the patient until the head extends over the edge of the bed
  - Right ear down
  - Left ear down



When should you be careful about trying this?

- Paget’s disease
- Neck pain
- Morbid obesity
- Severe RA
- Cervical instability/stenosis
- Confused/agitated
- Cervical radiculoathy

Why should you do it?

- Your patients will love you
- You can ‘fix’ their problem with no medication
- It can prevent a fall
- Your patients quality of life is enhanced

Interpretation

- Positive for ear turned down when nystagmus occurred
- If nystagmus observed, note:
  - Latency
  - Duration
  - Direction
  - Fatigability
  - Reversal

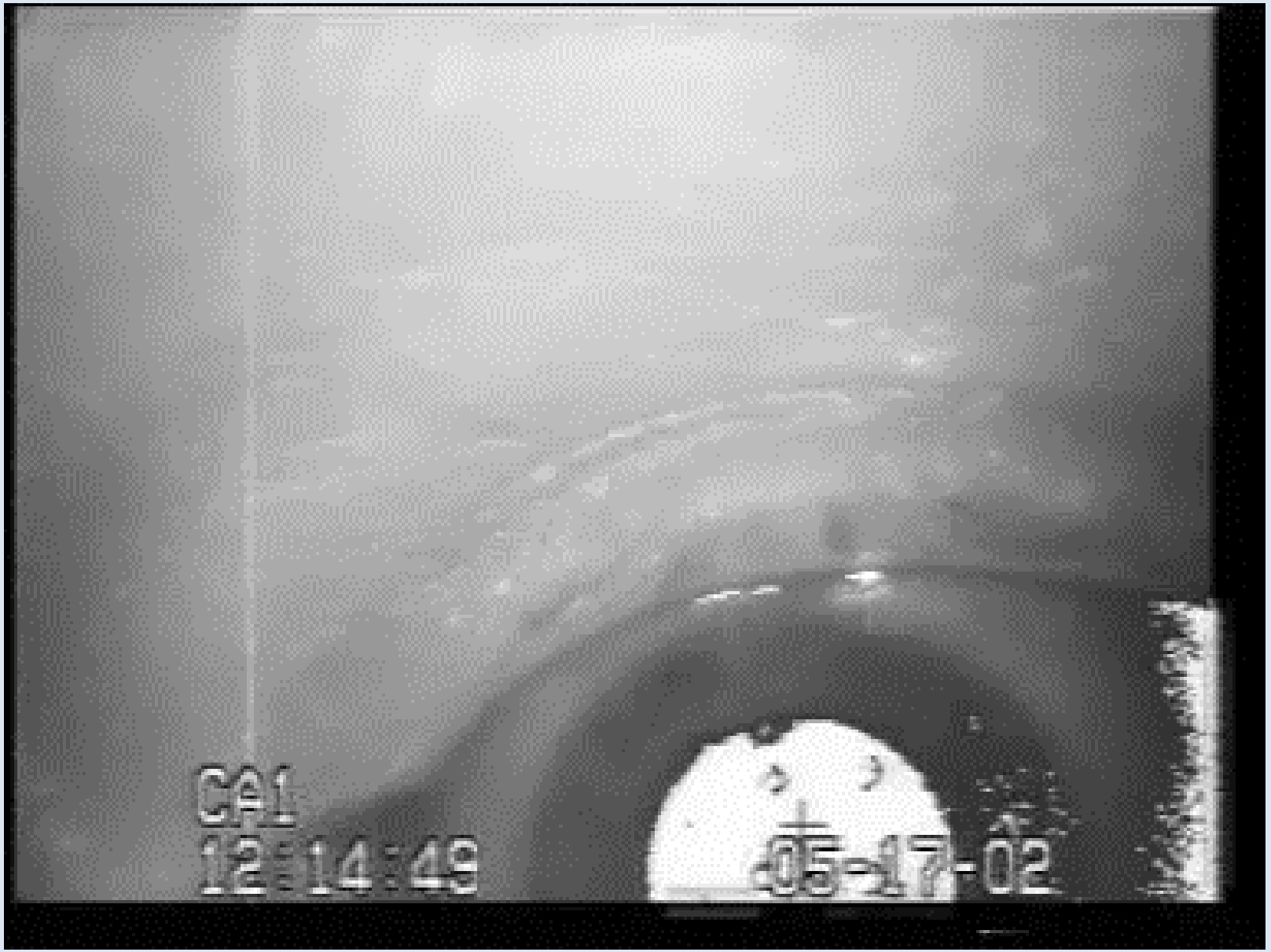
Interpretation

- Latency 3-5 seconds
- Lasts 5-15 seconds in a crescendo-decrescendo pattern
- Fatigability
- DH may initially be negative - early morning tests
- DH test may be suspicious for horizontal canal BPPV

Interpretation

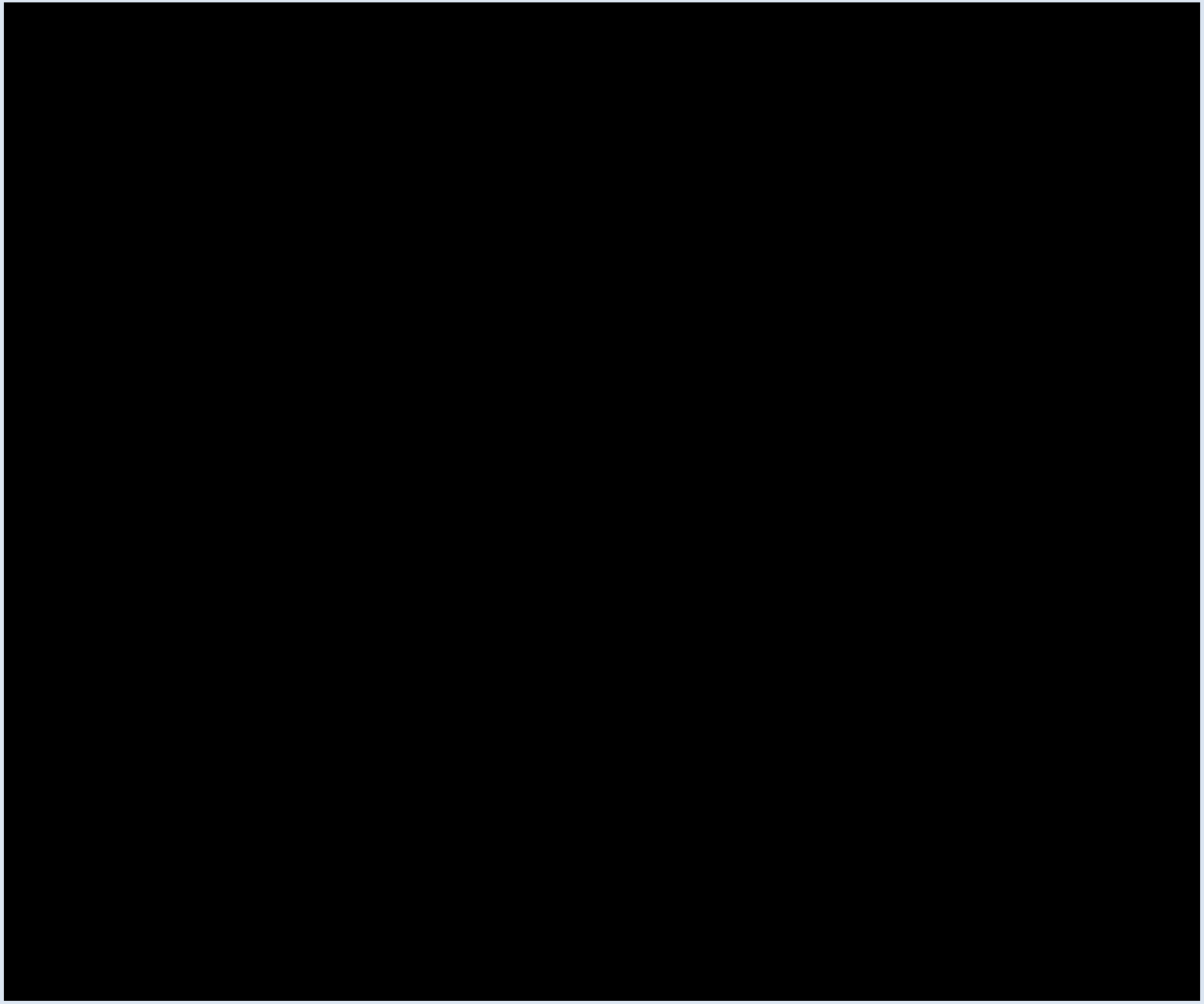
- Nystagmus of posterior canal BPPV is upbeating, rotatory
  - Right ear – vertigo & nystagmus in right ear down position. Nystagmus is upbeating and eyes appear to rotate anticlockwise
  - Careful attention to iris markings improves observation of nystagmus

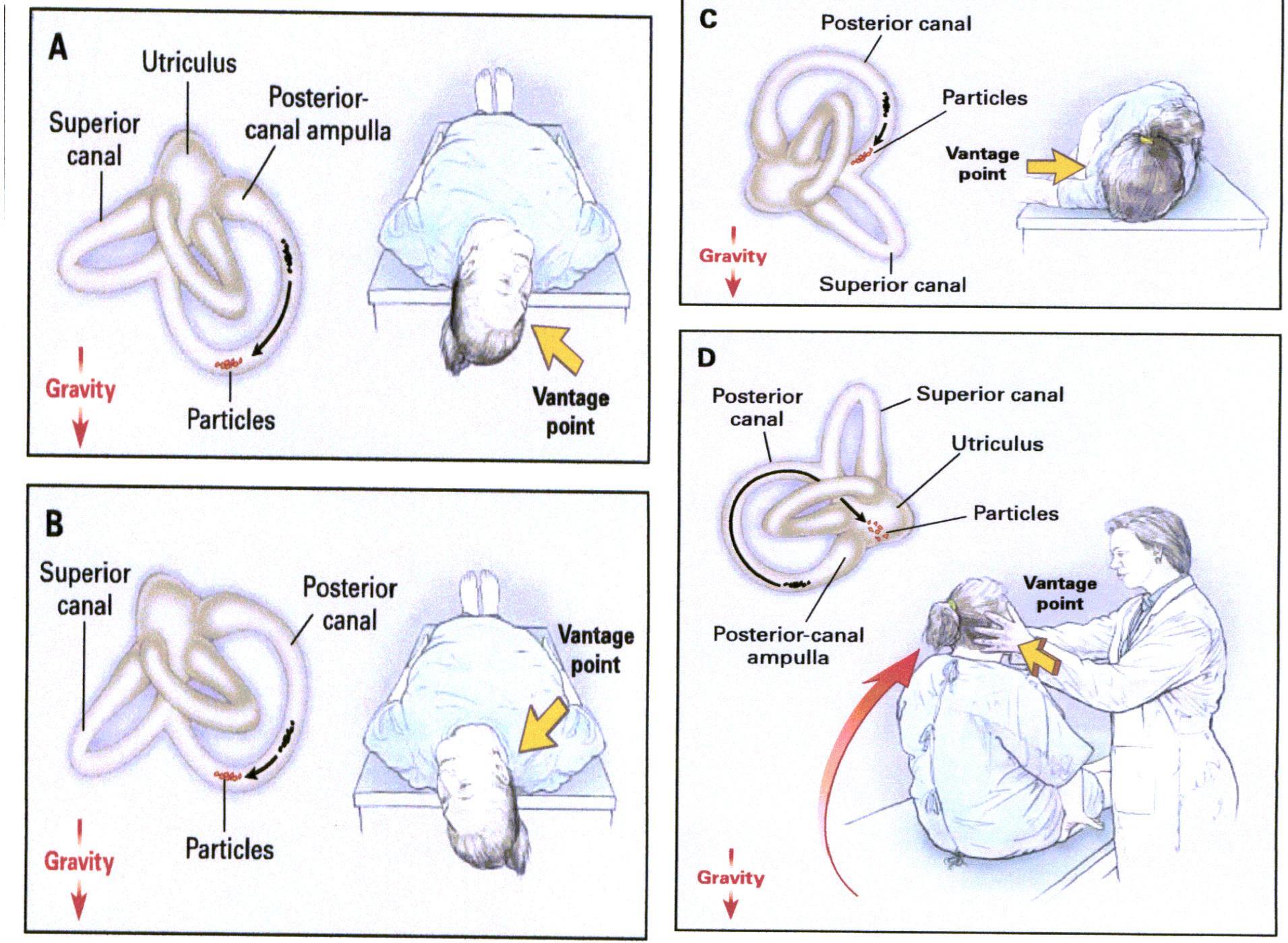
Right Posterior Canal BPPV



Treatment – Posterior canal BPPV

- Canalith repositioning to float otoliths out of the posterior canal
  - Epley maneuver
  - Semont maneuver
  - Brandt-Daroff exercises

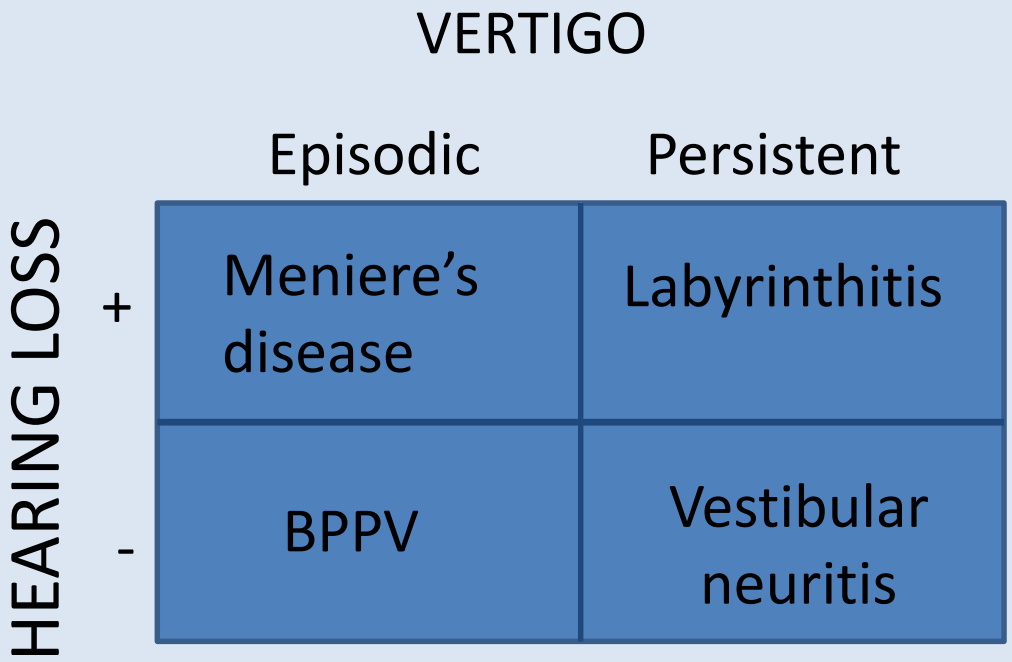



A
Utriculus
Superior canal
Posterior-canal ampulla
Gravity
Particles
Vantage point
B
Superior canal
Posterior canal
Vantage point
Particles
Gravity
C
Posterior canal
Particles
Vantage point
Gravity
Superior canal
D
Posterior canal
Superior canal
Utriculus
Particles
Posterior-canal ampulla
Vantage point
Gravity

BPPV prognosis

- Success rate 80–95% following the first maneuver
- Vague disorientation for 2–3 days after treatment
- ? Repeat manoeuvres
- 5% of patients do not respond
  - Surgical interventions such as plugging the posterior canal
- After treatment:
  - BPPV could change to affect another canal
  - 15% recurrence

Diagnostic Matrix for Acute Vertigo



Meniere’s disease

- Repeated attacks of spontaneous vertigo (hours) with nausea and vomiting
- Unilateral hearing loss, tinnitus & aural fullness
- Occurs in clusters
- Otolithic crises of Tumarkin

Meniere's disease
Medical treatment

- Buccastem
- Stemetil suppositories
- Salt restriction
- Diuretics
- Betahistine

Miscellaneous

- Autonomic symptoms – orthostatic hypotension
- Superior canal dehiscence syndrome – vertigo/oscillopsia evoked by intense stimuli/sounds
- Psychological dizziness
- Mal de debarquement
- Metabolic disturbances

Miscellaneous

- Basilar Migraine
- Carotid sinus hypersensitivity

Drugs

- Vestibular/auditory damage
  - Aminoglycosides
  - Salicylates – reversible within 24 hours
  - Anticonvulsants – phenytoin/carbamazepine
  - Loop diuretics
  - Opiate medication
  - Chemotherapeutic agents
- Treatment
  - Discontinue drugs/vestibular rehabilitation

Progressive disequilibrium of aging

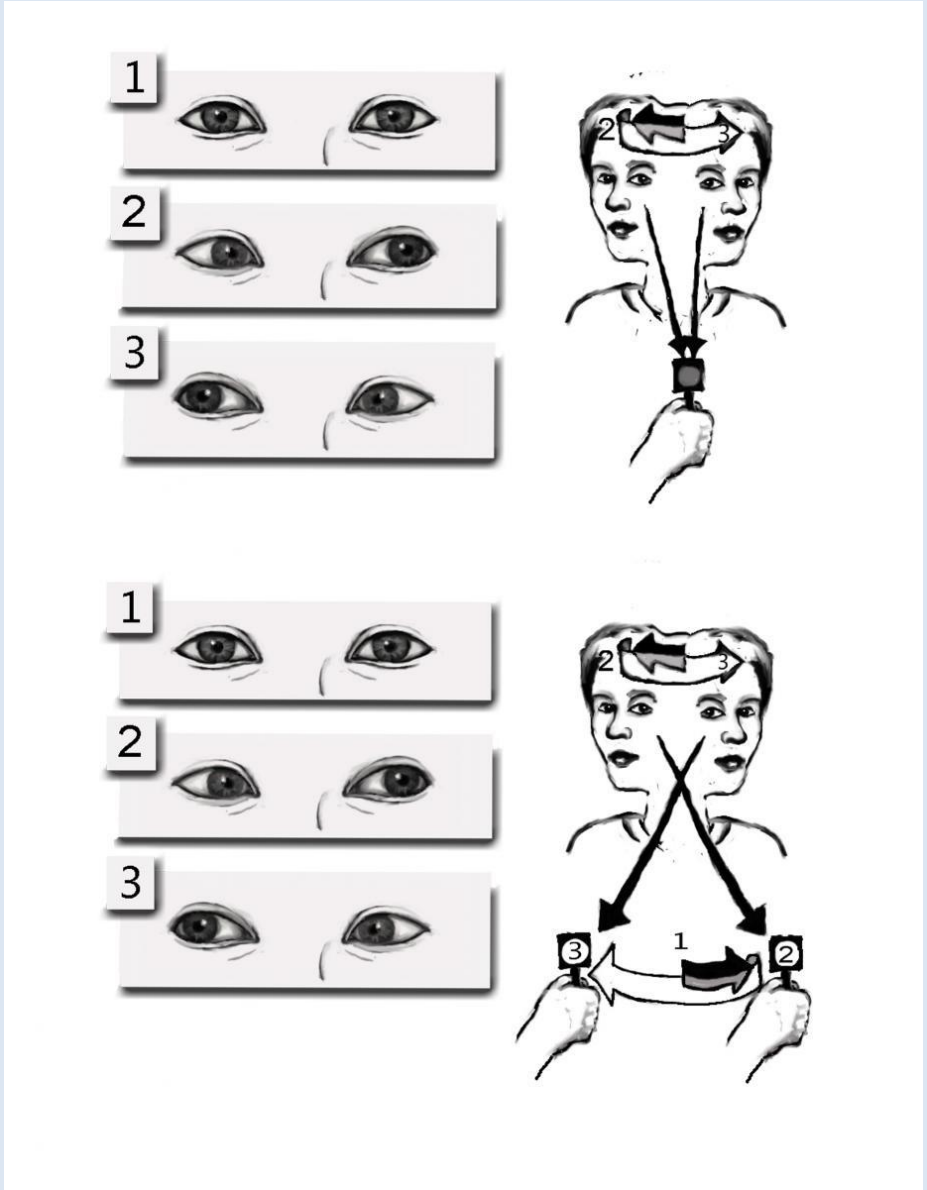
- Multi-system decline
  - Vestibular degeneration
  - Proprioceptive loss (degenerative joint disease)
  - Visual impairment
  - Cerebral & cerebellar degeneration
- → gait instability & falls

Progressive disequilibrium of aging
Treatment

- Stop vestibular suppressants & sedatives
- Correct vision & hearing
- Physiotherapy:
  - Balance training
  - Walking aids
- Occupational therapy
  - Hand rails, lighting, loose carpets

Vestibular Rehabilitation

- CNS plasticity



Scenarios

1. 45 year old with continuous vertigo
2. 78 year old with dizziness hanging up washing
3. 22 year old with recurrent episodes of fortification spectra, visual loss, diplopia & headache

Thank you –
Resources

- Videos:
  http://www.neurology.org/content/70/22/2067/suppl/DC2
- BPPV guideline:

  http://www.entnet.org/content/clinical-practice-guideline-benign-paroxysmal-positional-vertigo-bppv
- http://www.bpac.org.nz/BPJ/2012/september/vertigo.aspx