Common clinical conditions regarding Vertigo

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Peripheral Vestibular syndromes

- **Acute** Unilateral Vestibulopathy (Vestibular neuritis)
- **Intermittent** stimulation and inhibition of vestibular symptoms in Benign Paroxysmal Positioning Vertigo (BPPV), Menieres, Vestibular Paroxysmia and Superior Semicircular Canal Dehiscence Syndrome (SCCD)
- **Chronic** Bilateral Vestibulopathy due to destruction of both labyrinths

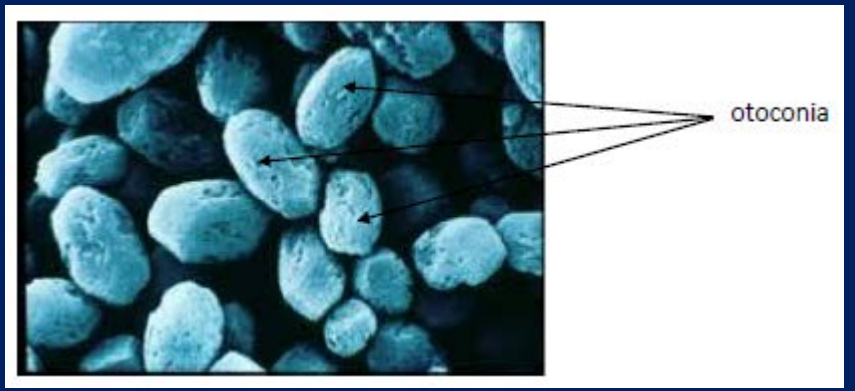
Benign Paroxysmal Positioning Vertigo (BPPV)

Pathophysiology

- Vertigo is induced by free floating otoconia in the semi-circular canals. (Cupulolithiasis and Canalolithiasis)

Clinical Features

- Episodic rotatory vertigo lasting for seconds Provoked by rapid changes in head position related to gravity.
- Nausea and severe vomiting
- Clinical diagnosis- Dix Hallpike test



Differential Diagnosis

- Vestibular Paroxysmia
- Central causes with positional nystagmus
- Superior Semicircular Canal Dehiscence Syndrome

Benign Paroxysmal Positioning Vertigo (BPPV)

Treatment

- No place for drug therapy.
- Otolith repositioning manoeuvres will make the patient better immediately.
  1. Epley (To be done by attending physician)
  2. Semont manoeuvre (To be thought to do as a home exercise)

- Take extra caution for patients with severe spondylosis, previous surgery of cervical spine & backache.

MENIERE'S DISEASE

Pathophysiology

- Endolymphatic hydrops is caused by excessive production or reduced
- resorption of endolymph.

Risk Factors

- Migraine
- BPPV

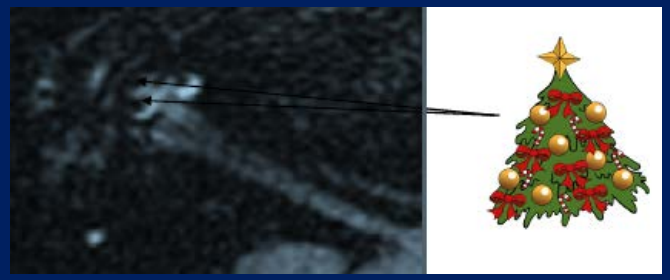
Clinical Features

- History is the key to diagnose
- Episodic vertigo lasts from 20 minutes to 12 hours.
- Unilateral tinnitus, deafness and ear fullness.

MENIERE'S DISEASE

Investigations

- No definite investigation to diagnose Meniere's.
- PTA – Low frequency hearing loss.
- Presence of Christmas tree pattern in high definition MRI scan with intra tympanic contrast support the diagnosis.



Treatment

During the <u>acute attack</u>

1. Rehydration with Normal Saline
2. Antiemetic's
3. Anti-vertiginous drugs
4. Transtympanic Dexamethasone (On going studies)

<u>Prophylactic treatment</u>

1. Betahistine (On going studies)
2. Trans tympanic Gentamycin
3. Dietary Modifications (2g salt diet) anti migranous diet
4. Surgery (Now less of a role)

Vestibular Neuritis

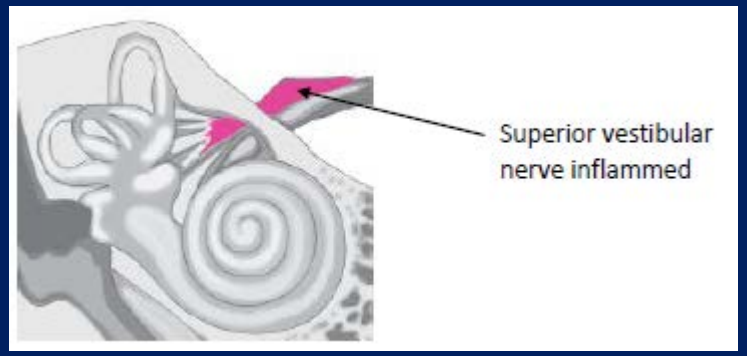
- Vestibular Neuritis is attributed to a viral infection of the vestibular nerve (Herpes Simplex Virus or Varicella Zoster Virus).

Clinical Features

- Sudden rotatory vertigo with feeling of movement of surroundings.
- Associated with nausea, vomiting and postural imbalance with tendency to fall towards the affected ear.
- No history of tinnitus, deafness or other neurological symptoms.

Investigations

- No special investigations . Diagnosis is clinical



Vestibular Neuritis

Differential diagnosis

- Meniere's Disease with prolong attacks
- Vestibular migraine.
- Cerebrovascular Accident (CVA)

Treatment

- Prochloperazine and Cinnarazine –
  - short period to reduce vomiting and severe vertigo. patient is warned not to use them for a long period.
- Methyl prednisolone 100mg daily for 5 days. Tapered off by 20mg every 4th day.
- Vestibular rehabilitation therapy (VRT) – To enhance central compensation

Head impulse test positive video

BILATERAL VESTIBULOPATHY

Pathophysiology

- Loss of vestibular afferents from both labyrinths, due to bilateral vestibular damage.
- Majority are idiopathic.
- Aminoglycoside toxicity. (Gentamycin, Streptomycin)
- Bilateral Meniere's

Clinical features

- Postural imbalance and oscillopsia during rapid head movements
- no nystagmus.
- Hearing loss maybe present
- Some patients may have coexisting cerebellar ataxia, abnormal smooth pursuit and saccades.

BILATERAL VESTIBULOPATHY

Investigations

- Vestibular Testing (Lab setting)

Differential Diagnosis

- Benign Paroxysmal Positional Vertigo (BPPV)
- Vestibular paroxysmia
- Severe unilateral vestibulopathy
- Peripheral neuropathy
- Cerebellar disease
- Hydrocephalous and Extrapyramidal disorders

Treatment

- Vestibular Rehabilitation Therapy (VRT)
- Life style modifications (Walking stick, Good Spectacles)
- Regular exercise can improve the quality of life.

Unsteady gait video

VESTIBULAR PAROXYSMIA

Pathophysiology

- Not known
- Epilepsy like condition

Clinical Features

- Multiple Episodic positional rotatory vertigo lasting from seconds to minutes with or without auditory symptoms.
- Attacks induced by:
  1. Certain head positions
  2. Hyperventilation
  3. Certain changes in body position (not BPPV specific changes)

VESTIBULAR PAROXYSMIA

Investigations

- PTA
- MRI
- EEG

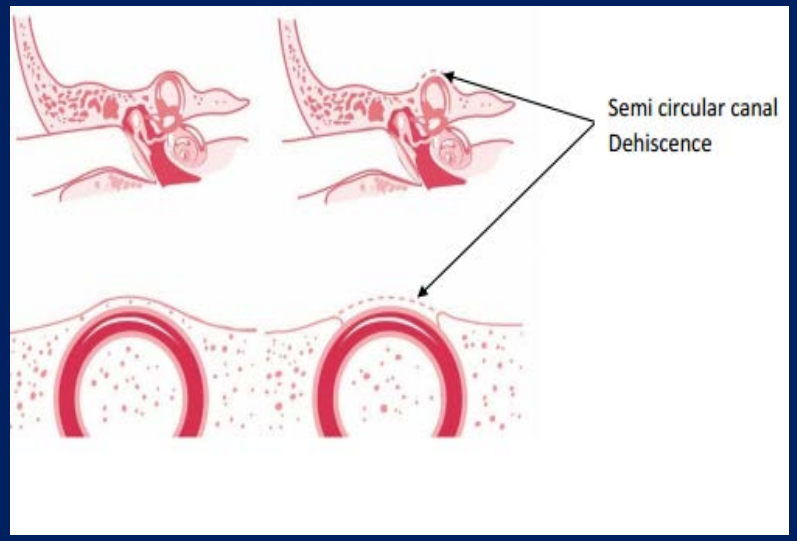
Treatment

- Therapeutic trial of carbamazepine (200-600 mg daily). This has to be given long term (Ongoing studies)

Semi Circular Canal Dehiscence Syndrome (SSCD)

Pathophysiology

- Dehiscent SSC creating contact of dura & inner ear membrane.
- Vertigo is induced by sound or pressure.



White arrow shows the Semi Circular CanalDehisence

Clinical Features

- Pressure on tragus induces vertigo & oscillopsia(Fistula test, Hennerbert sign).
- Vertigo & oscillation when exposed to loud sounds (Tullio phenomenon)

  Develops avoidance behaviour.
- Valsalva may increase Intra Cranial Pressure leading to increased vertigo and nystagmus. This can be demonstrated by Frenzel Goggles.
- Autophony
- Pulsatile tinnitus and co.nductive deafness.

Investigations

- PTA- conductive hearing loss.
- HRCT - oblique cuts are necessary to demonstrate the dehiscence

Differential Diagnosis

- Perilymph Fistula

Treatment

- Depends on type and severity of symptoms.
- Mild
  - Conservative management
  - Ear plugs and avoidance of sound.

- Severe – Surgery
  - Entering the middle ear via ear canal and augmentation of round and oval window with fascia has showed promising results.
  - Severe cases - CT evidence of dehiscence,
  - Intracranial plugging
  - Obliteration of Superior canal.
  - As surgery has severe morbidity we have to carefully select the patients.

Central Vestibular Syndromes

Caused by pathology of vestibular pathway to higher centres in the brain.

Causes

- Migraine
- Infarction
- Haemorrhage
- Intoxication
- Tumour
- Multiple Sclerosis (MS)
- Degenerative brain disease

- Attacks lasting for seconds to minutes –
  - Transient Ischemic Attack (TIA)
  - Vestibular Migraine
- Attacks lasting for hours to days –
  - Vestibular Migraine
  - Episodic Ataxia type 2
- Permanent syndromes –
  - Downbeat Nystagmus in Neurodegenerative disorders and cerebellar disorders
  - Upbeat Nystagmus in brainstem lesions

Nystagmus video

VESTIBULAR MIGRAINE

Risk Factors

- Female of child bearing age presents with recurrent attacks of vertigo with or without headache

Triggers

- Stress, reduced sleep and hormone fluctuations trigger the attack.
- Sensory amplification (Sound, light, smell, Allodynea, motion, food & medication) – Seen in Tablet Gamers

VESTIBULAR MIGRAINE

Clinical Features

- Typical symptoms are episodic vertigo with imbalance, visual disturbances lasting for 5-60mins (double vision, flashes of light, scotoma) followed by headache, nausea, vomiting

Treatment

- Medical
  - During Attack – Analgesics, Antiemetic, Rehydration
  - Prophylactic Treatment – Beta Blockers, Amitryptaline, Pizotiten, Topiramate
- Avoid Triggers
- Dietary modifications

Diagnostic criteria

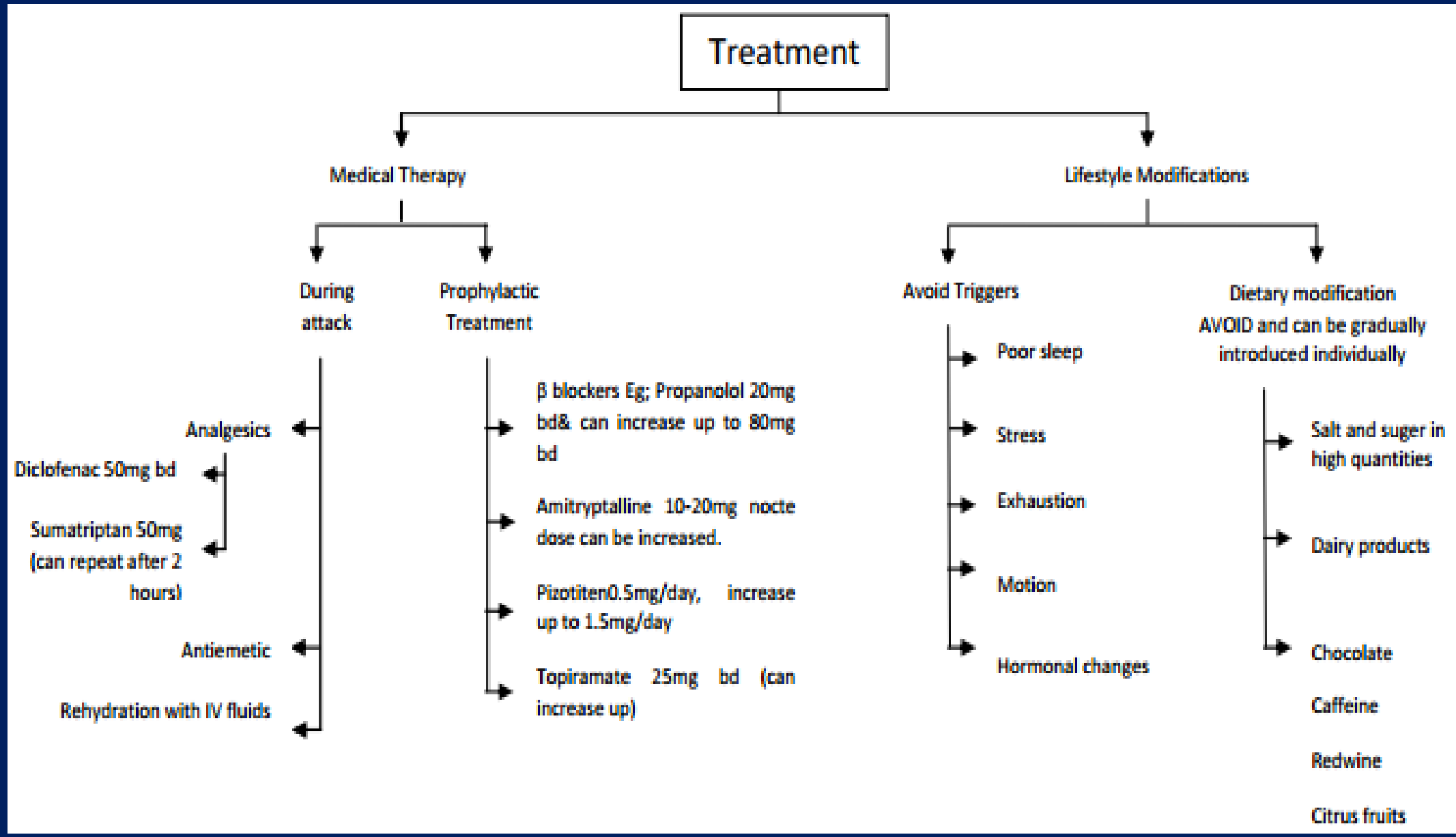
Bárány Society International Headache society ; Lempert et al 2012

Vestibular Migraine

A. At least five episodes with vestibular symptoms of moderate or severe intensity, lasting 5 minutes to 72 hours
B. Current or previous history of migraine with or without aura according to the International Classification of Headache Disorders (ICHD 2004)
C. One or more migraine features with at least 50 % of vestibular episodes:
    - Headache with at least two of the following characteristics: one-sided location, pulsating quality, moderate or severe pain intensity, and aggravation by routine physical activity
    - Photophobia and phonophobia
    - Visual aura
D. Not better accounted for by another vestibular or ICHD diagnosis

Probable Vestibular Migraine

A. At least five episodes with vestibular symptoms of moderate or severe intensity, lasting 5 minutes to 72 hours
B. Only one of the criteria B and C for vestibular migraine is fulfilled (migraine history *or* migraine features during the episode)
C. Not better accounted for by another vestibular or ICHD diagnosis


Treatment
Medical Therapy
Lifestyle Modifications
During attack
Prophylactic Treatment
Avoid Triggers
Dietary modification
AVOID and can be gradually introduced individually
Analgesics
Diclofenac 50mg bd
Sumatriptan 50mg (can repeat after 2 hours)
Antiemetic
Rehydration with IV fluids
β blockers Eg; Propanolol 20mg bd& can increase up to 80mg bd
Amitryptalline 10-20mg nocte dose can be increased.
Pizotiten0.5mg/day, increase up to 1.5mg/day
Topiramate 25mg bd (can increase up)
Poor sleep
Stress
Exhaustion
Motion
Hormonal changes
Salt and suger in high quantities
Dairy products
Chocolate
Caffeine
Redwine
Citrus fruits

FUNCTIONAL DIZZINESS (PHOBIC POSTURAL VERTIGO)

Risk Factors

- Patients with Vestibular Migraine

Clinical Features

- Common in between 20-50 years.
- Postural vertigo , fluctuating instability with fear of falls.
- During an attack patient has features of anxiety
- Attacks are triggered by certain social situations (large crowds,on bridges, driving a car, empty rooms). Patient develops avoidance behaviour to above.
- Perfectionist personality , depressive symptoms

FUNCTIONAL DIZZINESS (PHOBIC POSTURAL VERTIGO)

Treatment

- If patients with Functional Dizziness are not diagnosed and treated properly, avoidance behaviour makes them home bound.
- Educate the patient about the illness
- Desensitization by self-exposure to triggers
- Regular exercises
- Behavioural therapy
- Pharmacotherapy – Selective serotonin re-uptake inhibitors (SSRI) (Sertraline, Fluvoxamine) for 6 months with anxiolytic for short period.

POST TRAUMATIC VERTIGO

Temporal bone fractures

- leads to inner ear damage. Inner ear is damaged in transverse fracture causing VII nerve damage and hearing loss. Usually U/L and rarely B/L.

Benign Paroxysmal Positioning Vertigo (BPPV)

- Commonest form of post traumatic vertigo.
- Frequently bilateral and asymmetrical.
- Clinical features are not immediate after trauma. It takes days to weeks.
- Post traumatic BPPV can occur after major head and neck surgery also.

Treatment

- Repeated bilateral manoeuvres are necessary as its treatment resistant

CHILDHOOD VERTIGO

- >4 years affected, with no obvious precipitating factors. Commonest cause of paediatric dizziness.
- Very young children cannot complain of vertigo.
- Fifty percent of cases of childhood dizziness and imbalance are caused by one of the three most common causes.
    1. BPV – Benign Paroxysmal Vertigo of Childhood
    2. Migraine
    3. Otitis Media with Effusion

Clinical Features

- Present with short lived acute vertigo for 30 – 60 s.
- May fall or hold onto something suddenly and cry.
- Becoming pale and sweaty. rapid return to normality.
- Nystagmus is present during attacks.

Treatment

- same as the prophylactic treatment given in Vestibular migraine in adults.
- Good prognosis.
- Half of these children develop migraine in adolescence. Most have a family history of Migraine.

VERTIGO IN ELDERLY

- Multifactorial. (Vision, Proprioception, inner ear)
- B/L Vestibulopathy is common.

Management

- Checked and managed according to the cause.
- E.g :- Spectacles, Cataract Surgery, Walking aid, Vestibular rehabilitation therapy, psychological support

Treatment Videos

Thank you