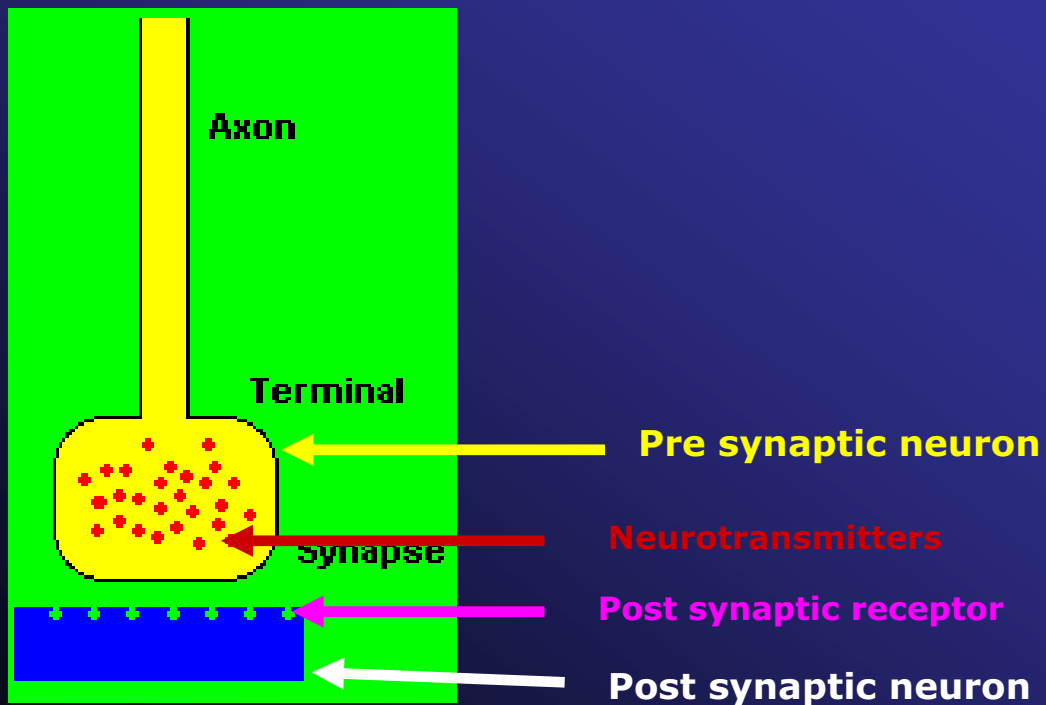


Vertigo Pharmacotherapy



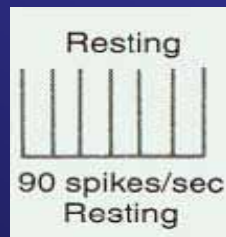
Fatthi Abdel Baki MD
Alexandria Medical School

Neurotransmitters

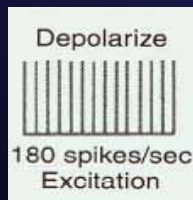


Main Neurotransmitters

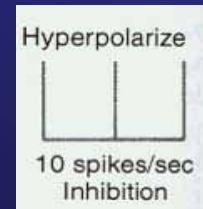
Excitatory or Inhibitory



Glutamate:
Excitatory



GABA (2):
Inhibitory

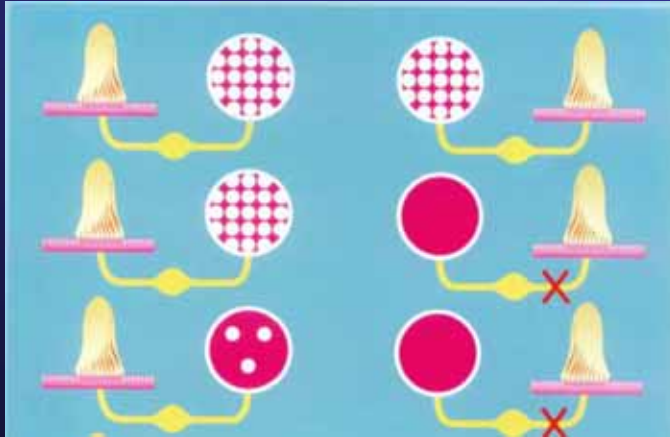


Other Neurotransmitters

Excitatory or Inhibitory

- **Depends on type of receptors:**
 - Acetyl choline Nicotinic & Muscarinic (5)
 - Dopamine (5) D1 to D5
 - Histamine (3) H1; H2;H3
 - Serotonin 5 HT (7)
 - Nitric oxide

Vestibular Lesion



**Vestibular
suppressants**



**Vestibular
Stimulants**

Vertigo

Management Plan

Acute Episode

Vertigo
Vomiting
Nystagmus

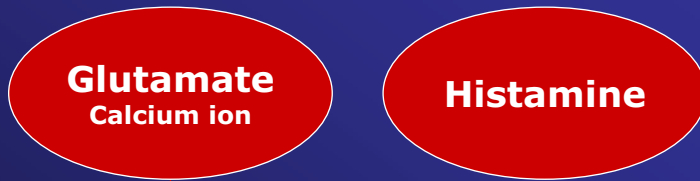
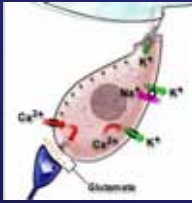
Speed recovery

Vasodilators
Rheology
Oxygenation
Vestibular activity

Target treatment

Meniere
Vestibular neuritis
VBI
Migraine
Vascular loop

Vestibular suppressants



Calcium channel blocker
Cinnarazine

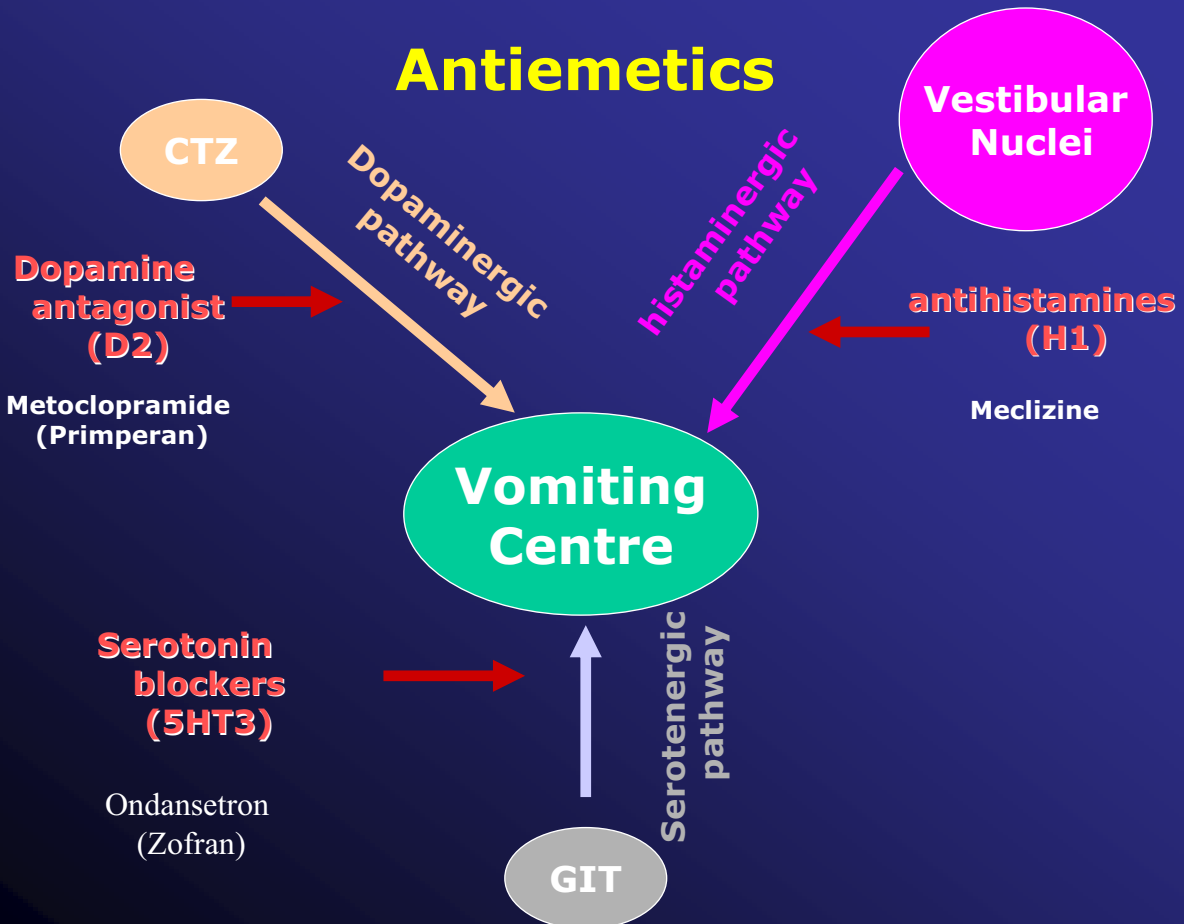
Antihistamine:
Meclizine

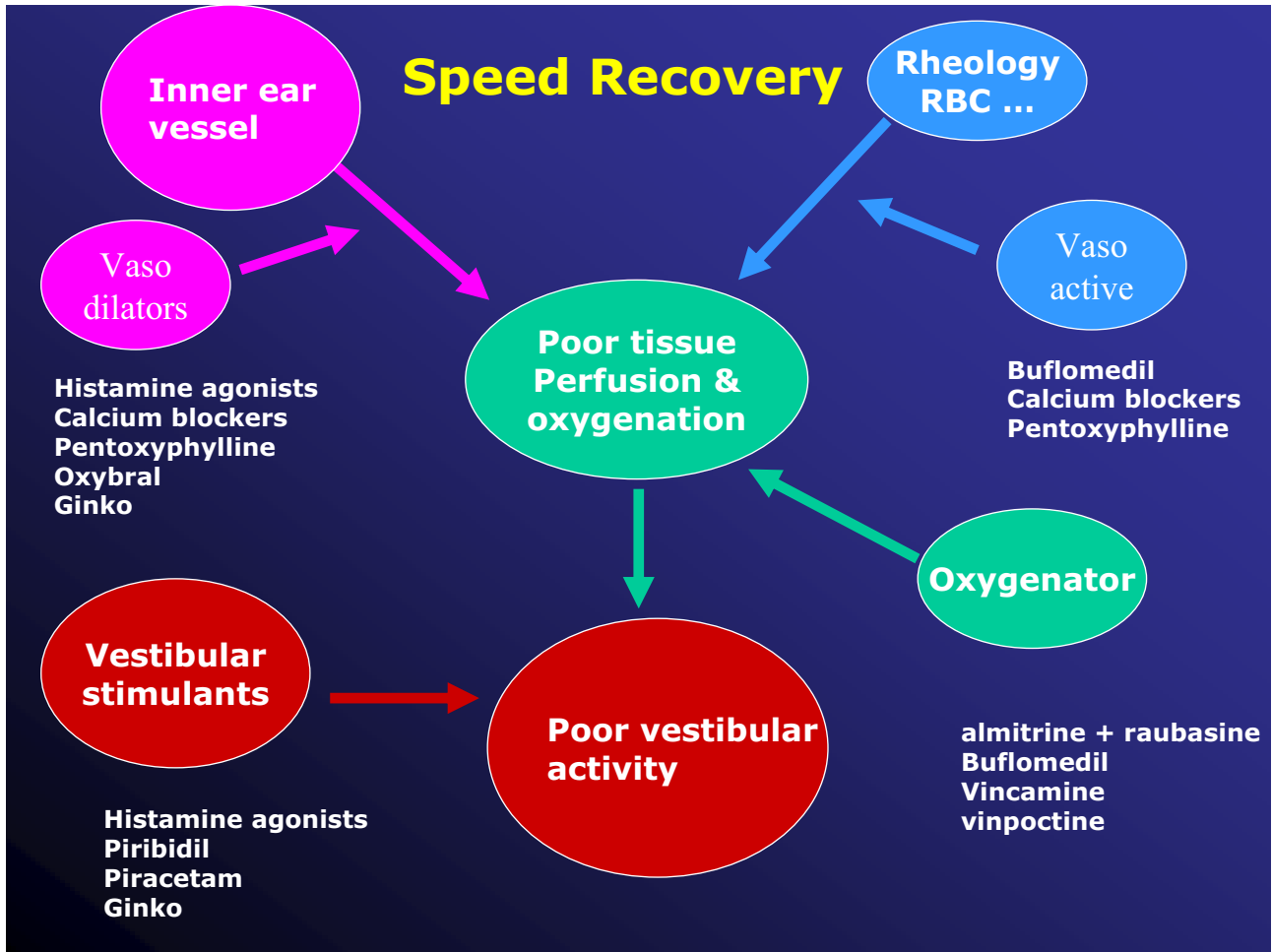
GABA (B) agonist:
Baclofen

GABA (A) agonist:
Benzodiazepines



Antiemetics





Drugs: mechanism of Action

	vestibular Suppressant	Anti emetic	Vaso Dilator	Vaso active	O 2	vestibular Stimulant
Antihistamine	+	+				
Benzodiazepam	+					
Cinnarazine	+		+	+		
Betahistine			+			+
Vicamine			+		+	
almitrine + raubasine					+	
Buflomidil				+	+	
Pirebidil			+			+
Pentoxifylline			+	+		
Ginko				+		+

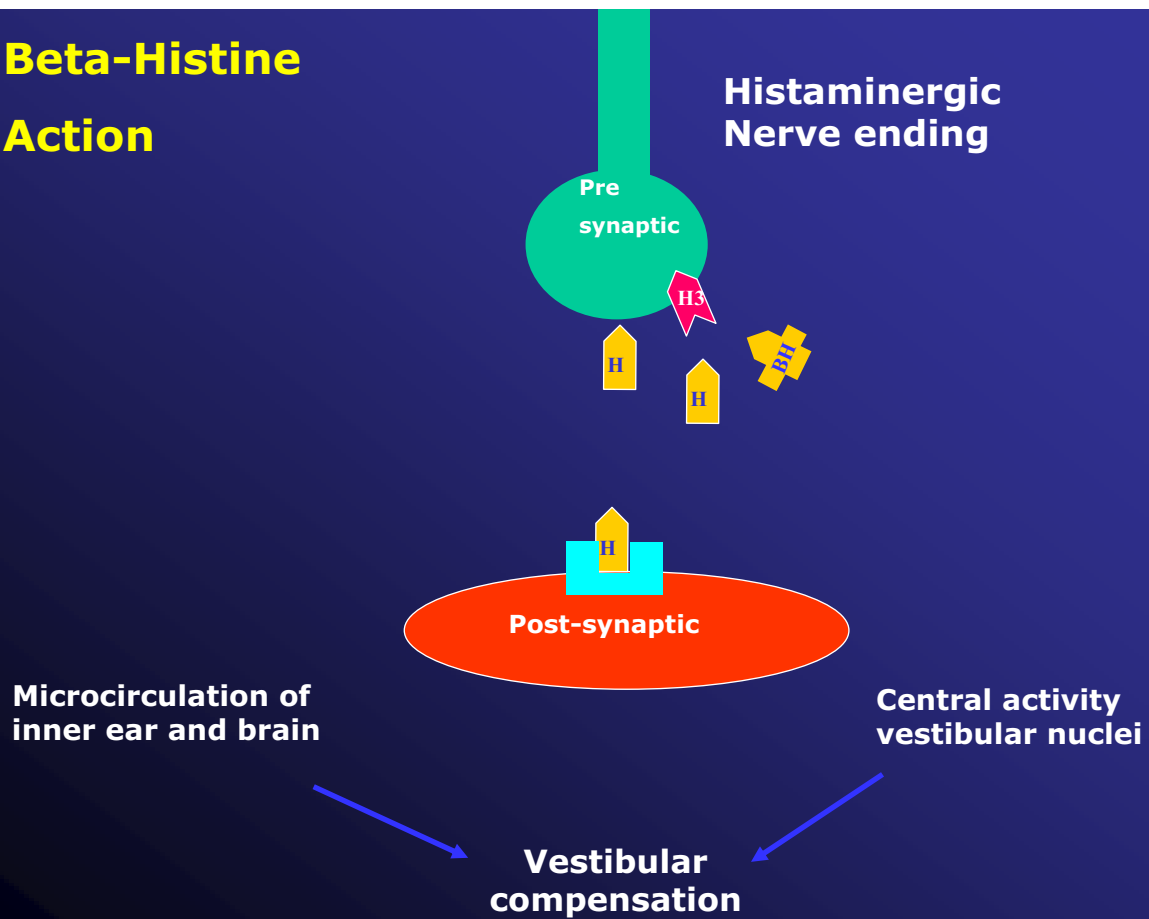
Drugs: Side effects

	Side Effects / Precautions
Antihistamine	Sedation; anticholinergic; extrapyramidal
Benzodiazepam	Sedation; habituation
Betahistine	Bronchial asthma
Cinnarizine	Sedation
Vincamine	Hypotension
Almitrine + Raubasine	Drowsiness
Buflomedil	GIT
Pirebidil	GIT
Pentoxifylline	Flushing/headache

Betahistine Betaserc

- Widely used for the management of vertigo.
- UK (Meniere's): 94% betahistine; 63% diuretics
- Not approved by the FDA
- Randomized controlled trial: controversial
 - No EBM
 - Recent large study (144) showed statistically significant improvement
- Dose 16-32 mg three times/day for 2 to 40 w
- Do not use with antihistamine

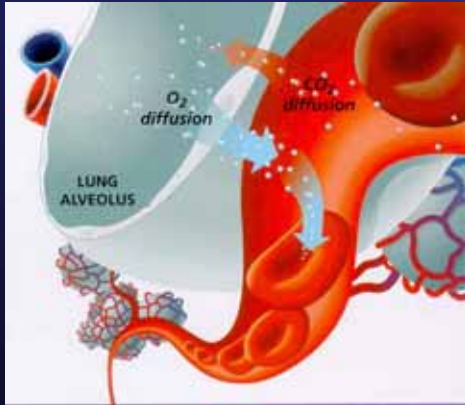
Beta-Histidine Action



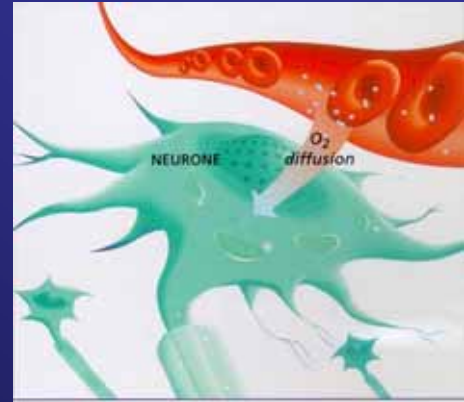
Buflomedil HCl Loftyl

- RBC's deformability ↑
- RBC's aggregation ↓
- Platelet aggregation ↓
- Leukocytic adherence to vessel wall ↓
- Tissue Oxygenation ↑
- Tissue Perfusion ↑

Alimintrine bismesylate / rabusine Duxil



Increases Oxygen availability



Increases Oxygen utilization

Vincamime Oxybral

- Increase cerebral flow
- Increase oxygen capture and utilization by the hypoxic neurons.

Dopamine agonists

Piribedil

- Compensate deficient Dopaminergic neurotransmission (aging)
- Reducing the sympathetic vaso-constricting tone.

Ginko

- Reduces the viscosity of the blood
- Anti-oxidant.
- Enhance vestibular compensation in animals

Vertigo

Target treatment

- **Meniere**
- **Vestibular neuritis**
- **VBI**
- **Migraine**

Meniere

Prophylaxis

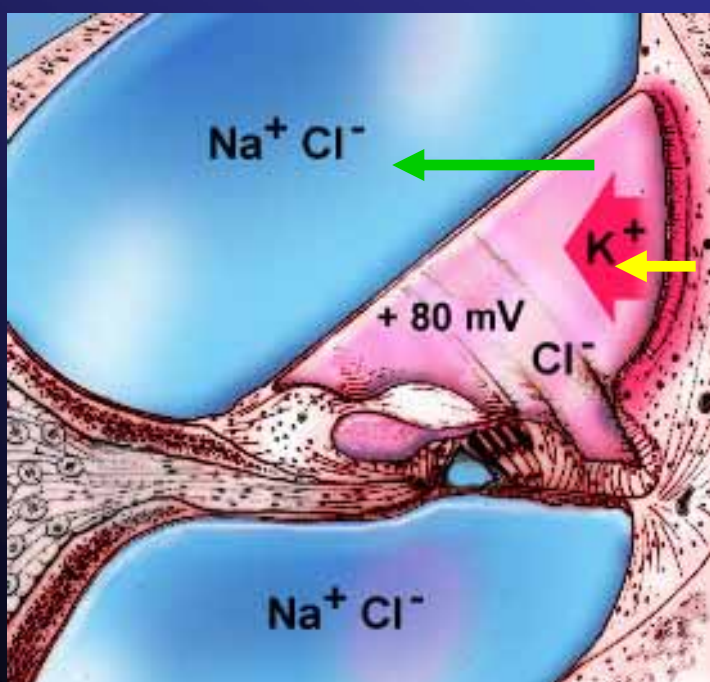
- **Vasodilators**
- **Diuretics and dietary salt restriction**
 - in salt sensitive persons
- **Glucocorticoids**
 - in salt insensitive persons
- **Chemical labyrinthectomy**

Meniere

Vasodilators

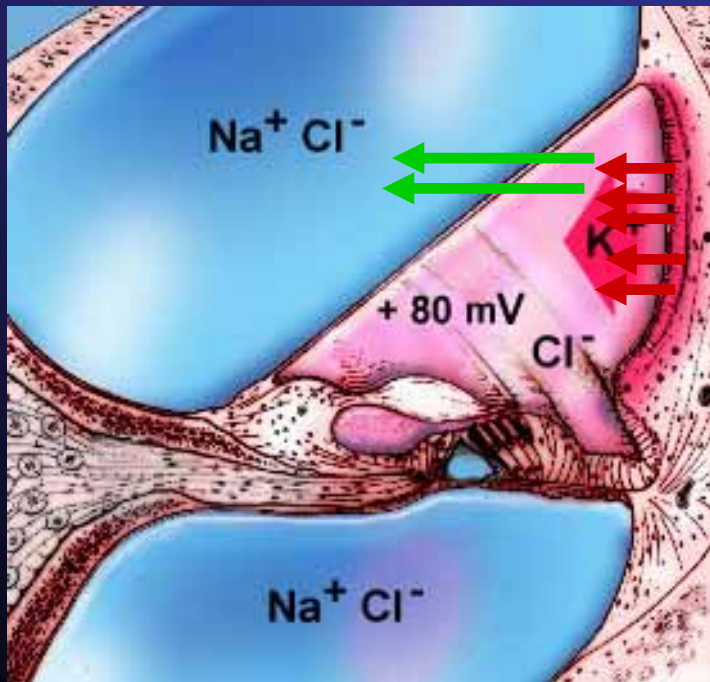
- Betahistine (an oral histamine analogue)
- Role of Betahistine in Meniere disease:
 - No EBM

Ions Homeostasis



Vasopressin
Aldosterone

Ions Homeostasis Meniere



**Increase
Vasopressin
Aldosterone**



**Diuretic
Steroids**

Meniere

Diuretics

- Potassium losing diuretics (Thiazide)
 - Multiple undesirable side effects
- Potassium sparing diuretic (Spironolactone)
 - Homeostasis theory
- Combined (Thiazide+ Amiloride)
- Role of diuretics in Meniere:
 - No EBM

Meniere

Intra- tympanic steroids

Methyl prednisolone: solumedrol

- **Advantage:**
 - Higher concentration in endolymph and perilymph after administration
- **Disadvantage:**
 - Slow absorption from endolymph into stria. It remain in endolymph longer than dexa by 6hs
 - Painful

Meniere

Intra- tympanic steroids

Dexamethasone: (fortacorten)

- **Advantage:**
 - Faster absorption and diffusion from endolymph into stria and surrounding tissue (steroid act intracellular)
- **Disadvantage:**
 - Need high concentration; 24mg /ml not available in market
- **Dose:**
 - 24mg (compounding) /cc / week (2 treatment) most effective in early stage

Meniere

Intratympanic gentamycin Protocol

- Base line caloric before injection to determine degree of vestibular function in the other ear
- **Standard protocol**
 - 0.3-0.6 ml of gentamycin 40mg /ml (12-24 mg)
 - Repeated weekly till end points
- **Low dose protocol**
 - Single dose protocol
 - Injection of low concentration (10mg/ml)
 - Repeated after 2-4 weeks if vertigo remains

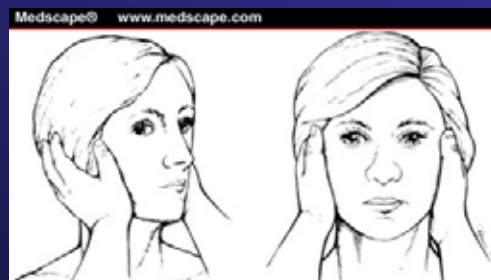
Meniere

Intratympanic injections End Point

- **Hearing worsened**
 - PTA increase > 15db in 3 consecutive freq.
 - SDS fell > 20 %
- **Nystagmus**
 - Spontaneous paralytic
 - Head shaking
 - Head thrust
- **4 scheduled treatment**



Head shaking



Head thrust

Meniere

Intractable vertigo Protocol

- **Early stage: Mild / fluctuant hearing loss:**
 - Intra-tympanic steroids if failed
 - Vestibular neurectomy
- **Advanced stage: Moderate/ severe HL with poor discrimination:**
 - Intra- tympanic gentamycin

Vestibular neuritis

Management

- **Vestibular suppressant (3 days)**
- **Steroids**
- **Antiviral**
- **Vestibular Rehab.**



VBI

Management

- **Treatment of risk factors:**
 - Hyperlipidemia; hypertension; diabetes; smoking
- **Drugs**
 - Antiplatelet: Aspirin; plavix; persantin
- **Neck care**
 - Collars; Physiotherapy Cautions neck movements

Migraine

Management

- **Trigger factors: avoidance**
- **Drugs:**
 - **Beta blockers:**
 - Propanolol
 - **Calcium channel blockers:**
 - Cinnarazine
 - **TCA antidepressant:**
 - Amitryptiline (tryptizol)
 - **Novel antiepileptic:**
 - Topamax

Other conditions

- **Motion sickness**
- **Orthostatic hypotension**
- **Psychogenic Vertigo (hyperventilation)**
- **Juvenile vertigo**
- **Senile vertigo "presbyastasis"**
- **Microvascular compression**
- **Bilateral vestibular loss**
- **Treatment of undetermined or ill defined cause of vertigo**

Motion Sickness

Management

- **Prevention:**
 - Anticholinergic (scopolamine) pure anticholinergics are ineffective if administered after symptoms have already appeared
- **Treatment:**
 - Calcium channel blockers: Cinnarizine
 - Antihistamine: Dramamine

Orthostatic Hypotension

Nonpharmacologic treatment

- Slow, careful changes in position, especially on arising in the morning
- Avoidance of hot environments and hot showers or baths
- Multiple small meals
- Increased salt ;fluid and caffeine intake

Orthostatic Hypotension

Pharmacologic treatment

- Removal of medications that exacerbate hypotension when possible
- Fludrocortisone (Florinef)
- Midodrine (ProAmatine)
- Sympathomimetics
- Erythropoietin

Psychogenic vertigo

Management

- Drugs:
 - Benzodiazepines
 - SSRI (selective serotonin reuptake inhibitors eg ciprolex) less effectiveness but less habituation
- Breath into a bag in the event of an attack
- Psychiatric consultation is suggested.

BPV of childhood

Management

- **Antiepileptics**
 - low dose
 - where the frequency of the attacks is more than once a week..



Microvascular compression

Management

- Anti-convulsants:
 - Carbamazepine (Tegretol)
 - Gabapentin (Neuronton)

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www.orlegypt.com

Please Register

Thank you

