



Medical and non-surgical treatment of vestibular disease

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Introduction

- Vertigo and dizziness are among the most common complaints, having a lifetime prevalence of about 30% 1.
- Causes
 - Peripheral (otologic vertigo)
 - Central (brain-induced vertigo)



Introduction

- Acute process vertigo, nausea and vomiting
- Chronic process dizziness and/or disequilibrium

Vertigo and dizziness treatment options

- Pharmacological
- Liberatory and reposition maneuvers
- Vestibular rehabilitation
- Psychotherapeutic measures
- Surgical treatments

Prerequisites for pharmacological treatment

- Correct diagnosis
- Correct drug
- Appropriate dosage
- Sufficient duration

Correct diagnosis



- The first step for successful treatment, establishing a diagnosis, is especially important.
- Vertigo and dizziness are not diseases – they are symptoms.

Correct diagnosis

- Clinical history

- Is there vertigo or dizziness?
- Are the patient's symptoms spontaneous or triggered?
- How long has the patient had symptoms, and how often do they occur? When did symptoms first begin?
- Are there accompanying symptoms, namely ear symptoms or neurological symptoms?



Correct diagnosis

- Clinical examination
 - Eye movement evaluation
 - Neurological examination
 - Otological examination



Medication targets in vertigo and dizziness

- Treat the etiology
- Control the symptoms
- Accelerate central compensation
- Diminish the psychological comorbidity





Drug groups in vertigo and dizziness treatment

- Anti-inflammatories
- Anti-migrainous
- Anticonvulsants
- Anti-Ménière's
- Antidepressants
- Antimetics



Vertigo and dizziness pharmacological approach

- Treatment options
 - Symptomatic
 - Specific
 - Prophylactic

Symptomatic control: vestibular suppressants and antiemetics

- There is a connection between the part of the brain involved in vomiting and the vestibular system.
- Autonomic symptoms
 - pallor, swelling, salivation, diarrhea and abdominal distention

1. Vestibular suppressants

- To reduce the intensity of vertigo and nystagmus
- To reduce the associated motion sensitivity and motion sickness
- Conventional vestibular suppressants
 - Anticholinergics
 - Antihistamines
 - Benzodiazepines

1. Vestibular suppressants

- Anticholinergics

- inhibit firing in vestibular nucleus neurons
- reduce the velocity of vestibular nystagmus

- The most effective single anticholinergic drug for the prophylaxis and treatment of motion sickness is scopolamine.

1. Vestibular suppressants

- Antihistamines
 - prevent motion sickness
 - reduce the severity of symptoms
- Meclizine, Dimenhydrinate, Diphenhydramine, Promethazine

1. Vestibular suppressants

- Benzodiazepines
 - Control motion sickness
 - Minimize anxiety and panic associated with vertigo
- Diazepam, Clonazepam, Lorazepam, Alprazolam

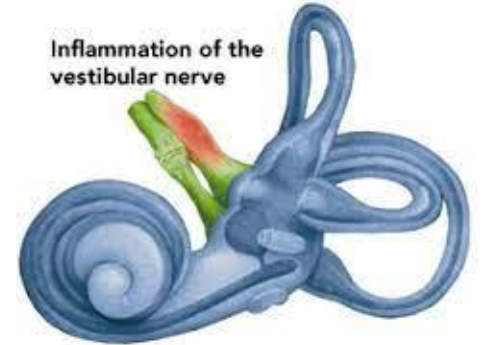
2. Antiemetics

- The choice for vertiginous patients depends upon the route of administration and the side effect profile.
- Inpatient- setting: Dexamethasone (Decadron®) and ondansetron
- Outpatient- setting: Droperidol, Meclizine, Dimenhydrinate, Phenothiazines (Prochlorperazine, Promethazine), Metoclopramide, Domperidone

Specific treatment of individual selected conditions

1. Vestibular neuritis
2. Vestibular migraine
3. Ménière's disease

1. Vestibular neuritis



- Vestibular neuritis is the most common cause for acute vestibular syndrome.
- Although it is believed to be caused by the reactivation of a virus (Herpes simplex virus: type 1) in the vestibular nerve, it does not benefit from antiviral treatment but rather from methylprednisolone.

1. Vestibular neuritis

- Symptomatic treatment should also be provided in the first days.
- In the emergency room Dexamethasone is useful for both its anti-emetic and anti-inflammatory properties.
- Treatment with vestibular suppressors should be discontinued once the acute symptoms are controlled.
- Vestibular rehabilitation has shown to be most effective strategy in reaching complete clinical recovery.

1. Vestibular neuritis

- Summary
 - Antiemetics to ease nausea and vomiting
 - Antihistamines to decrease vertigo
 - Benzodiazepines to reduce dizziness
 - Steroids to lessen inflammation

2. Vestibular migraine

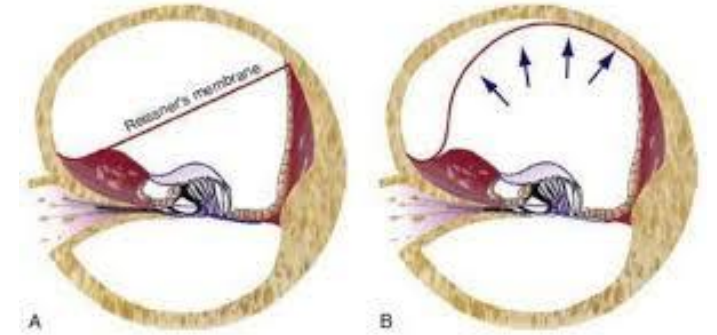
- Both migraine and vertigo or dizziness must be related in time in order to diagnose this condition.
- The treatment includes trigger avoidance, pharmacotherapy and vestibular rehabilitation.
- For acute attacks, only symptomatic control is eventually effective.
- Migraine abortive agents such as triptans have reached inconclusive results.

2. Vestibular migraine

- Prophylactic treatment
 - Beta-blockers (propranolol or metoprolol)
 - Calcium-channel blockers (verapamil)
 - Antidepressants (amitriptyline, fluoxetine, venlafaxine)
 - Anticonvulsants (valproate, topiramate)
 - Carbonic anhydrase inhibitors (acetazolamide)

3. Ménière's disease

- To stop vertigo attacks
- To abolish tinnitus
- To reverse or preserve the hearing loss.



3. Ménière's disease

- Pharmacological treatment
 - acute episode management
 - prevention of new attacks
 - treatment of audio-vestibular dysfunction
- There is no consensus on prophylaxis of Ménière's syndrome.

3. Ménière's disease

- Dietary salt restriction (1-2 gram salt diet)
- Adequate hydration (35 ml/kg of liquids)
- Avoid caffeine
- Stop smoking

3. Ménière's disease

- Thiazide diuretic hydrochlorothiazide-triamterene
- Carbonic anhydrase inhibitors acetazolamide

3. Ménière's disease

- Betahistine a weak histamine H1 receptor agonist and a potent histamine H3 receptor antagonist
 - increase inner-ear blood flow, thereby relieving pressure from the inner ear
 - Long-term high-dose treatment (at least 48 mg three times daily)

3. Ménière's disease

- Transtympanic steroids
 - In patients refractory to betahistine,
 - Those with bilateral ménière's
 - Those with relatively good hearing in the affected ear

3. Ménière's disease



- Pulse pressure treatment (Meniett device)
- Recent meta-analysis reported that Meniett device provided complete remission of 52% of patients and 34% of patients had not complete but significant release of symptoms.

3. Ménière's disease

- Transtympanic “low-dose gentamicin”
- Further progression of hearing loss in spite of the treatment of chronic audio-vestibular dysfunction:
 - Hearing aids
 - Vestibular rehabilitation

3. Ménière's disease

- Transtympanic “low-dose gentamicin”
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3. Ménière's disease

- Debilitating bilateral Meniere's disease
 - Intravenous streptomycin sulfate
- Immune-mediated bilateral Meniere's disease
 - Methotrexate treatment
 - Systemic steroids



Thank you

