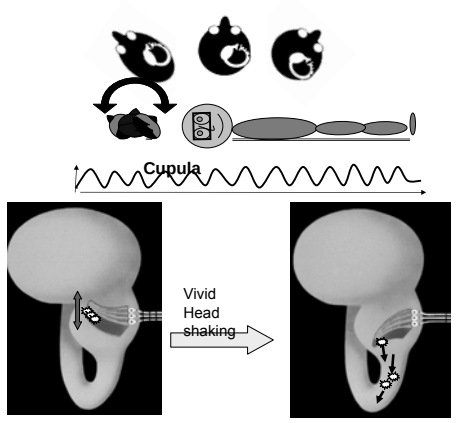


48

72 year old women, 4 months of dizziness and unsteadiness, especially with positional changes. Otherwise healthy

49

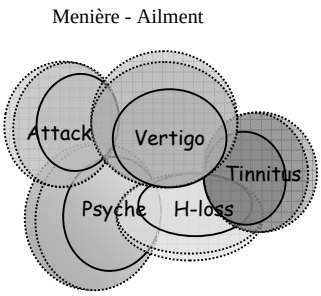
Mb Menière

It is a riddle in a mystery inside an enigma.

W Churchill - on the Ribbentropp pact 1939

Mb Menière Symptom & Ailment

- **Vertigo**
  - Attack
  - Continous
- **Hearing loss**
  - Fluctuating
  - Permanent
- **Tinnitus**
- **Fullness**
- **Diplacusis**
- **Tumarkin attacks**



MM -02

Definitions of Mb Menière

(AAO-HNS recommendations, ORL-H&N Surg 1995;113)

Possible Menières Disease
- Episodic spells of Menièrelike vertigo but without documented hearing impairment, or
- Sensorineural H-loss, either fluctuating or permanent, with uncharacteristic dizziness
- Other causes excluded

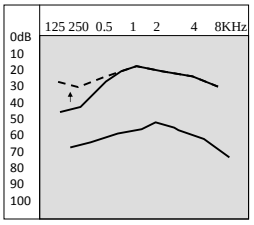
Probable Menières Disease
- One episode of true vertigo
- Audiometric verifierad sensorineural H-loss at least at one occasion
- Tinnitus or fullness in affected ear
- Other causes excluded

Definitive Menières Disease
- Two or more verified occasions with spinning vertigo > 20 min duration
- Audiometric verifierad sensorineural H-loss at least at one occasion.
- Tinnitus or fullness in affected ear
- Other causes excluded

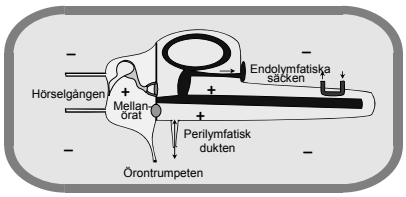
Verified Menières Disease
-Definitive Menière + histopathology (endolymphatic hydrops)

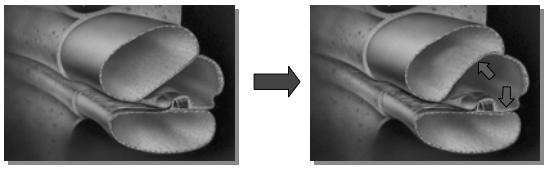
Hearing loss in Meniere

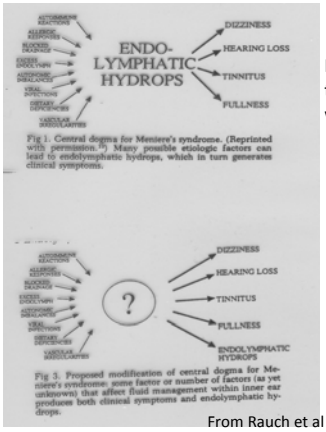
- Hearing loss fluctuate
- Initially there is a low-frequency hearing- loss,
- Later the loss becomes permanent
- 60-70 dB , Patient never gets totally deaf



Mb Menière hypothesis:







Hydrops can be found in temporal bone from patients without Mb Méniere

A number of theories have been proposed

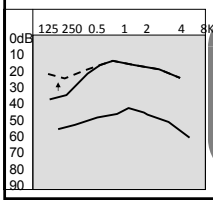
... And more will come!

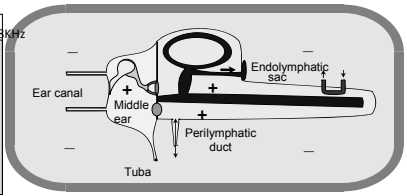
From Rauch et al 1989

One theory:

Gibson WP, Arenberg IK Pathophysiologic theories in the etiology of Meniere's disease. Otolaryngol Clin North Am 1997 Dec;30(6):961-7

A theory suggests that a narrowed duct becomes obstructed by debris that is cleared by a combination of the secretion of hydrophillic proteins within the sac and a hormone, saccin, that increases the volume of endolymph within the cochlea. It is proposed that the sudden restoration of longitudinal flow initiates the attacks of vertigo.





You must be dead in order to be properly diagnosed with ”certain” Meniere´s disease!!

”Definite” Meniere´s disease
2 or more spontaneous vertigo episodes > 20 minutes
Documented sensorineural hearing loss on at least one occasion
Tinnitus and aural pressure in the same ear

”Certain” Meniere´s disease =
”Definite” Meniere´s disease + histopathologic hydrops

A diagnosis, most often made on criteria

Mb Meniere a therapeutic AND diagnostic problem

The ’2/3’ problem of Meniere’s disease

- About 2/3 of the patients stop having attacks in 3-4 months
- About 2/3 of patients respond with reduced vertigo on most treatments. (Torok -77, -91),
- Effect of threatening with Surgery (Kerr et al -98)
- Effect of threatening with Gentamicin (Magnusson Karlberg)

Treatment Options

Pharmaceutical
Diuretics
Betahistidin (betaserc, serc)
Antihistamin
Anxiolytic
Channelblockers
Etc…

Dietry
Low-Sodium

Miscellaneous

Pressure
Pressure chamber
Meniette
Grommets

Topical
Steroids
Gentamicin
Latanoprost
Lidocain

Surgery
Shunt
Sac removal
Nerve section
Labyrinthectomy

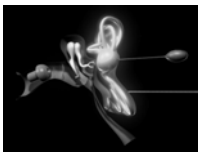
Treatment (Meniere's disease)?

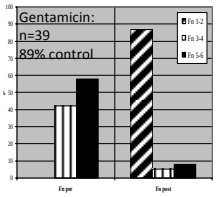
- Diuretics (scandinavian) f ex furosemid 40mgx1
- Betahistidin (Serc®), High dose 24/48mg x 3
- Suppress attack (*Dimenhydrinate, Promethazine*)
- Diazepam 2 – 2,5 mg x 1-2, [Clonazepam]
- Salt reduction. 50ug U-Na/d (**www.onh.lu.se**)
- Antisecretory factor? (SPC-flake®)

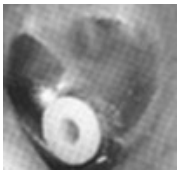
- 'Psycho supportive therapy'.

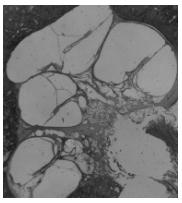
If that's not enough..

- TMD-tube
- Local pressure Meniette?
- Intratymp steroid
  - dexametason
- Saccus surgery??
- Gentamicin
- Vestibular nerve section
- Labyrinthectomy





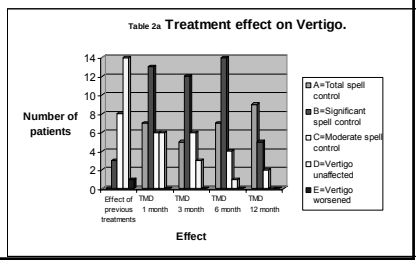




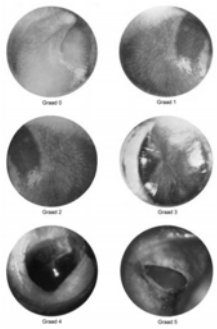
TMD for Meniere´s disease

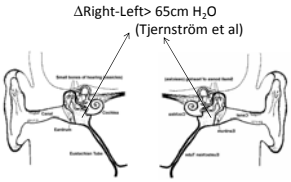
positive results
-Tumarkin *J Laryngol Otol* **1966**
-Lall *J Laryngol Otol* **1969**

negative results
-Hall & Brackmann *Arch Otolaryngol* **1977**



Alternobaric vertigo





Alternobaric vertigo (9.0%) In divers
(Gonnermannn et al, HNO 2007)

Intra tymp Steroids

- Dosage and regime vary
- 2 times a week for 2 weeks (JP Harris, G Hughes)
- We do 1/day for 4 days.
- Dexametson, with or without lidocain.

- Avoid infected eardrums or after radiation therapy

Risk for persistent perforations

Gentamicin

- Ototoxic, delayed effect, low dose
- The only? (Yet) Treatment that has been shown to have effect in a double blind study. *(Stokroos & Kingma Acta Otolaryngol **2004)***

1-2 injections and then wait

or

1 inj/week until there is symptoms

of vestibular impairment

Surgical Procedures

- Saccotomy – sac ectomy
  - Vs Placebo, as good as TMD (Thomsen et al -98)
- Vestibular nerve section
  - Get all the nerve, preventing further decrement??
  - Risk for complications
- Labyrinthdestruction /ectomy
  - The final blow…
- **All procedure aim at vertigo/dizziness**

Placebo?

- '71% respond with reduced vertigo, to any treatment' with in 3-4 months, As they do to no treatment at all. **Torok et al 1977.** ~800 studies scrutinized. (Re-done 1991.)
- **Kerr AG, Toner** JG. A new approach to surgery for Meniere's disease: **talking about surgery**. clin Otolaryngol Allied Sci. **1998** Jun;23(3):263-4
- **Magnusson M, Karlberg M.** Curr op Neurol 2002, 'Threatening with Gentamicin'

Mb Meniere

- Ethiology – not clairfyied
- Pathofysiology – at least questioned
- Varying Corse - Spontaneous Remissions
- Placebo effects??
- A treatment affecting the causitive ethiology should have an effect on hearing as well as vertigo

To consider:

- MR: Large Vestibular Aqueduct or Retro-jugular vein.
- If repeated Vertigo spells, with duration > 12h or without hearing loss – consider migraine?

Vestibular neuritis

Vestibularis Neurit

Symptom

- *Acut e(relative) spinning sensation – vertigo.* Malaise and vomiting.
- *Nystagmus.* (quick phse to healthy side), falls (to lesioned side)
- *No (new) cochlear symptom or tinnitus.*
- *No neurologic symptoms.*

Findings

- Spontaneous nystagmus, accentuated by a)gaze to quick phase, b)headshake c)Frenzels glasses
- Falls with slow phase of nystagmus
- Patol. Impulse test

Inflammation – Virus?

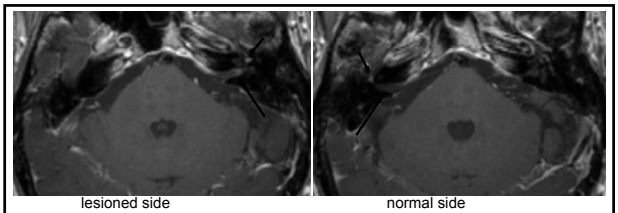
Normal ENT and Neurology

- CT useless to rule out CNS –lesion. MRT- recommended

Who - Epidemiology:
Quite common but varying with season, Often spring and fall. Sex: M~F .
15-60 år. Described among children but uncommon

Why - Ethiology:

- Virus? Herpes simplex (-'nerve ganglion'),
  Ischemic lesion of nerve or labyrinth??
- Cerebellar infarction? (1/3 > 50 år)
-Borreliosis? (erythma migrans??).
- MS? – MRT - fundus?,
- Zoster Oticus?? – pain!



lesioned side normal side

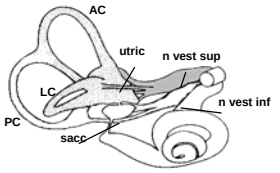
MRI (Siemens Magnetom Allegra) 3.0 Tesla T1-weighting, gadolinium 0.3mmol/kg ("tripple" dose)
Show: enhancement of the vestibular nerve in 2 consecutive cases

Karlberg, Annertz, Magnusson, Laryngoscope 2004

Most common: superior nerve

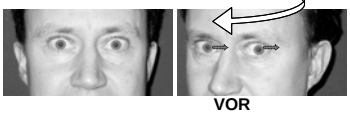
partiel periferal vestibular lesion that effect n vestibularis superior dvs

Anterior and lateral semicircular canal and utriculus



ent + SVV/SVH tilting to lesioned side

impulsetest



VOR

Cerebellar stroke vs vestibular neuritis:

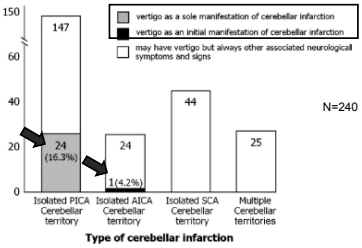


Figure 1. Frequency of cerebellar infarction subtypes simulating vestibular neuritis. PICA = posterior inferior cerebellar artery; AICA = anterior inferior cerebellar artery; SCA = superior cerebellar artery.

from Lee et al NEUROLOGY 2006;67:1178–1183

All had a normal impulses

Caveat: However, Small Brainstem infarctions may have pathological impulse test as well
(Toker et al 2008)

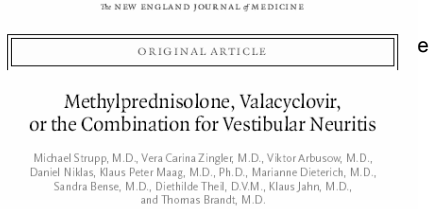
Treatment- Vestibular neuritis:

Acute phase *day1-2.* Care,. Ev. antivertigeneous drugs. i.v. rehydration.

Subacute phase *day 2-10.* Training. Habituation exercises.

Compensatory phase *day 10<* More extensive training - Ve

Sic e patient the lor


The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Methylprednisolone, Valacyclovir, or the Combination for Vestibular Neuritis

Michael Strupp, M.D., Vera Carina Zingler, M.D., Viktor Arbusow, M.D., Daniel Niklas, Klaus Peter Maag, M.D., Ph.D., Marianne Dieterich, M.D., Sandra Bense, M.D., Diethilde Theil, D.V.M., Klaus Jahn, M.D., and Thomas Brandt, M.D.

Prognosis?

Steroids

central kompensation
spontaneous nystagmus
ocular torsion

habituering
postural control

Restitution of function
ca 1/3 normal caloric reaktion

The higher the Canal paresis= the worse are the problem!!! (Kammerlind *et al* -06)

Dizziness, anxiety, fatigue

Cognitive ability??

- Bilateral vestibular loss –reduce results in cognitive tests (Brandt et al 2004)
- And hippocampal volume (Brandt et al 2006)
- Compensated unilateral vestibular loss have prolonged 'reaction time' in cognitive test! (Redfern et al 2003)

Vestibularis Neuronitis

1. Impulse test
2. Activate patient – 'rehab' program
3. Possibly HSV 1.
4. Steroid treatment (within 3 d)
   Initial dose betametason i.v.
   50mg prednisolon/d I 5d.
   Taper 5 d. [40-30-20-10-5mg]

Labyrintitis

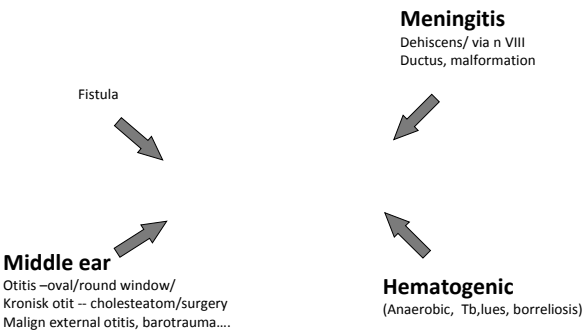
Definition:

infection of the inner ear

Signs of otitis + dizzy, hearing loss, tinnitus.

- Bacterial infektion
  - Purulent -- Direct effect – Nyst to healthy side
  - Serous -- Toxic effect – Nyst to slesioned side
- Virus
- Spirocheter - fungus
- Congenital

Labyrintitis - origin



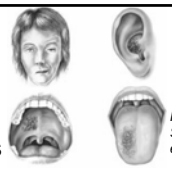
Bacterial complications

- Petrosit
- Gradenigo's syndrome -----
  - Otit
  - Pain behind the ear- ---- also i n n V.
  - Abducens pareses
- Epidural abscess
  - Parietalt – big / posterior fossa small
- Intra cerebral abscess
  - Today uncommon but cultural dependent
  - **Treatment Surgery**, systemic and local antibiotics.

Viral Infection

- Parotitis
  - At the end of the disease, unilat i 80%
  - High freq loss
  - Sometimes vertigo and caloric loss
- Measles
  - Sudden hearing loss at the time of the rash
  - Bilateral
- Upper airway and gastro intestinal infections

Acute viral infection



From Sweeney et al

- Varicella-Zoster
  - Zoster oticus about 25% get labyrinthine symptoms
  - Ramsay-Hunt (nVII & n VIII + blisters)
  - **Treatment:** Acyclovir i.v. (Valcyklovir 1 g x 3) + Steroid [f ex. prednisolon 50 mg x 1 i 5 d + taper]
- Herpes simplex??
  - Facialis pares?? Sudden deafness/vetibular neuritis
- CMV ganciclovir/foscarnet???

And now to something completely different….. The other part of the ear..