

به نام خدا

Meniere's Disease: an updated review

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25 بهمن 1403

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Meniere's Disease: Definition

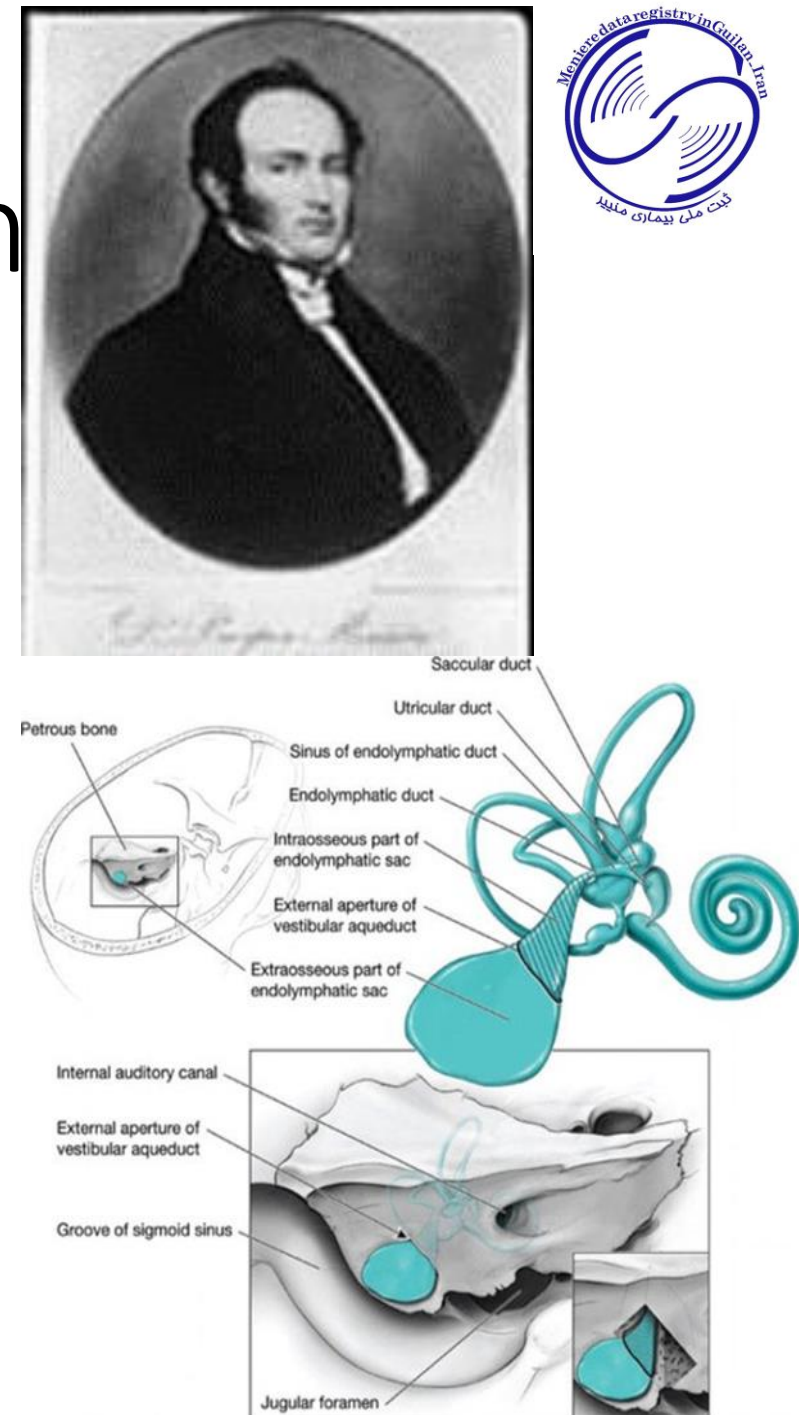
- Meniere's disease is defined as a symptom complex associated with:

1. Vertigo (episodic)
2. Sensorineural hearing loss (Low frequency)
3. Roaring tinnitus
4. Fullness of the ear

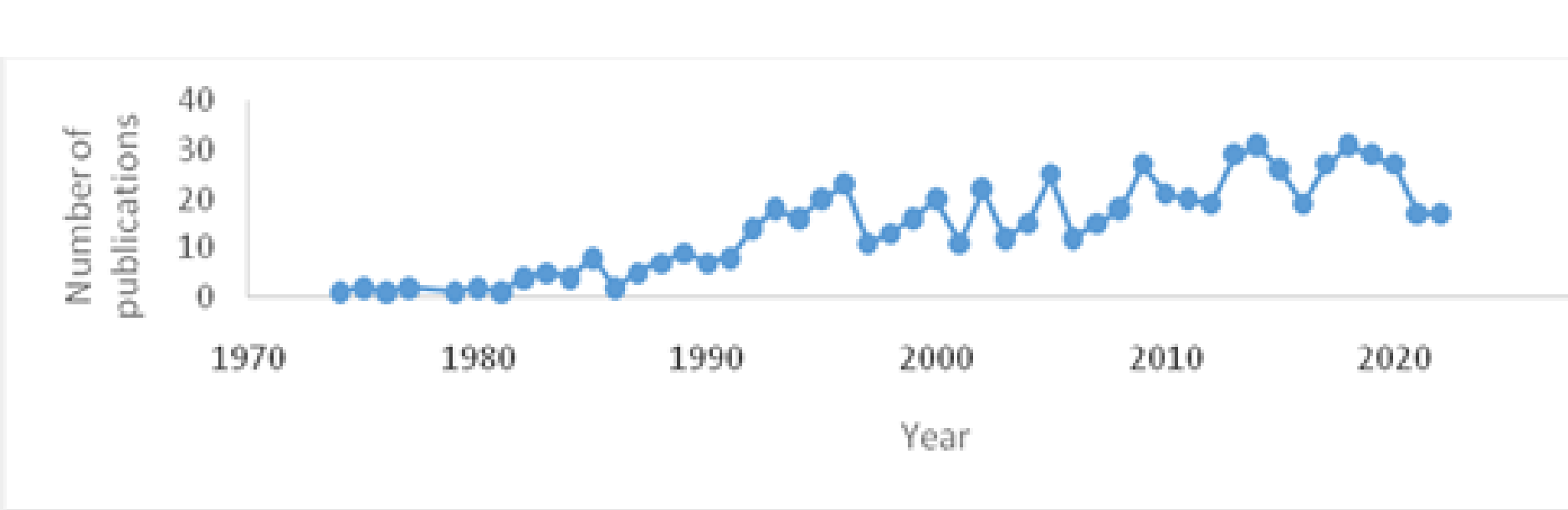
Attacks are often preceded by **an aura** consisting of a sense of fullness in the ear, increasing tinnitus, and a decrease in hearing. These symptoms are associated with dilated membranous labyrinth filled with endolymph

163 years have passed since this syndrome was described: 1861

Amount of literature accumulated has virtually doubled; **The past 15 years were with significant PROGRESS!**



Tracing the Landscape of Research in Meniere's Disease; a Bibliometric and Visualized Analysis



Publication year trend

1	United states
2	Japan
3	United Kingdom
4	Germany
5	Sweden

M.D. is difficult to study

- a **controversial** and often **difficult** disease to diagnose,
- **dramatic variability** is the **hallmark** of MD. The natural course of MD is typically progressive and fluctuates unpredictably
- the **absence of a definitive test** for MD necessitates diagnosis based on historical data.
- Its **affecting factors**: Stress, Allergic Rhinitis, TMJ disorders, dys-autonomia, ET dysfunction, Cervicogenic factors, ...

MD attacks are typically random and episodic (approximately **6-11 per year**), with periods of remission that may last months to years →→→

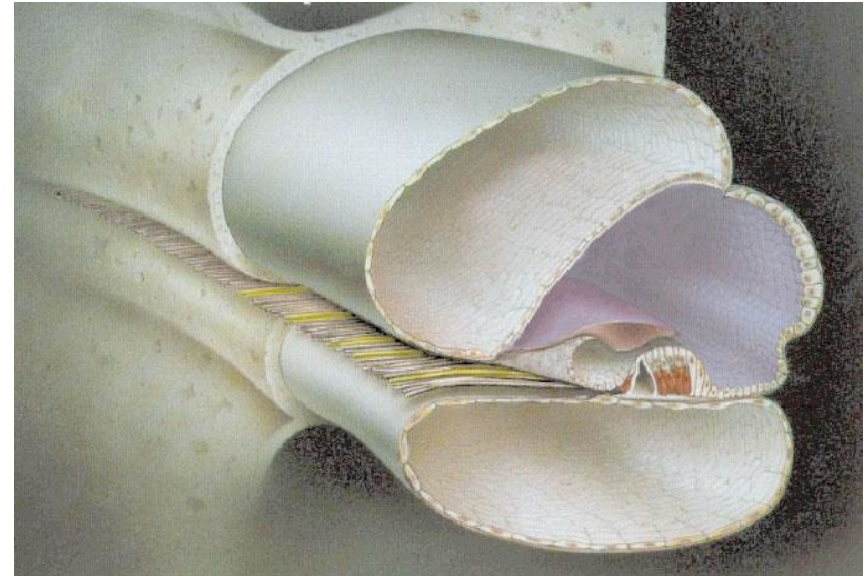
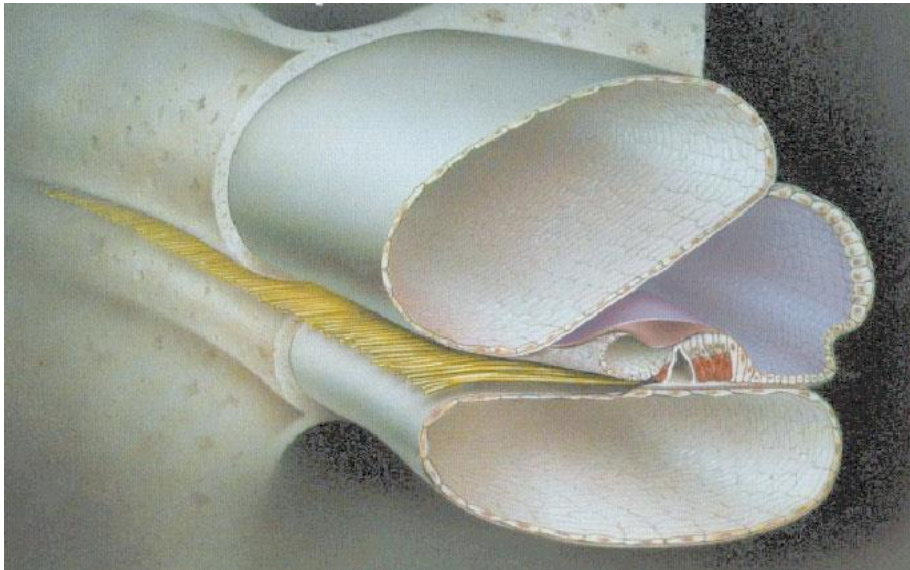
- Δ : is typically not made at 1 point in time; rather, **it may take months or even years** to fully appreciate the clinical manifestations leading to definitive diagnosis.
- ₹: **minimum 2-year time course over which results of interventions** must be documented

History

- 1861 – **Prosper Meniere** describes classic symptoms and attributes to labyrinth... LUKEMIA!!... Ménière along with Flourens...
- 1871 – Knappin theorizes dilatation of membranous Labyrinth
- **1938** – Hallpike and Portman confirm endolymphatic hydrops via temporal bone histology, Prior to this time, “Ménière disease” was used **as a generic term for any peripheral vertigo!!**
- 1972 – AAO defines the disease criteria/ vestibular and cochlear MD
- 1985 – AAO-HNS revises the definition and establishes reporting protocols/**vestibular and cochlear MD abandoned**
- 1995 – AAO-HNS revises the definition and reporting protocols again
- 2016- AAO-HNS+Barany New criteria
- **2017 & 2018- other newer criteria**

Pathophysiology

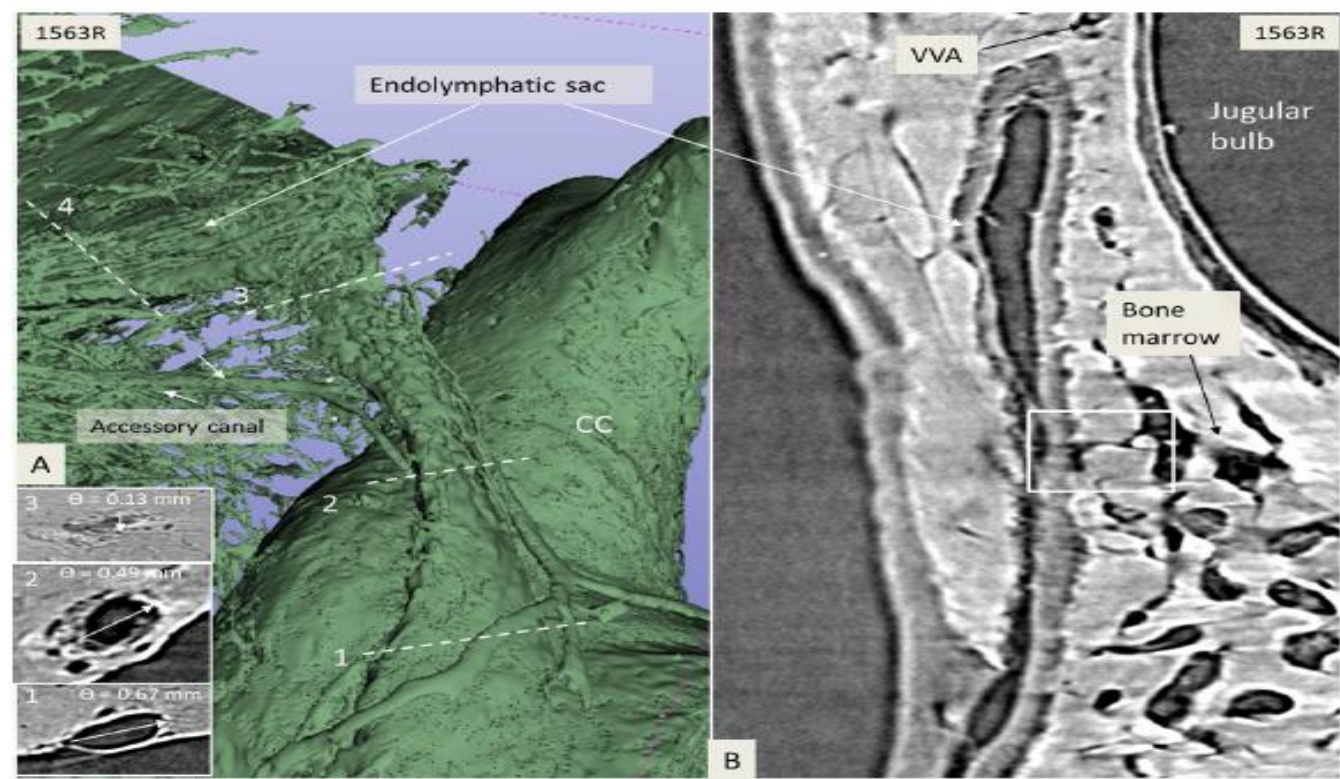
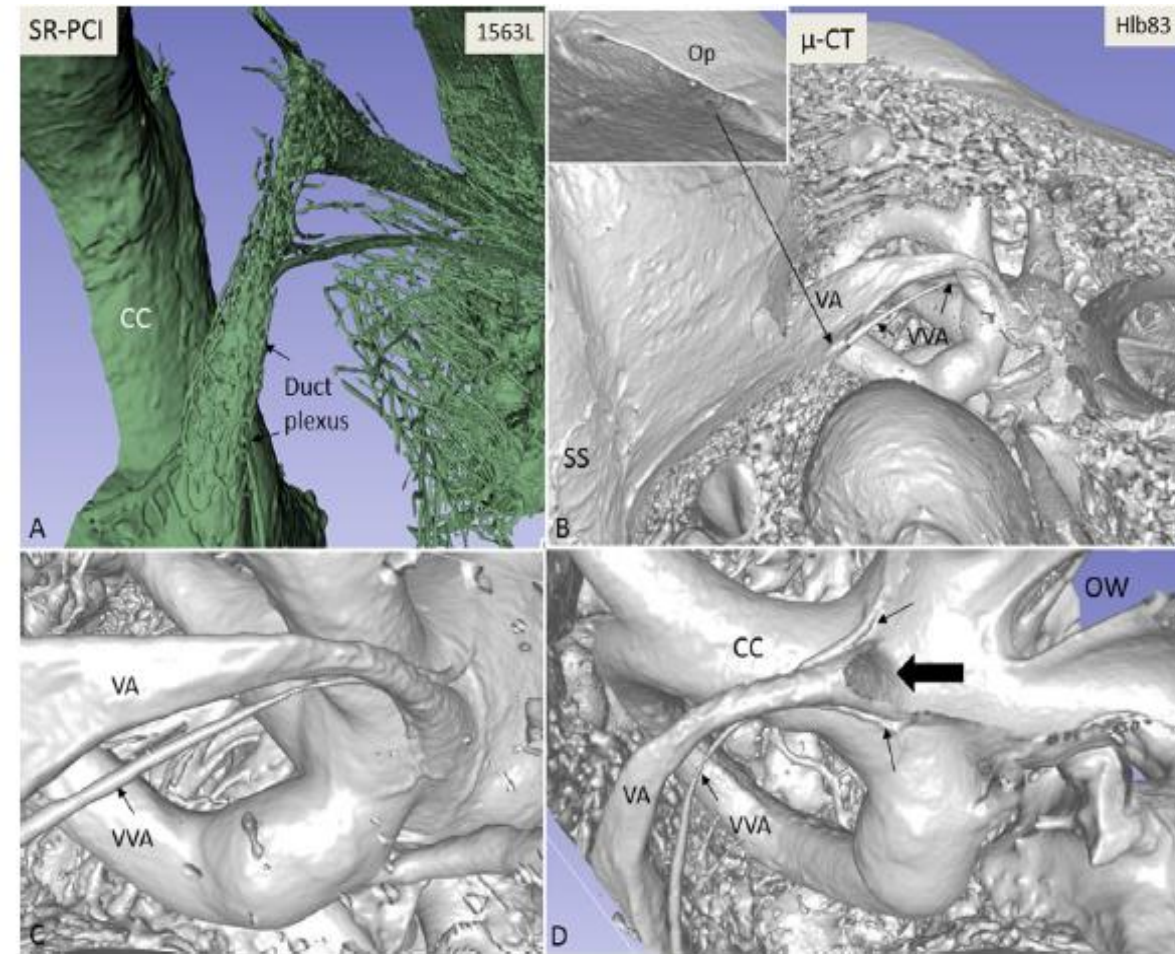
- E. Hydrops is **NOT pathognomic** for MD, it is just a **MARKER** for the disease
- A number of processes that seem associated with the development of hydrops (e.g., trauma, acute otitis media, labyrinthitis, congenital inner ear deformity, idiopathic processes).
- Knapp advanced the hypothesis that hydrops was similar to **ocular glaucoma**
- Endolymphatic hydrops leads to distortion of membranous labyrinth... Reisner's membrane can be seen bulging into the scala vestibuli in some histologic studies
- Microruptures may lead to episodic attacks which resolve when the tears heal



Pathophysiology.....Theories behind endolymphatic hydrops:

- **Obstruction** of endolymphatic duct/sac...inadequate absorption of endolymph by the E. sac, E. duct may act **as a valve** to regulate endolymph homeostasis.... otosclerotic foci causing mechanical endolymphatic blockage
- Hypoplasia of e. duct/sac **perisaccular fibrosis**
- Alteration of absorption of endolymph
- Alteration in production of endolymph
- **Ruptures** in the membranous labyrinth (Schuknecht)
- **Autoimmune** insult: 1 in 3 MD cases there is an autoimmune factor
- **Allergic factor**: 50% control of vertigo... E. sac a target organ... effects of circulating imm. Complx.
- **Vascular** origin/ Ischemia of the E sac or inner ear, E. Hydrops impairs **blood autoregulation**.
- **Viral** etiology, subclinical: HSV
- **Autosomal dominant** mode of inheritance has been suggested, although AR and mitochondrial inheritance has also been described. **Migraine is strongly association with familial MD. No gene** has yet been identified despite analysis of several potential candidates
- **Gluten sensitivity** has recently implicated as a possible etiology.
- The incidence is elevated in individuals with specific major histocompatibility complexes (**MHCs**). Human leucocyte antigens (HLAs) B8/DR3 and Cw7 have been associated with MD.

منیرز و بیکفایتی وریدی، ریسک میکروآنژیوپاتی



In humans, it was conceived that the endolymphatic sac (ES) was a passive structure and when it became blocked the endolymph could no longer drain, causing hydrops [3] . Recent research has challenged the rupture theory. Studies of the ES showed that it is a complex structure in humans consisting of **microtubules** which secrete **glycoprotein**, a hydrophilic substance, and it is the only part of the inner ear to have **lymphatic** and **phagocytic** capabilities

Figure 1. (A) Synchrotron radiation phase-contrast imaging (SR-PCI) and 3D reconstruction of a right human temporal bone (anterior view). The structures are visible after the bone was made transparent using a scalar opacity mapping tool. Semi-automatic segmentation visualized the extensive channel system surrounding the



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The Meniere attack: An ischemia/reperfusion disorder of inner ear sensory tissues ☆,☆☆



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- Meniere attacks arise as a chance association of endolymphatic hydrops and vascular risk factors for intracerebral ischemia. Hydrops acts as a variable Starling resistor upon the inner ear vasculature that is capable of inducing ischemic attacks only in people with reduced perfusion pressure in the ear.
- the differential sensitivity of the inner ear tissues to transient ischemia, with the sensory tissues (dendrites, hair cells) vulnerable to hours-long ischemia/reperfusion injury, and the stria vulnerable to ischemia due to its high metabolic rate. Permanent hearing loss and vestibular damage after many attacks would result when small areas of irreversible sensory cell damage accumulate and become confluent
- Induction of Meniere attacks in animal models requires both hydrops and a mechanism that reduces perfusion pressure, such as epinephrine injection or head dependency.
- Vulnerable tissues: damage to dendrites and hair cells and with strial atrophy in late Meniere disease cases

- Hydropic ear acts as a variable Starling resistor
- Changes of Atmospheric pressure
- Vascular risk in **every case: No studies have yet been performed to assess vascular risk factors in Meniere disease.**
- **Migraine, older individuals, sleep apnea,**
- **Examples of rare causes** of ischemia should include coagulation disorders, sickle cell disease, genetic and autoimmune vasculopathies, vertebral dissection or vascular malformations near the ear, and chronic carbon monoxide exposure.
- Differential sensitivity of inner ear tissues to ischemia
- Strial ischemia initiates the spells
- Ischemia/reperfusion injury during spells

Stroke risk factors by frequency in the general population.

Risk factor	Prevalence % (in US adult population)
Dyslipidemia, any type	53
Obesity	36
Hypertension	30
Age >55	21 (of total population)
Smoking	19
Atherosclerosis	8-14
Diabetes	8
Sleep apnea	3-7
History of myocardial infarction	4
History of stroke	2-3
History of TIA	2

If Meniere attacks occur only in those with vascular risk factors for stroke, then the prevalence of the disorders listed above should be increased in patients with a diagnosis of Meniere disease compared to the general adult population.

Chronic Cerebrospinal Venous Insufficiency and Menière's Disease: Interventional Versus Medical Therapy




Giuseppe Attanasio, MD, PhD; Luigi Califano, MD; Aldo Bruno, MD; Vincenzo Giugliano, MD; Massimo Ralli, MD, PhD ; Salvatore Martellucci, MD ; Claudia Milella, MD; Marco de Vincentiis, MD; Francesca Y. Russo, MD, PhD ; Antonio Greco, MD

TABLE III
Zamboni Diagnostic Parameters for CCSVI.*

1. Reflux in the IJVs and/or VVs in orthostatic and supine postures	Pathological when reversal flow lasted >0.88 seconds
2. Bidirectional flow (or reflux) in the intracranial veins and sinuses	Using the same intracranial approach and QDP system
3. B-mode abnormalities/stenosis of the IJVs including: <div>A. Morphological stenosis</div> <div>B. Hemodynamic stenosis</div>	<div>Presence of severe reduction of the CSA of IJVs in the supine position (<0.3 cm²), which does not increase with Valsalva maneuver</div> <div>Significant stenosis with simultaneous presence of intraluminal defects such as webs, septa, or malformed valves, and hemodynamic changes (block, reflux, increased velocity flow)</div>
4. Flow not Doppler—detectable in IJVs and/or VVs despite numerous forced inspirations	Tested in both sitting and supine position
5. Negative Δ cross-sectional area in the IJV	Value is obtained by measuring the difference in IJV cross-sectional area between the supine and upright positions.

*CCSVI was diagnosed when two or more criteria were found.

CCSVI = chronic cerebrospinal venous insufficiency; CSA = cross-sectional area; IJVs = internal jugular veins; QDP = quality Doppler profile; VVs = vertebral veins.

Recent studies using imaging and histopathology demonstrate loss of integrity of the BLB in the affected inner ear of MD patients: CA, 2018.



Oxidative Stress in the Blood Labyrinthine Barrier in the Macula Utricle of Meniere's Disease Patients

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The blood labyrinthine barrier (BLB) is critical in the maintenance of inner ear ionic and fluid homeostasis. Recent studies using imaging and histopathology demonstrate loss of integrity of the BLB in the affected inner ear of Meniere's disease (MD) patients. We hypothesized that oxidative stress is involved in the pathogenesis of BLB degeneration, and to date there are no studies of oxidative stress proteins in the human BLB. We investigated the ultrastructural and immunohistochemical changes of the BLB in the vestibular endorgan, the macula utricle, from patients with MD ($n = 10$), acoustic neuroma (AN) ($n = 6$) and normative autopsy specimens ($n = 3$)

OPEN ACCESS

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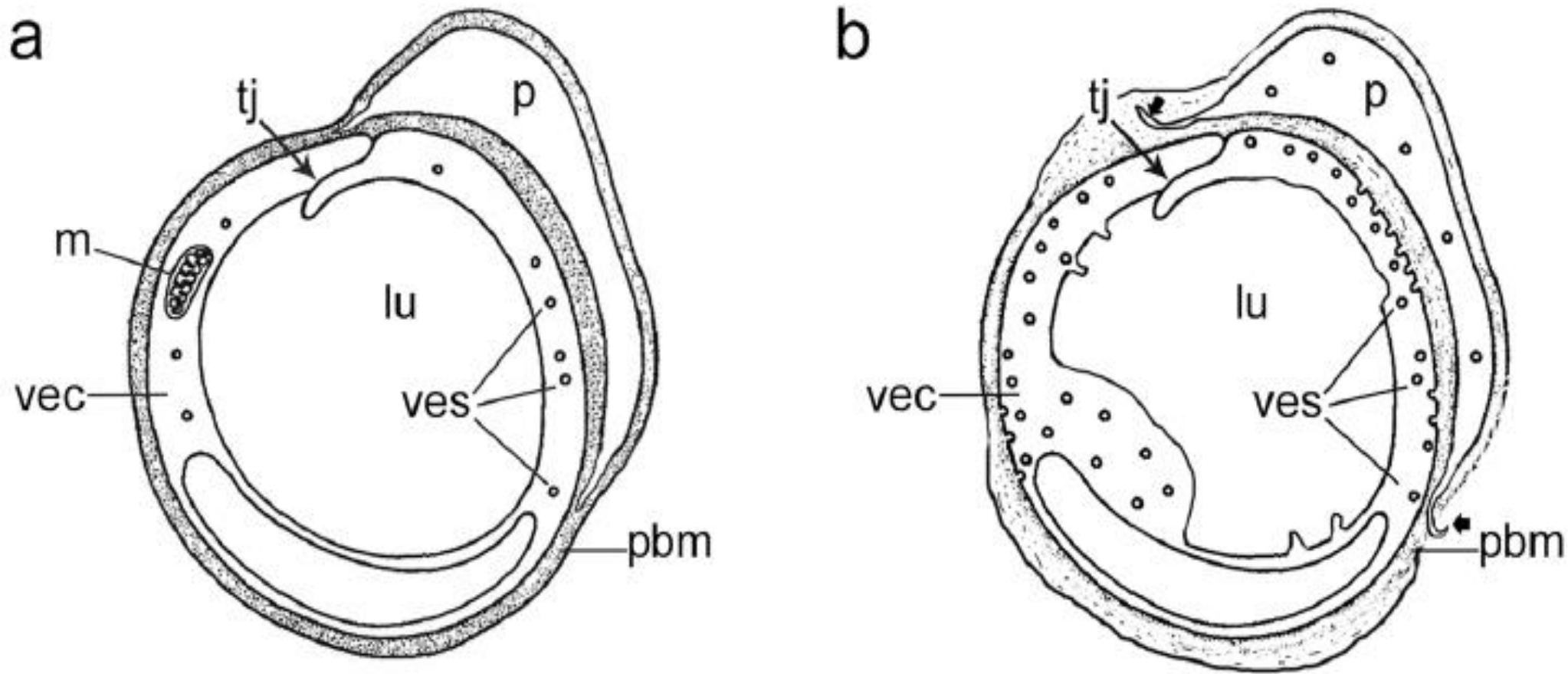


Figure 8. Diagram to represent the BLB in (a) normal capillary and (b) Meniere's disease capillary. In Meniere's disease, there are excessive vesicular formation (ves), abluminally concentrated, with degenerative changes noted early on in the endothelial cell (vec). The perivascular basement membrane (pbm) is thickened and edematous. Tight junctions (tj) are relatively preserved. Pericytes (p) exhibit vacuolization, and pericyte process detachment.

The results allowed us to investigate the extent of intercellular disruption in the microvasculature of the macula utricle from Meniere's patients

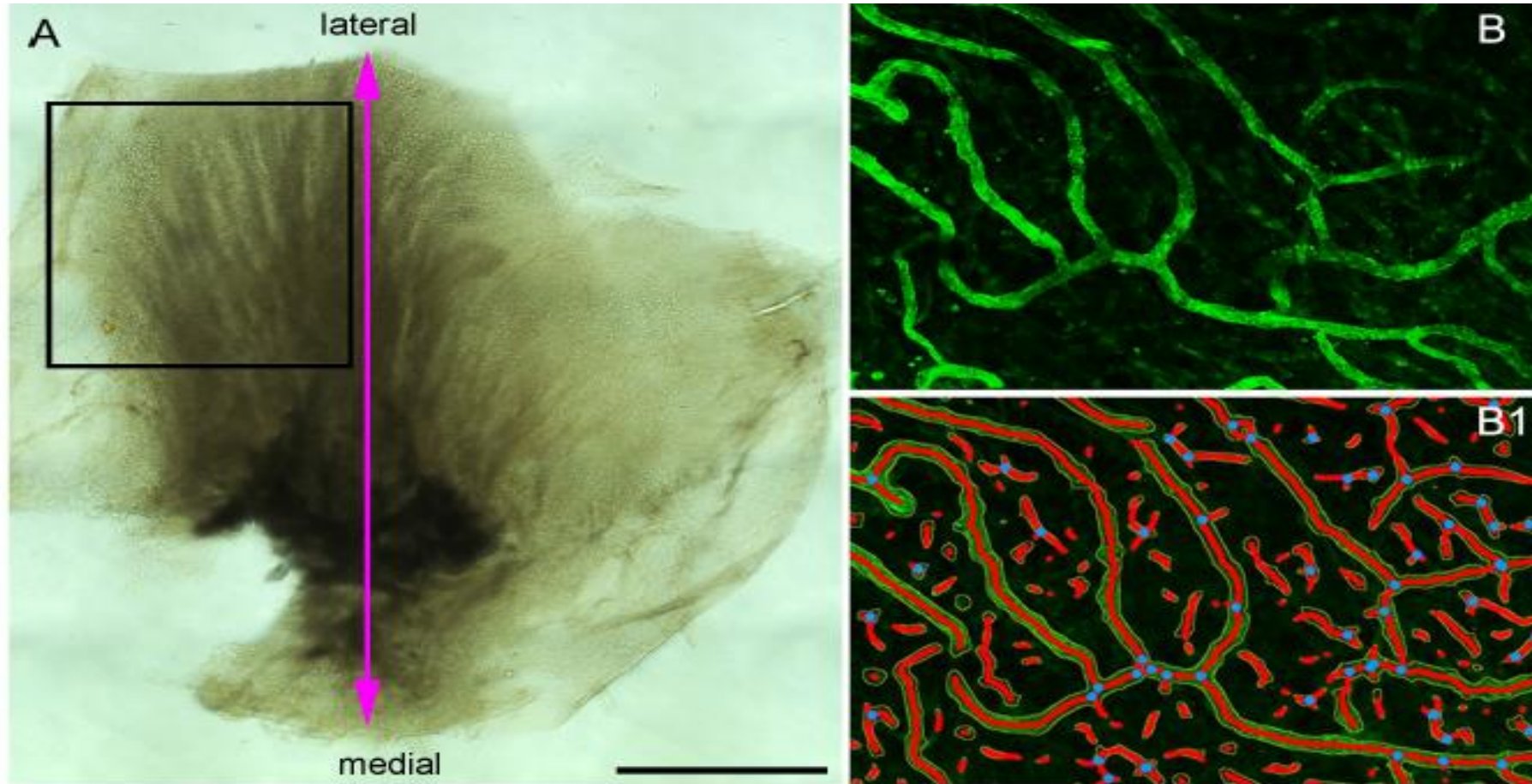
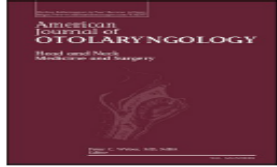


FIGURE 1 | (A) The macula utricle was cut into two halves. The black color rectangular frame shows the area analyzed for quantitative immunofluorescence. **(B)** A small immunostained area of the macula utricle (Specimen on **Figure 4C**) and **(B1)** shows the resulting segmented and skeletonized image from **(B)**. Blue dots showed the branching index. Bar in **(A)** is 1 mm.

بررسی ارتباط تغییرات میکروواسکولار در آم آر آی مغزی و عوامل خطر عروقی در بیماران منییر مراجعه کننده به بیمارستان امیرالمومنین رشت در سال ۱۴۰۰

- 60% از بیماران منییر و 23/33% از افراد گروه کنترل یافته میکروواسکولار در MRI داشتند که این تفاوت معنادار بود ($p=0.004$)



Prevalence of anxiety and depression in Meniere's disease; a comparative analytical study

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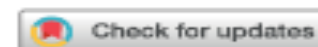
Results: A total of 177 participants enrolled. Anxiety score of MD, BPPV and control groups were 25.19 ± 14.16 , 13.64 ± 7.66 and 7.51 ± 4.83 respectively. Depression scores were: 11.25 ± 10.0 , 7.03 ± 5.51 , and 2.39 ± 3.64 , respectively. The average scores of anxiety and depression and the severity of anxiety and depression were higher in MD and BPPV groups than in the control group ($P < 0.001$). The average anxiety score and anxiety severity in the MD group was higher than in the BPPV group ($P < 0.001$). However, in the case of depression, only severity was higher in the MD group ($P < 0.001$), and the average depression score showed no significant difference between MD and BPPV groups. After controlling for underlying variables, the impacts of MD ($P < 0.001$; regression coefficient = 16.5) and also BPPV ($P = 0.025$; regression coefficient = 4.6) on anxiety were significant compared to the control group.

Conclusion: Our results suggest that the prevalence of anxiety and depression is higher in MD and BPPV patients than the healthy people, and MD has a higher effect on the incidence of depression and anxiety compared to BPPV

MD and retinal changes

The Laryngoscope, 2024 •

RESEARCH ARTICLE



Phonophobia and migraine features in patients with definite meniere's disease: Pentad or triad/tetrad?

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ABSTRACT

Background: Epidemiological studies have shown different association between migraine and Meniere's disease (MD). Few studies investigated the frequency of phonophobia in MD.

Objectives: This study aimed to determine the frequency of phonophobia and other features of migraine in definite MD.

Material and Methods: Patients with definite MD and a group of healthy (non-MD, non-vertiginous) control subjects participated. Demographic data and other clinical features of the two diseases recorded. Data analyzed in SPSS software version 20, by chi square and independent T test and logistic regression model.

Results: 69 MD patients (average age: 48.87 ± 12.15 years) and 60 control subjects (average age: 47.58 ± 12.05 years) enrolled. The frequency of migraine headache in MD cases was 16% (45% with aura) compared with 5% in control group (three cases; 2 without and 1 with aura) ($p < .001$). Family history of migraine was the only determinant of the presence of migraine in MD ($p = .001$, OR = 15.625, 95%CI: 2.94–88.33). The frequency of phonophobia in MD was very high (88.4%: 54.5% in migraine subgroup and 89.6% in non-migraine cases) and without significant relation to existence of migraine, in contrast to photophobia and osmophobia ($p = .064$).

Conclusions: The frequency of migraine in MD is higher than normal subjects. Phonophobia may be an independent symptom in MD.

ARTICLE HISTORY

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KEYWORDS

Meniere's disease; migraine; aura; phonophobia

- MD & BPPV
- MD & Migraine
- MD & BMI!!
- MD & Whiplash Syndrome
- MD & TMJD



Benign Paroxysmal Positional Vertigo Prevalence in Meniere's Disease: Is Meniere's Disease a Predisposing Factor?

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ABSTRACT

Background: Meniere's disease (MD) is a chronic illness defined as an idiopathic syndrome of endolymphatic hydrops. Benign paroxysmal positional vertigo (BPPV) is a balance disorder and can be the sequel of diverse inner ear impairments.

Objectives: The purpose of this study was to investigate the prevalence of BPPV in MD patients.

Materials and Methods: All patients with definite or probable MD participated in this cross-sectional descriptive and analytic study between March 2013 and February 2014. We used the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) criteria plus electrocochleography (ECoChG) test results to define the presence of MD and

Incidence:

- 13.1-500 in 100000.... 2-5.1 in 1000...
(50 to 200 per 100,000 adults)
- $M \sim F$, more prevalent among Caucasians
- peak age of onset is in the 4th & 5th decades
(almost exclusively reported in adults, with <3% of cases estimated to occur at age <18 years, most common between the ages of 40 and 60 years)
- bilateral MD: 20-25%... Autoimmune disease & migraine
- familial cases: 10-20%.... migraine

MD: Different subgroups of patients with potentially different etiological factors

- Five clinical variants among patients with MD based on epidemiological studies was made by the European Ménière's Disease Consortium; [2018]: 53%, 8%, 13%, 15%, 11% **therapy selection!**

Unilateral Ménière's disease (MD)	
Type 1	Sporadic MD (if concurrent migraine, autoimmune disease, or familial MD is observed, patients are out of this subgroup)
Type 2	Delayed MD (hearing loss precedes vertigo attacks in months or years)
Type 3	Familial MD (at least two patients in the first or second degree)
Type 4	Sporadic MD with migraine (temporal relationship not required)
Type 5	Sporadic MD plus an autoimmune disease
Bilateral MD	
Type 1	Unilateral hearing loss becomes bilateral
Type 2	Sporadic, simultaneous hearing loss (usually symmetric)
Type 3	Familial MD (most families have bilateral hearing loss, but unilateral and bilateral cases may coexist in the same family)
Type 4	Sporadic MD with migraine
Type 5	Sporadic MD with an autoimmune disease

Diagnosis of MD:

- There is **no single test** that makes the diagnosis of MD.
- Symptomatology: recurring attacks of vertigo (96.2%) with tinnitus (91.1%) and ipsilateral HL(87.7%). Vertigo attacks usually **2-3 hours** (Attacks longer than a day are unusual and if present should cast **doubt** on the diagnosis)
- Attacks are often preceded by an **aura** consisting of a sense of fullness in the ear, increasing tinnitus, and a decrease in hearing.
- 50% of patients presented with vertigo and HL together, 19% with vertigo only, and **26% with only deafness**. These variable initial presentations have led to the usage of the terms cochlear or vestibular MD.
- The terms **recurrent vestibulopathy or atypical MD** have been used for individuals with less than the classic triad of HL, vertigo, and aural fullness or tinnitus.
- **Diagnostic Criteria....** + Diagnostic tools to detect E. Hydrops + R/o DDx.
Other masquerading diagnoses; such as **syphilis, immune-mediated inner ear disease**, and **migraine** must have been excluded.

چند نکته جدید:

- Documented **return of low-frequency hearing threshold** in subsequent audiograms confirms the diagnosis of MD.
- in the first years of the disease **conductive or mixed HL** can also be observed
- Flat SNHL & drop attacks in progressed advanced MD.
- The 2016 diagnostic criteria also include **delayed MD**: when the auditory symptoms precede vertigo attacks by months or years, or vertigo spells precede HL by weeks or months
- Gurkov et al. [2019]: primary hydropic ear disease (PHED) vs. Secondary hydropic ear disease (SHED)
- EAONO 2018 criteria define **confirmed MD** the diagnosis of which is based on MRI scans; MRI now makes it possible to visualize the inner ear in a way that the vestibular or cochlear hydrops can be detected

AAO-HNS CHE 1985 & 1995:

- Meniere's is diagnosed by
 - Vertigo
 - Spontaneous, lasting minutes to hours
 - Recurrent, must have more than 1 episode (**>20 min, > 2 episodes: 1995**)
 - Associated with nystagmus
 - Hearing loss
 - Fluctuating sensorineural
 - Low-frequency or flat
 - Tinnitus
 - **AAO-HNS CHE 1995 (aural fullness!!)**
- Vertigo treatment reporting standard
 - 0 = Complete control
 - 1-40 = Substantial control
 - 41-80 = Limited control
 - 81-120 = Insignificant control
 - > 120 = Worse
- Hearing treatment reporting standard
 - PTA reported 500, 1000, 2000, 3000 kHz
 - If multiple pre and post levels are available, the worst is always used
 - PTA is considered improved / worse if a 10 dB difference is noted
 - SDS is considered improved / worse if a 15% difference is noted

Avg spells/month post-treatment (24 mon recommended)

x 100 =
Control Level

Avg spells/month pre-treatment (6 mon recommended)

AAO-HNS CHE 1995: Functional Level Scale

AAO-HNS CHE 1995 vs. 2016 criteria....

- **Possible Meniere's disease** Deleted in 2016 !
 - Episodic vertigo of the Meniere's type without documented hearing loss, or
 - Sensorineural hearing loss, fluctuating or fixed, with dysequilibrium but without definitive episodes
 - Other causes excluded
- **Probable Meniere's disease**
 - One definitive episode of vertigo/... **Two or more episodes of vertigo or dizziness, each lasting 20 minutes to 24 hours. B. Fluctuating aural symptoms (hearing, tinnitus or fullness) in the affected ear**
 - Audiometrically documented hearing loss on at least one occasion
 - Tinnitus or aural fullness in the treated ear
 - Other causes excluded
- **Definite Meniere's disease**
 - Two or more definitive spontaneous episodes of vertigo 20 minutes or longer/ **each lasting 20 minutes to 12 hours**
 - Audiometrically documented hearing loss on at least one occasion
 - Tinnitus or aural fullness in the treated ear
 - Other cases excluded
 - See staging chart
- **Certain Meniere's disease** Deleted in 2016 !
 - Definite Meniere's disease, plus histopathologic confirmation
 - See staging chart

Stage	PTA
1	<=25
2	26-40
3	41-70
4	>70

Box 165-1. AMERICAN ACADEMY OF OTOLARYNGOLOGY-HEAD AND NECK SURGERY CRITERIA FOR MENIERE DISEASE DIAGNOSIS¹²⁰

Major Symptoms

Vertigo

- Recurrent, well-defined episodes of spinning or rotation
- Duration from 20 minutes to 24 hours
- Nystagmus associated with attacks
- Nausea and vomiting during vertigo spells (common)
- No neurologic symptoms with vertigo

Deafness

- Fluctuating hearing deficits
- Sensorineural hearing loss
- Progressive hearing loss, usually unilateral

Tinnitus

- Variable, often low pitched and louder during attacks
- Usually unilateral
- Subjective

Diagnosis of Meniere Disease

Possible Meniere Disease

- Episodic vertigo without hearing loss or
- Sensorineural hearing loss, fluctuating or fixed, with dysequilibrium but without definite episodes
- Other causes excluded

Probable Meniere Disease

- One definitive episode of vertigo
- Hearing loss documented by audiogram at least once
- Tinnitus or aural fullness in the suspected ear
- Other causes excluded

Definite Meniere Disease

- Two or more definitive spontaneous episodes of vertigo lasting at least 20 minutes
- Audiometrically documented hearing loss on at least one occasion
- Tinnitus or aural fullness in the suspected ear
- Other causes excluded

Certain Meniere Disease

- Definite Meniere disease plus histopathologic confirmation

AAO-HNS & Barany Soc. 2016:

- **Definite MD:**

- **Two or more** spontaneous attacks of **vertigo**, each lasting **20 minutes to 12 hours**
- **Audiometrically documented** fluctuating low- to midfrequency sensorineural hearing loss (SNHL) in the affected ear on at least 1 occasion before, during, or after 1 of the episodes of vertigo
- **Fluctuating aural symptoms** (hearing loss, tinnitus, or fullness) in the affected ear
- Other causes excluded by other tests

- **Probable MD:**

- At least **2 episodes** of **vertigo or dizziness** lasting **20 minutes to 24 hours**
- **Fluctuating aural symptoms** (hearing loss, tinnitus, or fullness) in the affected ear
- Other causes excluded by other tests

Japan Society for Equilibrium Research: MD criteria;2017

- Proposed in 1974 and revised them in 1987 and 2017.
- In the latest criteria used in this review, diagnostic criteria for MD, as well as for two atypical MD: **Cochlear type and Vestibular type** are postulated.
- Each criterion is composed of two parts: A: symptoms and B: examination findings....
 - A: 1. Spontaneous vertigo attacks lasting **10 minutes to several hours**. 2. fluctuating cochlear symptoms (HL, tinnitus or aural fullness). 3. No neurological symptoms except for the eighth cranial nerve.
 - B. Examination findings 1. Audiometrically ... 2. horizontal/torsional **nystagmus and/or postural imbalance**. 3. No neurological dysf. 4.R/O others, and 5. Identification of endolymphatic hydrops in the affected ear by **contrast-enhanced MRI**

MD Examinations (Japanese criteria)

- 1) audiological tests,
- 2) vestibular function tests: nystagmus toward affected side (irritative) and to unaffected ear (paralytic); caloric test and the vestibular evoked myogenic potentials
- 3) tests for estimating endolymphatic hydrops: **The EcoG** (electrocochleography), **glycerol test**, **furosemide test**, and glycerol/furosemide, cervical vestibular evoked myogenic potential (**cVEMP**)
- 4) MRI imaging of endolymphatic hydrops: **3D-FLAIR imaging+ Gd.** using **3T** MRI unit with 32-channel head coil...Positive ratio: ranges from 73.2% to 94.2%, which is higher than that of the tests for estimating endolymphatic hydrops

Diagnostic categories (Japanese)

- **Certain Meniere's disease**: To meet all the points in criteria A and B.
- Definite Meniere's disease: To meet all the points in criteria A and points 1–4 in criteria B.
- Probable Meniere's disease: To meet all the points in criteria A.
- Diagnostic criteria for **atypical Meniere's disease**
 - 1. Cochlear type of atypical Meniere's disease
 - 2. Vestibular type of atypical Meniere's disease (Note: Vestibular type of atypical MD should be diagnosed after exclusion of recurrent vertigo caused by mechanism other than endolymphatic hydrops.)

MD: symptoms

- Bilateral synchronous SNHL (symmetric or asymmetric) can occur in some patients, although such a pattern should raise concern for the possibility of **autoimmune inner ear disease** and when progressing slowly over years, may favor **migraine**
- Sensorineural hearing loss may antedate the onset of vertigo episodes by several months or years. This clinical variant has been called **“delayed hydrops”**
- The characteristic of **Tinnitus**:
Roaring
- A temporal association between hearing loss and the vertigo episode is sometimes observed by the patient, generally as a **change in hearing within 24 hours of the vertigo episode**. Hearing loss typically fluctuates spontaneously in the first few years of the disease.
- Episodic vertigo may precede the onset of hearing loss by several weeks or months, but tinnitus or aural fullness is usually associated with the first episode of vertigo
- vertigo ceased **spontaneously in 57%** of patients in 2 years, and 71% after 8.3 years. Attacks are often clustered in time

HL is **essential** for diagnosing Definite and probable MD.... Averages 0.5, 1, 2 and 3 kHz..

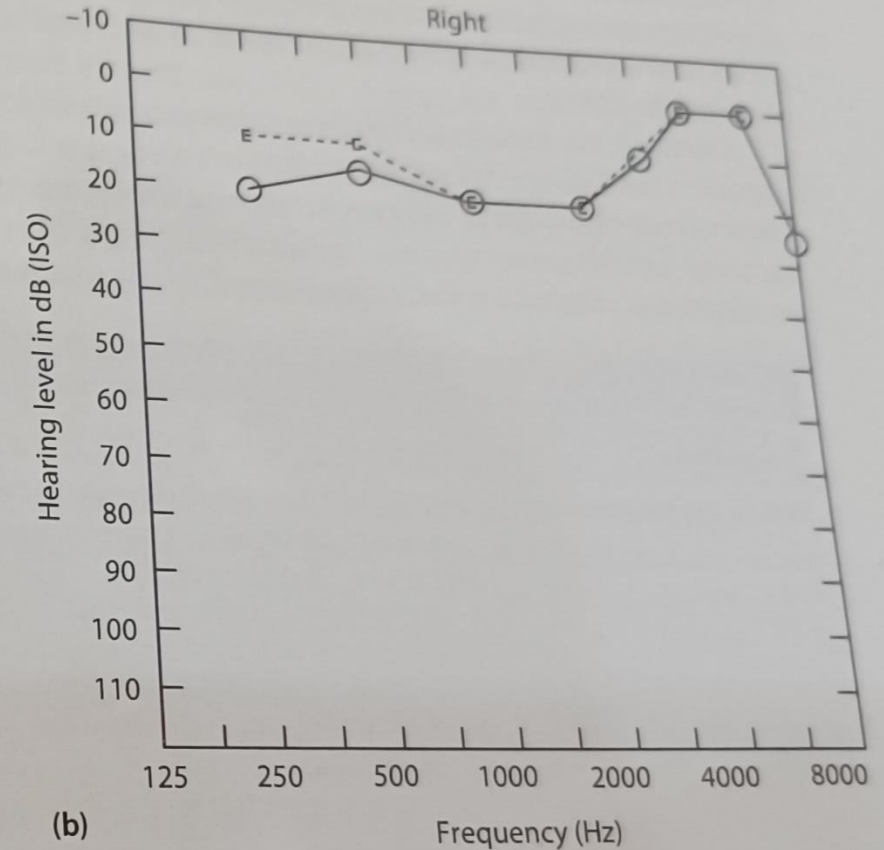
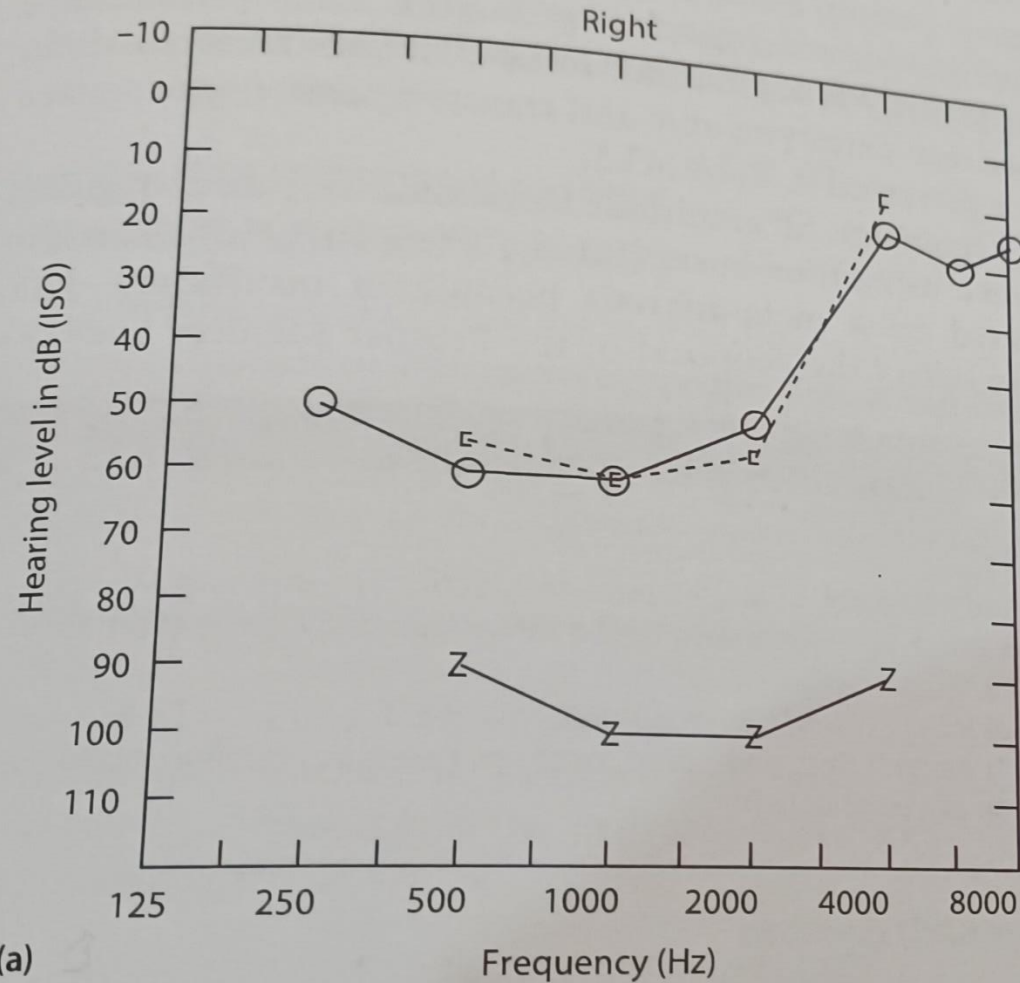


Figure 63.1 Audiogram in Ménière's disease. This patient, a 14-year-old female, began to have attacks of acute spontaneous vertigo with right-sided aural fullness and then tinnitus. **(a)** Audiogram on presentation shows a 60 dB low-frequency hearing loss with normal acoustic reflexes (Z), indicating a fully recruiting cochlear hearing loss. **(b)** Audiogram after 4 months of treatment with a rigorous low-sodium diet shows normal pure-tone thresholds.

Diagnostic tools to detect E. Hydrops:

- E. Hydrops is NOT pathognomonic for MD, it is just a MARKER for the disease
 - Electrocochleography
 - Cochlear Hydrops Analysis Masking Procedure (CHAMP): in stacked ABR
 - Delayed Gd. injected MRI: 4 hrs IV or 24 hrs IT..... A bilateral disease!!

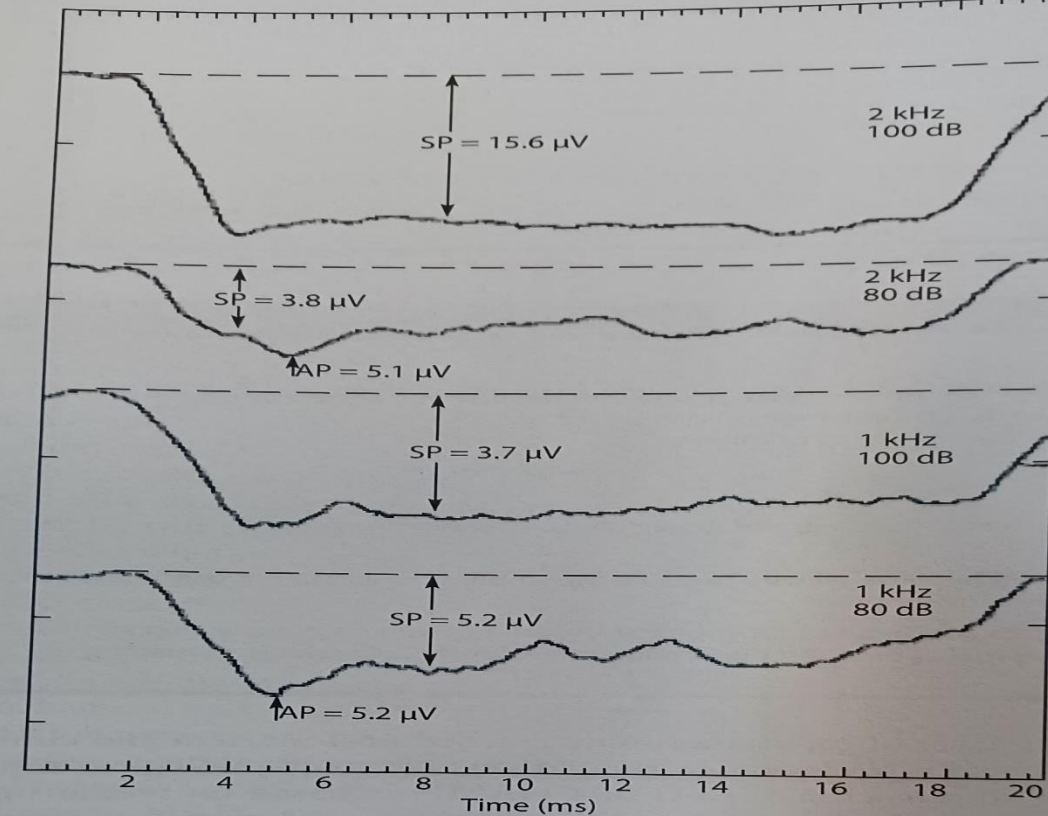


Figure 63.2 Electrocochleogram (ECoG) in Ménière's disease. Transtympanic ECoG of the patient whose audiogram is shown in Figure 63.1, showing large negative summating potentials (SP) in response to 16 ms, 1 kHz and 2 kHz tone-bursts at 80 and 100 dB nHL. The mean absolute negative SP levels in patients with definite Ménière's disease, who have subjective thresholds below 40 dB nHL, are as follows: 2 kHz, 100 dB 46 mV; 2 kHz, 80 dB 44 mV; 1 kHz, 100 dB 44 mV. These results show that tone burst ECoG responses are more likely to be abnormal in patients with Ménière's disease than are click-evoked responses.⁷⁵ Figure courtesy of W. Gibson, Sydney, Australia.

TABLE 63.5 Electrocochleography SP/AP ratio and SP thresholds

	Stimulus	Thresholds	
		Extratympanic	Transtympanic
SP/AP ratio	Click	>0.42	>0.35
SP	Tone-bursts	–	<–2 μV (<–3 μV at 1 kHz)

Differential diagnosis

- Labyrinthitis
 - otitis media
 - middle ear or inner ear surgery
 - fistula test (+)
- Drug intoxication of ear
 - streptomycin
 - Gentamycin
- vertebro-basilar artery insufficiency
 - Relevant to head position and movement
 - Accompany with other cranial nerve symptom
 - abnormal MRA of vertebro-basilar artery
- Benign paroxysmal positional vertigo
 - Vertigo occurs when head in a definite position
 - decade second to 2 minute vertigo
 - Without hearing loss and tinnitus
- Vestibular Migraine
- Vestibular neuritis
 - Common cold
 - Without symptom of cochlea
 - More than 2 week vertigo
- Acoustic neuroma
 - Unilateral progressive hearing loss and tinnitus
 - Mild vertigo
 - Sometimes with symptom of trigeminal nerve
- Sudden hearing loss
 - Severe or profound, unilateral sensorineural hearing loss suddenly occurs, with or without vertigo
 - Recovery of vertigo, hearing or partial hearing

MD is a Dx. Of exclusion:

- Otosyphillis Serological studies
 - T.I.As
 - Vestibular schwannoma
 - Endolymphatic sac tumors
 - Vestibular Migraine/ Migraine Its criteria...
 - BPPV
 - Vestibular Paroxysmia..... Its criteria(definite vs. probable)
 - neuro-vascular conflict
 - Recurrent Unilateral Vestibulopathy
 - Chronic Subjective Dizziness
- } MRI with & without Gd











Investigations

- PTA/IA/ SDS
- Gd-MRI of CPA & IAC
- Serological tests
- Electrocochleography
- Videonystagmography
- Vestibular Evoked Myopotentials (VEMP)



Review

European Position Statement on Diagnosis, and Treatment of Meniere's Disease*

Jacques Magnan , O. Nuri Özgirgin , Franco Trabalzini , Michel Lacour ,
Antonio Lopez Escamez , Mans Magnusson , Enis Alpin Güneri , Jean Philippe Guyot ,
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Assessment:

1. Low to medium frequency sensorineural hearing loss as mentioned above is the most significant finding of MD....> PTA mandatory.

Assessment:

- 2. Vestibular test battery:
 - VNG replaced electronystagmography,
 - Caloric tests are still applicable,
 - Video head impulse tests,
 - Vestibular evoked myogenic potentials (VEMPs) help evaluate the function of the utricle and saccule as well as the superior and inferior vestibular nerves; Today VEMPs are rather used for monitoring the otolith function and the effect of intratympanic gentamicin applications
 - Electrocochleography has lost its popularity over time

Assessment: Imaging

- 2007/Nakashima et al./3 Tesla MRI + **intratympanic gadolinium** injection. (Gd perfuses through the round window membrane allows the boundary between the endolymphatic space and the perilymphatic space to be distinguished)
- Also, MRI with IV gadolinium/ A **delay of 4 hours** is necessary following the injection of **double dose** of Gd. Both ears can be assessed but there is the risk of systemic toxicity due to the high dose of Gd. (While the T2-weighted images represent both perilymphatic and endolymphatic fluids, the bright signal on the **3D-FLAIR images** represents only the perilymphatic fluid and internal dark signal represents the endolymphatic fluid)
- In case the endolymphatic duct expands **>33%**, it should be argued as endolymphatic hydrops. However, the visualization of endolymphatic hydrops is not required to define MD and the **MRI imaging should not be used to replace the diagnostic criteria of MD** when also all definition criteria are fulfilled.

Treatments

- Life style modifications: Salt restrictions, water, stress management, No smoking, ...

Common general health issues whose management often benefits the patient with MD include: sleep disorders, allergies, thyroid dysfunction, diabetes, and perimenstrual or peripmenopausal hormonal fluctuations.

It is possible to assume that low amounts of caffeine, such as 100 mg/day, will not trigger Meniere's symptoms

- Medical therapy(diuretics, vasodilators, antiemetics, CATS restriction)

- Intratympanic Treatment

- Surgical therapy: one third of patients

- Endolymphatic sac decompression
- Vestibular neurectomy
- labyrinthectomy

Treatments in the acute period

- Patients with severe vertigo and nausea:
 - typically **require intravenous administration of fluids** during the emergency department stay.
 - To reduce symptoms, **anti-vertigo drugs** (include antihistamines, benzodiazepines, and anticholinergics).
 - To reduce symptoms, **antiemetics** (include metoclopramide and domperidone) are used.
 - Intravenous infusion of **7% sodium bicarbonate** is also effective to reduce vestibular symptoms.
 - Acute sensorineural **hearing loss** associated with vertigo attacks are treated with **steroids** (PO, IV, IT)

Medical Therapy

- سرکوبگرهای وستیبولی... استیل کولین، هیستامین، گلوتامات سه نوروترانسمیتر تحریکی در سیستم وستیبولی GABA مهارکننده اصلی سیستم وستیبولی اینها برای BPPV، فقدان دوطرفه عملکرد وستیبولی، نارسایی یک طرفه وستیبولر با جبران ضعیف مرکزی، یا دیزینس مزمن غیر وستیبولی اثری **ندارند!**
- ضد استفراغ ها... سروتونین و دوپامین محرکهای **اختصاصی تر** مرکز تهوع هستند (اوندانسترون و متوکلوپرامید) کانابینوئیدها و آنتاگونیستهای نوروکینین هم ضدتهوع های قوی هستند
- Mainstay of peripheral vertigo management are antihistamines that possess **anticholinergic/ antihistaminic** properties (short duration)
- Cinnarizine- dimenhydrinate- Meclizine-Diphenhydramine-Promethazine-scopolamine

Acute Therapy

	Sedative	Anticholinergic	Antiemetic
Promethazine (phenergan)	+++	+++	++
Diphenhydramine (Benadryl)	+++	+++	++
Dimenhydrinate (Gravol)	+++	++	+++
Hyoscine (Scopolamine)	++	+++	+++
Prochlorperazine (Stemetil)	++	+	+++
Meclizine (Bonamine)	+	+	+++

Treatments in the intermittent period

- algorithm reported by Sajjadi and Paparella (2008)
- Lifestyle changes
- Medications: Diuretics: Isosorbide, an osmotic diuretic is most commonly used in Japan (See CQ2). Anti-vertigo drugs, vitamin B12, and Chinese herbs are also used (See CQ1). anxiolytics or hypnotics may be used.
- Middle ear positive pressure treatment: Meniett is approved by FDA in the United States, but not by Pharmaceuticals and Medical devices Agency in Japan. Instead, the middle ear pressure device (Daiichi Medical Co., Ltd., Japan), which is an upgraded TM massage device is approved and available in Japan recently...
- Endolymphatic sac surgery
- Selective destruction of the vestibule: Gentamicin IT... (“shot-gun” protocol and the “titration” protocol.)

Recommendations:

1- anti-vertigo drugs (betahistine)

- Short-term therapy (< 3 months) may have some suppressive effects on vertigo symptoms and frequency of vertigo attacks (Grade of recommendation: B). However, long-term therapy (> 3 months) is not recommended because it has no effect (Grade of recommendation: C2).
- According to the clinical experience, the use of Betahistine 48 mg bid for 3-6 months to prevent Meniere's attacks can be advised (European Position Statement on Diagnosis, and Treatment of Meniere's Disease; Jacques Magnan et al. 2018)

Recommendations:

2- diuretics

- They can be considered as a treatment options to suppress vertigo and hearing loss (Grade of recommendation: C1). Isosorbide (90 ml/day), an osmotic di- uretic may also be considered as a treatment option to prevent the recurrence of vertigo attacks within six months after the last vertigo attack (Grade of recommendation: C1).
- As all were lacking the high quality of evidence, some studies have reported the efficacy of diuretics. The report concluded that there has been no good evidence of using diuretics in MD. Diuretics are generally issued as first-line therapy for MD. The studies that support using diuretics have a low level of evidence. The thiazide group diuretics can be a part of **the medical treatment**. (European Position Statement on Diagnosis, and Treatment of Meniere's Disease; Jacques Magnan et al. 2018)

Recommendations:

3- anti-viral drugs

- They are not recommended as a treatment option for Meniere's disease (Grade of recommendation: D).

Recommendations:

4- middle ear positive pressure treatments

- There is insufficient evidence to prove Meniett over placebo (insertion of a tympanostomy tube) on the symptoms of Meniere's disease.
- However, using Meniett device **for longer than 4 months** may have suppressive effects on the frequency of vertigo attacks. It may be recommended as a treatment option to prevent the recurrence of vertigo attacks (Grade of recommendation: B).... **not recommended as a treatment option for cochlear symptom** (Grade of recommendation: C2).

Recommendations:

5- endolymphatic sac surgery

- Because the endolymphatic sac surgery is the only surgical treatment of Meniere's disease with preservation of the inner ear function, it can be considered as a treatment options to prevent the recurrence of vertigo attacks and pro- gression of hearing loss before destructive surgery (Grade of recommendation: C1)

Cochrane review by Pullens et al. over two randomized controlled studies showed that no significant effect could be achieved using the endolymphatic sac surgery, providing insufficient evidence for the beneficial effect.

Kitahara proposed **the injection of dexamethasone into the sac**. As the endolymphatic sac is the only location for immune reactions in the temporal bone the hypothesis by Kitahara makes sense. (European Position Statement on Diagnosis, and Treatment of Meniere's Disease; Jacques Magnan et al. 2018)

Recommendations:

6- selective destruction of the vestibule

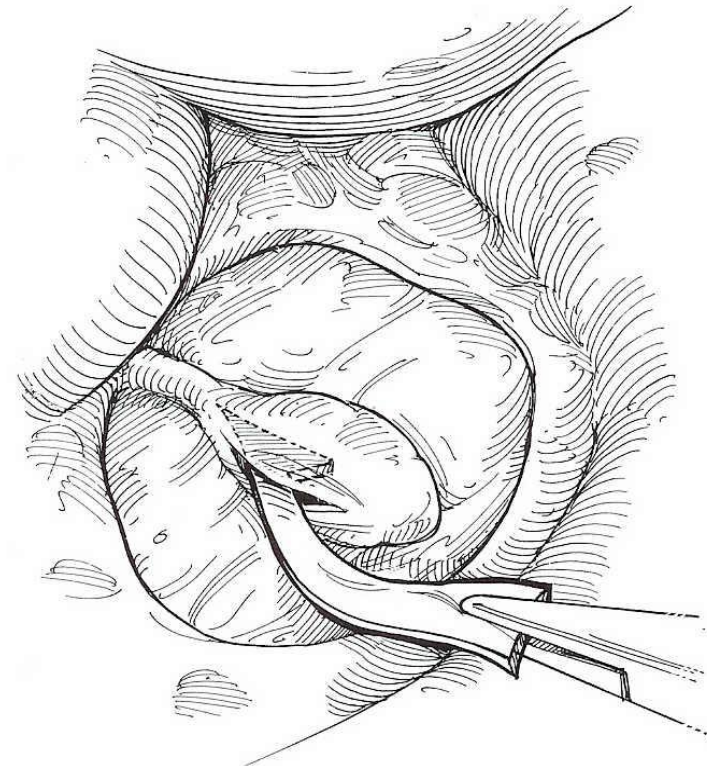
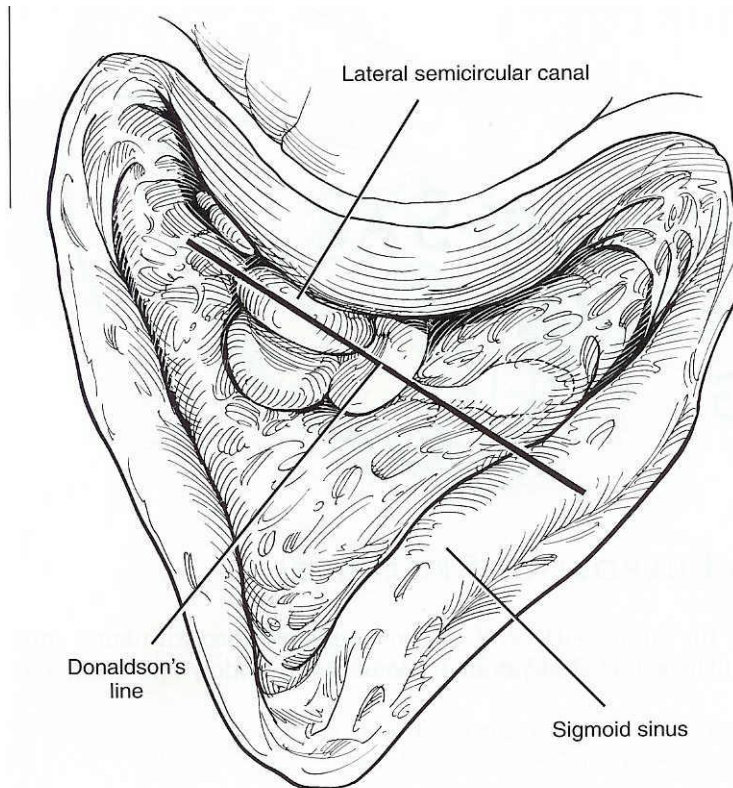
- **IT gentamicin** therapy is an effective treatment to prevent the recurrence of vertigo attacks in patients with intractable MD, but it carries a risk of worsening hearing loss (Grade of recommendation: B). Prior to IT gentamicin therapy, IT steroid therapy can be considered as a treatment option (Grade of recommendation: B).
 - mainly causing atrophy on type 1 vestibular cells as well as the neuroepithelium
 - dizziness and unsteadiness following the injection can be a minor problem that can be resolved by vestibular rehabilitation
- one injection of 26.7 mg/mL concentration and scanning the vestibular physiological responses (vHIT)
- While there is not sufficient evidence to prove effectiveness of vestibular nerve section, it is a treatment option that can be considered to prevent the recurrence of vertigo attacks in cases refractory to the other treatments including IT gentamicin therapy (Grade of recommendation: C1).

Vestibular neurectomy is believed to be **the most efficient technique for drop attacks** (Tumarkin's disorder) and for incapacitating MD.

1. Endolymphatic Sac Surgery
2. Selective vestibular nerve section

Both are Hearing preserving

Only a small group of patients, 5% to 10% of the total, who continue to have intractable vertigo require invasive therapy.



Overview

- Acute Therapy
- Life style modifications
- Long-Term Stabilization
 - Non-invasive medical treatments
 - Alternative options
- Non-Destructive Therapy
 - Medical: IT Steroids
 - Surgical: Mastoid shunt
- Destructive Therapy
 - Medical: IT Gentamicin
 - Surgical
 - Nerve section
 - Labyrinthectomy

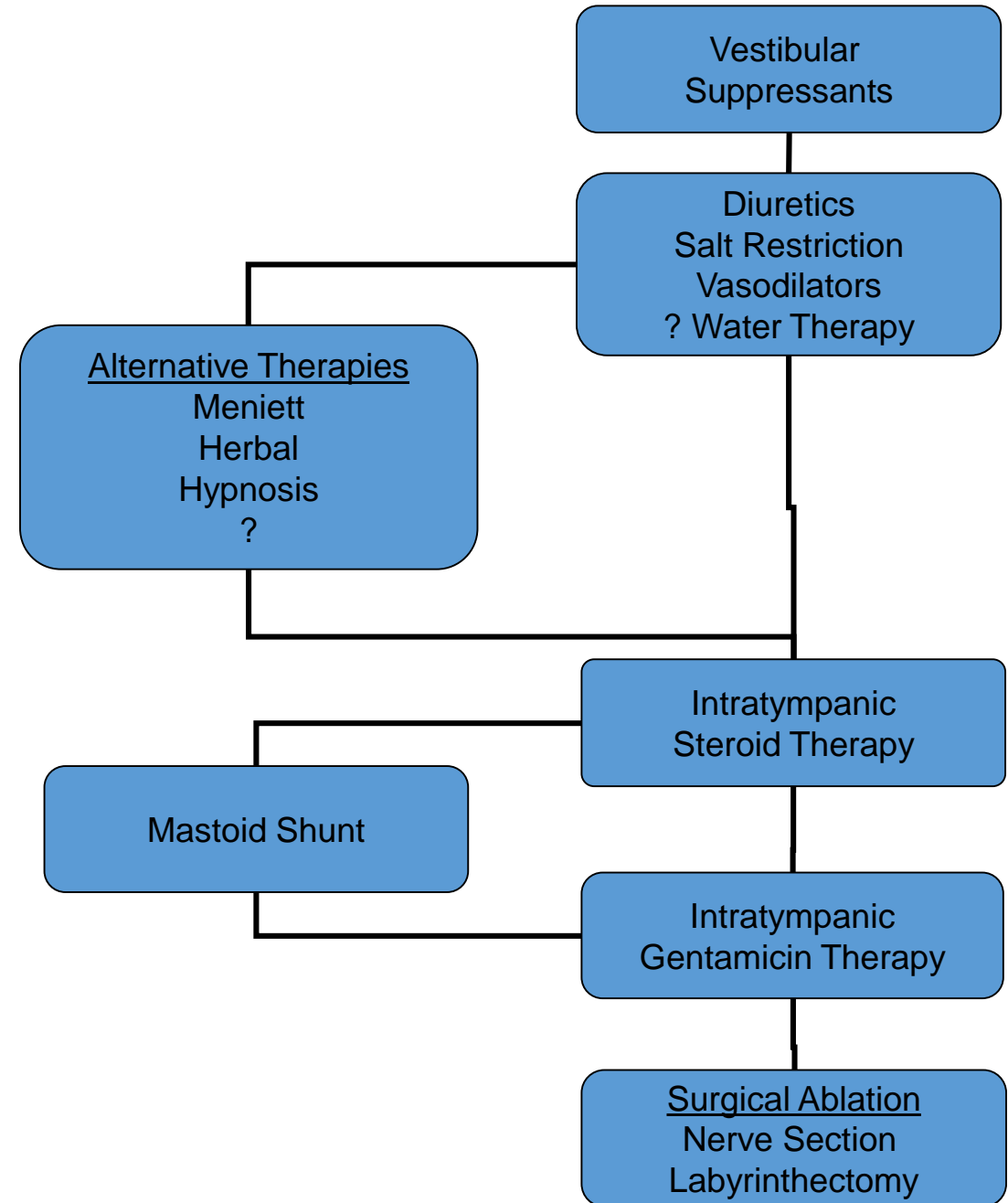
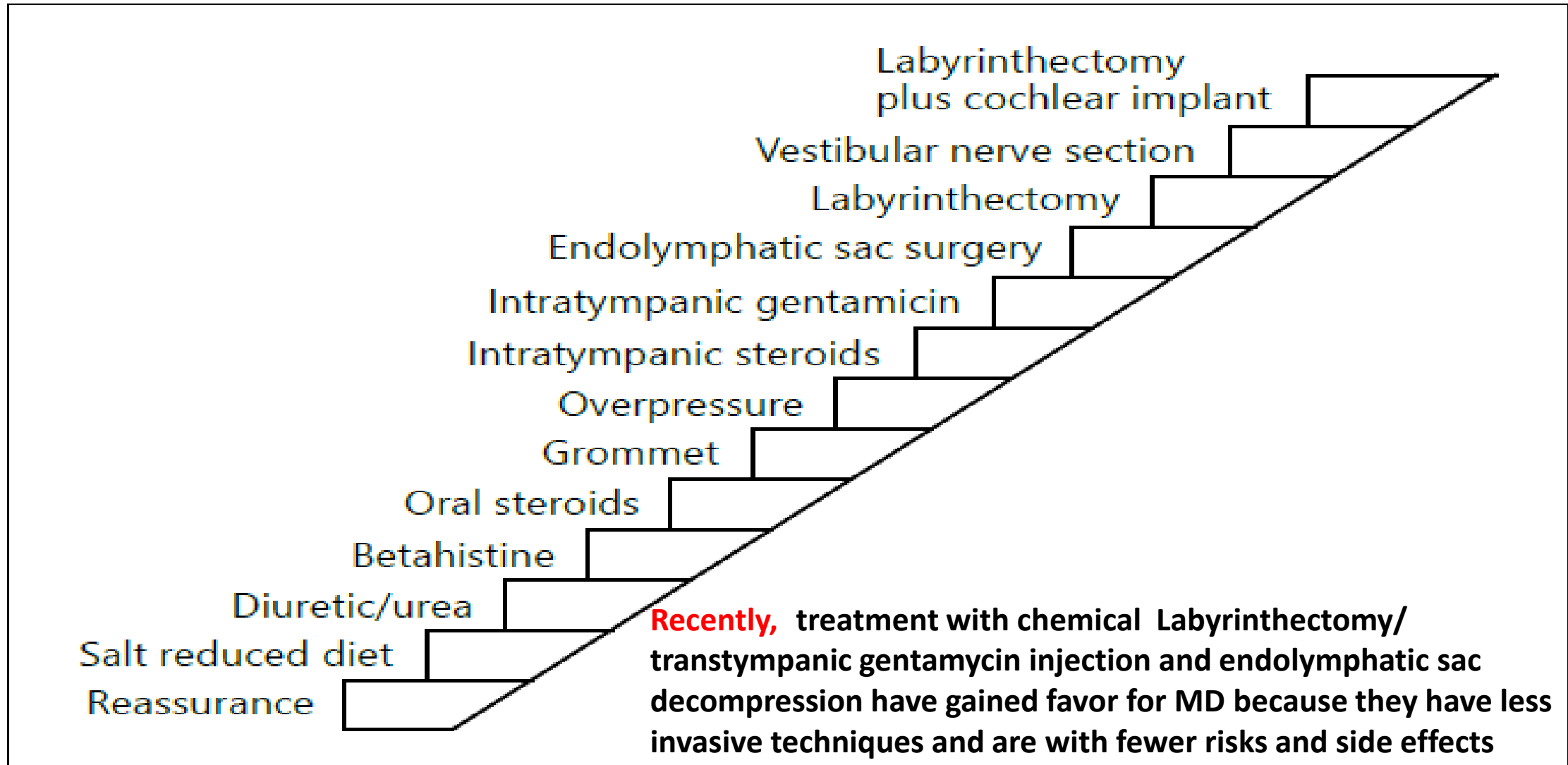




Figure 2: Algorithm for the treatment of MD. MD: Meniere's disease

Treatment ladder... Antivirals, Immunotherapy, CI, a course of anti-migraine therapy, ...





Management:

Review

European Position Statement on Diagnosis, and Treatment of Meniere's Disease*

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- Firstline Management (Preventive): Diet, Betahistine, Duetics
- Secondline Management (Preventive): IT steroids
 - IT dexamethasone application can have a short-term control over the Meniere episodes as being effective in only 5% to avoid ablative surgery.
 - The Cochrane review by Westerberg showed limited evidence to support the effectiveness of intratympanic steroids in MD treatment. Of note, the recent Oto-104 study with 12 mg dexamethasone can have the potential of discarding the disadvantages of intratympanic dexamethasone treatment regarding its low concentration
- Thirdline Management: sac surgery,
- Fourthline Management: IT gentamicine
- Fifthline Management: labyrinthectomy and vestibular neurectomy

Clinical Practice Guideline: Ménière's Disease

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

Abstract

Objective. Ménière's disease (MD) is a clinical condition defined by spontaneous vertigo attacks (each lasting 20 minutes to 12 hours) with documented low- to midfrequency sensorineural hearing loss in the affected ear before, during, or after one of the episodes of vertigo. It also presents with fluctuating aural symptoms (hearing loss, tinnitus, or ear fullness) in the affected ear. The underlying etiology of MD is not completely clear; yet it has been associated with inner ear fluid (endolymph) volume increases, culminating in episodic ear symptoms (vertigo, fluctuating hearing loss, tinnitus, and aural fullness). Physical examination findings are often unremarkable, and audiometric testing may or may not show low- to midfrequency sensorineural hearing loss. Conventional imaging, if performed, is also typically normal.

Keywords

fluctuating aural symptoms, electrocochleography, endolymphatic hydrops, endolymphatic sac decompression, gentamicin, labyrinthectomy, Meniett device, sensorineural hearing loss, sodium-restricted diet, vestibular testing, quality of life

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Introduction

Ménière's disease (MD) is a clinical syndrome affecting approximately 50 to 200 per 100,000 adults and is most common between the ages of 40 and 60 years.¹ In 1861, Prosper Ménière noted that vertigo, off-balance, and hearing loss symptoms associated with MD reflected a lesion of the inner ear. Strict clinical classification to diagnose MD has been established by the American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS).^{2–4} These diagnostic

Clinical Practice Guideline: MD, 2016

Summary of Guideline Key Action Statements:

- ❖ STATEMENT 1. **DIAGNOSIS OF ME´NIE`RE’S DISEASE:** ...Recom.
- ❖ STATEMENT 2. **ASSESSING FOR VESTIBULAR MIGRAINE:**Recom.
- ❖ STATEMENT 3. **AUDIOMETRIC TESTING:** .. an audiogram for the diagnosis of MD.
...**Strong recommendation**
- ❖ STATEMENT 4. **UTILITY OF IMAGING:** ...**MRI: Option**
- ❖ STATEMENT 5. **VESTIBULAR OR ELECTROPHYSIOLOGIC TESTING:** Clinicians should **not** routinely order vestibular function testing or electrocochleography (ECochG) to establish the diagnosis of MD. Recommendation **against**
- ❖ STATEMENT 6. **PATIENT EDUCATION:** Recom.
- ❖ STATEMENT 7. **SYMPTOMATIC MANAGEMENT OF VERTIGO** Recom..
- ❖ STATEMENT 8. **SYMPTOM REDUCTION AND PREVENTION** ... Recom.

- ❖ **STATEMENT 9. ORAL PHARMACOTHERAPY FOR MAINTENANCE:** Clinicians may offer **diuretics and/or betahistine for maintenance therapy** to reduce symptoms or prevent MD attacks. ... Option
- ❖ **STATEMENT 10. POSITIVE PRESSURE THERAPY:** Clinicians should **not** prescribe positive pressure therapy to patients with Me´nie`re's disease. Recommendation **against**
- ❖ **STATEMENT 11. INTRATYMPANIC STEROID THERAPY:** ...Option
- ❖ **STATEMENT 12. INTRATYMPANIC GENTAMICIN THERAPY:** to patients with active MD not responsive to nonablative therapy.... Recommendation
- ❖ **STATEMENT 13. SURGICAL ABLATIVE THERAPY:**... Recom.
- ❖ **STATEMENT 14a. ROLE OF VESTIBULAR THERAPY FOR CHRONIC IMBALANCE:** Interictal instability and following ablative therapy: Recom.
- ❖ **STATEMENT 14b. ROLE OF VESTIBULAR THERAPY FOR ACUTE VERTIGO:** Recommendation **against**
- ❖ **STATEMENT 15. COUNSELING FOR AMPLIFICATION AND HEARING ASSISTIVE TECHNOLOGY:** Recom
- ❖ **STATEMENT 16. PATIENT OUTCOMES...** Recomm.



Iranian National Program of Meniere's Disease Registry Site (meniereiran)

«رونمایی از سامانه ثبت ملی بیماری منیر»



Dr. Shadman Nemati,
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3 Oct. 2019



“



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Iranian Meniere's Disease Registry Program

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پزشک

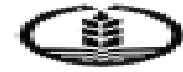
مطالب



حريم خصوصي کاربران در سامانه ثبت ملی بیماران منییر محفوظ میباشد



پرسشنامه ثبت ملی اطلاعات بیماران مبتلا به منییر



پرسشنامه ثبت ملی اطلاعات بیماران مبتلا به منییر

دانشگاه علوم پزشکی گیلان - بیمارستان امیرالمومنین (ع) - مرکز تحقیقات بیماریهای گوش و حلق و بینی

تاریخ:

شماره کد پرسشنامه:

ملیت ایرانی ☐ غیر ایرانی ☐

کد ملی:

مادر ☐

جنس: مؤنث ☐ مذکر ☐

نام و نام خانوادگی:

شماره ثابت:

شماره همراه:

تاریخ تولد: (... / ... / ۱۳۰۰)

روستای:

شهرستان:

محل سکونت: استان:

قومیت پدر: (فارسی، ترک، کرد، لر، آذری، ترکمن، عرب، بلوچ، گیلک، تاتی، مازنی، تالک و ...)

قومیت مادر: (فارسی، ترک، کرد، لر، آذری، ترکمن، عرب، بلوچ، گیلک، تاتی، مازنی، تالک و ...)

تشکل بیمار:

مرد ☐

زن ☐

گوش راست ☐

بیشتر از ۵ سال ☐

۳ تا ۵ سال ☐

۱ تا ۲ سال ☐

کمتر از یک سال ☐

مدت زمانی که بیماری منییر در شما تشخیص داده شده است:

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کم شواهد (حسی-حسی)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	کم شواهد (حسی-حسی)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	کم شواهد (حسی-حسی)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>
(تورم شواهد)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	(تورم شواهد)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	(تورم شواهد)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>
کاهش شواهد پشرونده	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	کاهش شواهد پشرونده	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	کاهش شواهد پشرونده	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>

تلاطم مازور (استاکوس با احساس وزوز و سر و صدا در گوش):

وزوز گوش منجمد که طی حسادت شدت آن بیشتر می شود	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	توضیحات:
وزوز یک طرفه	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	
ملاطم مازور (احساس فشار و تورم در گوش ها)	دارد <input type="checkbox"/>	ندارد <input type="checkbox"/>	

میانگین تعداد حسادت مشخص پیوسته (شامل حسادت سرگیمه، وزوز گوش، احساس فشار و پری گوش، ... در ماه (تقریباً ۶ ماه اخیر):

برای شدت حسادت خود (از صفر تا ۱۰۰ (شدهترین ملاطمه اقل تصور) چه عددی را در نظر می گیرید؟ (۱-۱۰۰)



تفاهم نامه ها: با روسای مراکز
تحقیقات و مدیران گروه های گوش
و حلق و بینی دانشگاه های علوم
پزشکی کشور

• نقش مهم مسئول/کارشناس آی-تی

IT man!

....

گروه ثبت رجیستری دانشگاه دانشگاه علوم پزشکی کرمان

دانشگاه علوم پزشکی اهواز

ردیف	نام و نام خانوادگی	مدرک تحصیلی	شماره تماس	ایمیل
PI	دکتر بریم عباسی راز	فellowship انورژر	۰۹۱۳۳۶۰۹۱۹۳	ma74@yahoo.com
ادمین (کارشناس IT)	سید محمد تقی حسینی	سرپرست بیمارستان	۰۹۱۳۳۶۰۷۸۴۳	s.kamreshini@gmail.com
اعضای تیم	دکتر سید علی دانهانی	متخصص گوش و حلق و بینی	۰۹۱۳۳۶۰۱۳۴۶۷	ma-daneghani@kmu.ac.ir
	دکتر علی احمدی کرمانی	فلوشیپ گوش و حلق و بینی	۰۹۱۳۳۶۰۸۳۰۹	a-arabi@kmu.ac.ir
	دکتر سمانه اسمانی	فلوشیپ حلق و بینی	۰۹۱۳۳۶۰۸۳۰۹	heslami@kmu.ac.ir
	دکتر آیه شمس الدین	فلوشیپ حلق و بینی	۰۹۱۳۳۶۰۸۳۰۹	ashamsadini@kmu.ac.ir
	دکتر حسین شاکری	فلوشیپ رینولورژی	۰۹۱۳۳۶۰۸۳۰۹	Hosein_shakeri61@yahoo.com
	دکتر علی محمدی	فلوشیپ رینولورژی	۰۹۱۳۳۶۰۸۳۰۹	f.fani@kmu.ac.ir
تعداد بیماران ثبت نام شده تا کنون				

لطفا پس از تکمیل جدول زیر را به آدرس ایمیل ent_rc@yahoo.com ارسال فرمایید.



دانشگاه علوم پزشکی کرمان
مرکز تحقیقات بیماری های گوش و حلق و بینی

مرکز کاشت
حلقون شنوایی استان خوزستان

ردیف	نام و نام خانوادگی	مدرک تحصیلی	شماره تماس	ایمیل
PI	دکتر نادر صابکی	فلوشیپ گوش ، حلق و بینی	۰۹۱۳۳۳۷۰۰۴	Ahvaz.ent@gmail.com
ادمین	شهریار مهنازاده	کارشناسی نرم افزار کامپیوتر	۰۹۱۶۹۹۹۳۸۳	Sh.mahnazadeh@gmail.com
اعضای تیم	مجید کریمی	کارشناس ارشد شنوایی شناسی	۰۹۱۳۴۴۴۷۰۳۳	Morvaridclinic@yahoo.com
	آرش بیات	دکترای شنوایی شناسی	۰۹۱۳۶۱۵۱۵۷	Arashbayat2004@yahoo.com
تعداد بیماران ثبت نام شده تا کنون				۱۰ نفر

اهواز / خیابان ۲۴ متری / خیابان شریف زاده / نبش نظام وکا
مجمع کاشت حلقون شنوایی خوزستان
تلفن: ۰۶۱ ۲۲۹۹۴۷۰۳۱
تلفکس: ۰۶۱ ۳۲۲۲۴۶۷۳
همراه: ۰۹۱۳۶۱۵۱۵۷

www.ahvazci.com info@ahvazci.com

دانشگاه‌های طرف تفاهم نامه برنامه ملی رجیستری منبیر

نام دانشگاه	PI	تفاهم نامه	ادمین
دانشگاه علوم پزشکی تهران- امیراعلم تهران	 <p>آقای دکتر مسعود متصدی زرنندی</p>		 <p>خانم آزاده محمودی</p>
دانشگاه علوم پزشکی اهواز	 <p>آقای دکتر نادر صاکی</p>		<p>آقای شهریار مهنزاده</p>
دانشگاه علوم پزشکی شیراز	 <p>آقای دکتر سید بصیر هاشمی</p>		<p>خانم مریم عابد</p>
دانشگاه علوم پزشکی اصفهان	 <p>آقای دکتر سید حمیدرضا ابطحی</p>		<p>خانم فاطمه غلامی</p>

نام دانشگاه	PI	تفاهم نامه	ادمین
دانشگاه علوم پزشکی مشهد	آقای دکتر محسن رجعتی		 خانم الهه جاجرمی
دانشگاه علوم پزشکی تبریز	آقای دکتر مسعود نادر پور		 آقای حسین زنوزی
دانشگاه علوم پزشکی قزوین	آقای دکتر ابوالفضل قبادی		خانم ساره جلالی
دانشگاه علوم پزشکی همدان	آقای دکتر فرهاد فراهانی		آقای محمد حسن ساعتی

این یک برنامه ملی است!
این یک کار زیرساختی است!
این یک کار علمی / فرهنگی است!



با سپاس از توجه شما

<http://meniereiran.ir>



دانشگاه علوم پزشکی گیلان برگزار می کند:

همایش یکروزه

بیماری منییر و ثبت ملی آن

۱۱ مهرماه ۱۳۹۸ گیلان، دهکده ساحلی بندر انزلی



ویژه متخصصین ENT و نورولوژی
پزشکان عمومی و کارشناسان شنوایی شناسی
کارشناسان رجیستری دانشگاهها

دبیرخانه همایش

رشت، خیابان امام خمینی (ره)، خیابان ۱۷ شهریور
پالاستر از دادگستری، مرکز آموزشی درمانی
امیرالمومنین (ع)، مرکز تحقیقات بیماری های
گوش و حلق و بینی

تلفن: ۰۱۳-۳۳۲۲۵۲۴۲

ent_rc@yahoo.com

جهت کسب اطلاعات بیشتر و ثبت نام به سایت ذیل مراجعه کنید

meniereiran.gums.ac.ir



منییر و رجیستری
آن- 11 مهر
1398- دهکده
ساحلی بندر انزلی

برگزاری اولین همایش "بیماری منیر و ثبت ملی آن" در دانشگاه علوم پزشکی گیلان

به همت مرکز تحقیقات بیماریهای گوش و حلق و بینی
و معاونت تحقیقات و فناوری در تاریخ ۱۱/۷/۱۳۹۸ در
دهکده ساحلی بندرانزلی



نار ملی رجیستری منیر-۹۹

**دانشگاه علوم پزشکی گیلان و
دبیر خانه ثبت ملی بیماری منیر برگزار می کند:**

تاریخ: دوشنبه ۱۳ بهمن ۱۳۹۹ ساعت: ۱۱ تا ۱۴:۳۰

حامی مالی: آلتیون

- ویژه متخصصین ENT و نورولوژی
- پزشکان عمومی و کارشناسان شنوایی شناسی
- کارشناسان رجیستری دانشگاه ها
- با حضور اساتید نورولوژی کشور
- همراه با پانل تخصصی
- دارای حداکثر امتیاز بازآموزی

وبینار کشوری منیر ۹۹
(مروری بر گایدلاینهای جدید تشخیص و درمان بیماری منیر و گزارش وضعیت برنامه ثبت ملی منیر)

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جهت کسب اطلاعات بیشتر و ثبت نام به سایت مراجعه کنید.

وبینار کشوری منیر ۹۹
(مروری بر گایدلاینهای جدید تشخیص و درمان بیماری منیر و گزارش وضعیت برنامه ثبت ملی منیر)

آلتیون

**دانشگاه علوم پزشکی گیلان و
دبیر خانه ثبت ملی بیماری منیر برگزار می کند:**

آلتیون

تاریخ: دوشنبه ۱۳ بهمن ۱۳۹۹ ساعت: ۱۱ تا ۱۴:۳۰
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جهت کسب اطلاعات بیشتر و ثبت نام به سایت مراجعه کنید.

مروری بر گایدلاینهای ۲۰۲۰ منیر

دکتر شادمان نعمتی

۱۳ بهمن ۱۳۹۹

وبینار کشوری منیر ۹۹
(مروری بر گایدلاینهای جدید تشخیص و درمان بیماری منیر و گزارش وضعیت برنامه ثبت ملی منیر)

آلتیون

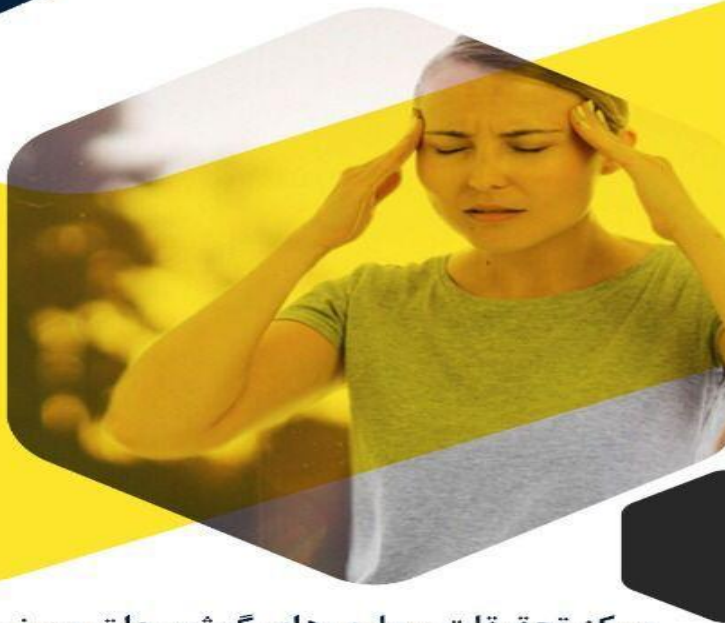
**دانشگاه علوم پزشکی گیلان و
دبیر خانه ثبت ملی بیماری منیر برگزار می کند:**

آلتیون

تاریخ: دوشنبه ۱۳ بهمن ۱۳۹۹ ساعت: ۱۱ تا ۱۴:۳۰
 meniereiran.gums.ac.ir

جهت کسب اطلاعات بیشتر و ثبت نام به سایت مراجعه کنید.

سومین همایش ملی
بیماری منییر و
رجیستری آن در ایران



سومین وبینار ملی منییر / Meniere's Disease Updates- 2022

مرکز تحقیقات بیماری های گوش، حلق و بینی دانشگاه علوم پزشکی گیلان
و دبیرخانه ثبت ملی بیماری منییر برگزار می کند:

Meniere's Disease Updates: 2022 (Webinar)

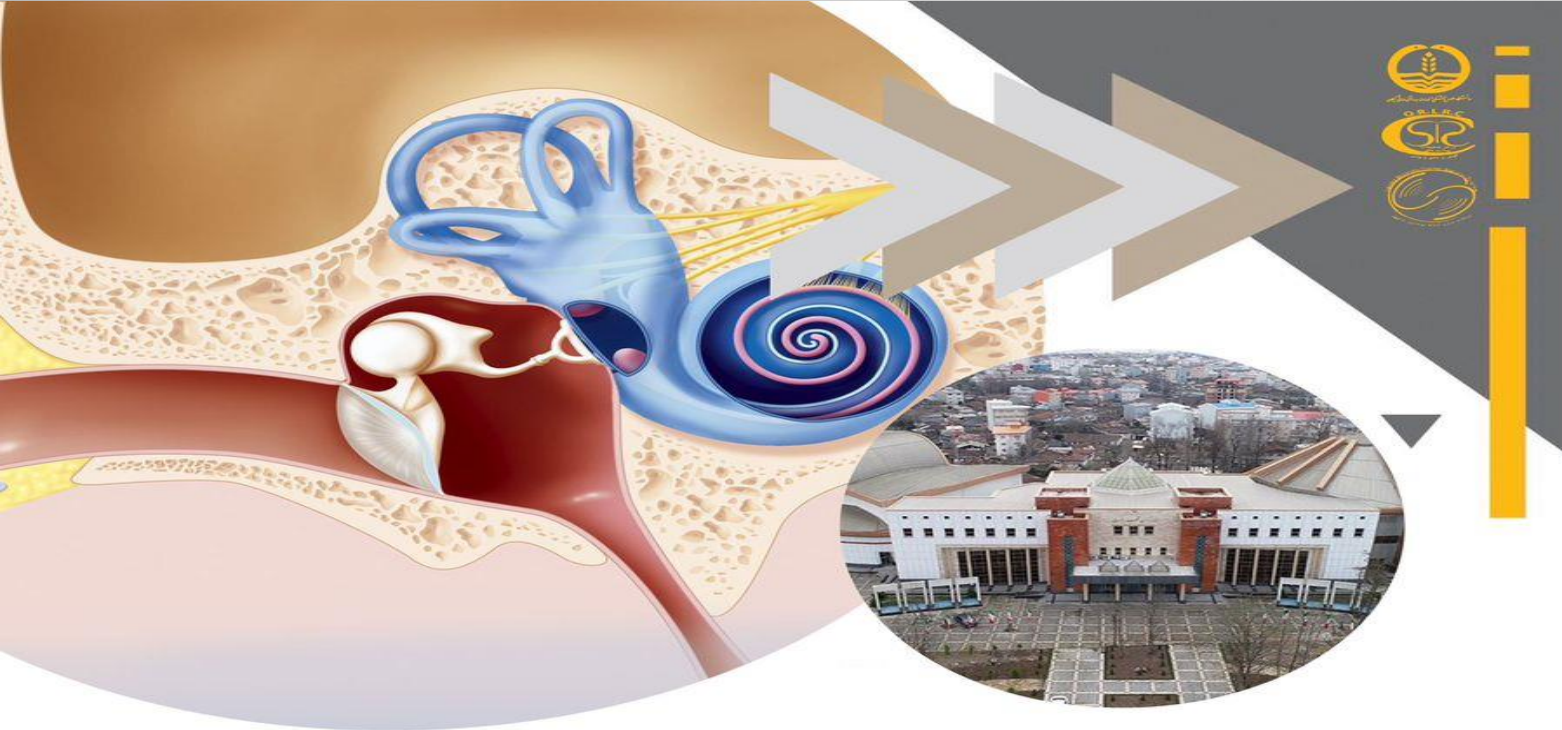
با سخنرانی اساتید برجسته نورواتولوژی و ادیولوژی کشور

همراه با گزارشی از برنامه ملی رجیستری بیماری منییر در استان های مختلف

- ویژه متخصصین گوش، حلق و بینی و نورولوژی
- همکاران اودیولوژیست، پزشکان عمومی و خانواده
- همراه با پنل تخصصی
- دارای امتیاز بازآموزی

دوشنبه ۵ اردیبهشت ماه ۱۴۰۱ ساعت ۱۰ الی ۱۳

جهت ثبت نام و کسب اطلاعات بیشتر به وبسایت Meniereiran.ir مراجعه نمایید



لطفا این تاریخ را در
تقویم کاری تان ثبت
بفرمایید ◀ ◀ ◀ ◀

با همکاری اساتید نورواتولوژی ایران،
دانشگاه علوم پزشکی گیلان برگزار می کند:

منیرایران:

دومین کنگره ملی تازه های اختلالات شنوایی و تعادل

۲۳ و ۲۴ خردادماه ۱۴۰۳، تالار مرکزی شهر رشت

سپاس از توجه شما

- Any Question?
- drshadmannemati_ent@yahoo.com

مرکز تحقیقات بیماری های گوش، حلق و بینی دانشگاه علوم پزشکی گیلان
با همکاری جامعه نورو اتولوژی ایران برگزار می کند:

همایش دوم ملی منییر ایران:
تازه های اختلالات شنوایی و تعادل

۲۳ و ۲۴ خردادماه ۱۴۰۳، تالار مرکزی شهر رشت

محورهای همایش:

- ✓ تازه های بیماری منییر و رجیستری ملی منییر
- ✓ جراحی های نوین (سمعک های کاشتنی، ابزارهای کاشتنی و سستیبولر)
- ✓ تازه های تشخیصی (اودیولوژی، رادیولوژی)
- ✓ ژنتیک و ژن تراپی
- ✓ سل تراپی و افق های نوین درمانی
- ✓ بیماری های داخلی، نورولوژیک و اختلالات شنوایی و تعادل
- ✓ سالمندی و اختلالات شنوایی و تعادل
- ✓ باز توانی ها در اختلالات شنوایی و سستیبولر

همراه با حداکثر امتیاز بارآموزی
ویژه نورو اتولوژیست ها، متخصصین گوش، حلق و بینی،
شنوایی شناسان، پزشکان عمومی و خانواده

سمعک های کاشتنی
همراه با کارگاه های جانبی
کارگاه عملی رجیستری بیماری ها
کارگاه عملی تست های بالینی و پاراکلینیک سرکیجه