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## Meniere's Disease

(Endolymphatic Hydrops)

*Meniere's disease is an inner ear disorder that produces vertigo, fluctuating sensorineural hearing loss, and tinnitus. There is no diagnostic test. Vertigo and nausea are treated with anticholinergics or benzodiazepines. Diuretics and a low-salt diet may decrease frequency and severity of episodes. For severe cases, the vestibular system can be ablated with topical gentamicin or surgery.*

In Meniere's disease, pressure and volume changes of the labyrinthine endolymph affect inner ear function. The etiology of endolymphatic fluid buildup is unknown. Risk factors include a family history of Meniere's disease, preexisting autoimmune disorders, allergies, trauma to the head or ear, and, rarely syphilis (even several decades previously). Peak incidence is between ages 20 and 50.

### Symptoms and Signs

Patients have sudden attacks of vertigo lasting up to 24 h, usually with nausea and vomiting. Accompanying symptoms include diaphoresis, diarrhea, and gait unsteadiness. Tinnitus may be constant or intermittent, buzzing or roaring; it is not related to position or motion. Hearing impairment, typically affecting low frequencies, may follow. Before an episode, most patients sense fullness or pressure in the affected ear. In 50% of patients, only one ear is affected.

During the early stages, symptoms remit between episodes; symptom-free interludes may last > 1 yr. As the disease progresses, however, hearing impairment persists and gradually worsens, and tinnitus may be constant.

### Diagnosis

- Clinical evaluation
- Audiogram and gadolinium-enhanced MRI to rule out other causes

The diagnosis, made clinically, is primarily one of exclusion. Similar symptoms can result from viral labyrinthitis or neuritis, a cerebellopontine angle tumor (eg, acoustic neuroma), or a brain stem stroke. Patients with suggestive symptoms should have an audiogram and an MRI (with gadolinium enhancement) of the CNS with attention to the internal auditory canals to exclude other causes. Audiogram typically demonstrates a low-



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frequency sensorineural hearing loss in the affected ear.

On examination during an acute attack, the patient has nystagmus and falls to the affected side. Between attacks, the Fukuda stepping test (marching in place with eyes closed) can be used; a patient with Meniere's disease often turns away from the affected ear, consistent with a unilateral labyrinthine lesion. Additionally, the Rinne test and Weber's test may indicate sensorineural hearing loss (see [Hearing Loss: Physical examination](#)).

#### Treatment

- Symptom relief with antiemetics, antihistamines, or benzodiazepines
- Diuretics and low-salt diet
- Rarely, vestibular ablation by drugs or surgery

Meniere's disease tends to be self-limited. Treatment of an acute attack is aimed at symptom relief. Anticholinergics (eg, [prochlorperazine](#) or [promethazine](#) 25 mg rectally or 10 mg po q 6 to 8 h) can minimize vagal-mediated GI symptoms. Antihistamines (eg, [diphenhydramine](#), [meclizine](#), or [cyclizine](#) 50 mg po q 6 h) or benzodiazepines (eg, [diazepam](#) 5 mg po q 6 to 8 h) are used to sedate the vestibular system. Some physicians also use a corticosteroid burst (eg, [prednisone](#) 60 mg once/day for 1 wk, tapered over another wk) for an acute episode.

A low-salt (< 1.5 g/day) diet, avoidance of alcohol and caffeine, and a diuretic (eg, [hydrochlorothiazide](#) 25 mg po once/day) may help prevent vertigo and are useful for many patients.

Intratympanic [gentamicin](#) (chemical labyrinthectomy) may be used when medical management is unsuccessful. Typical dose is 1 mL (at a 30 mg/mL concentration, made by diluting the commercial 40 mg/mL preparation with bicarbonate) injected through the tympanic membrane. Follow-up with serial audiometry is recommended to distinguish hearing loss from cochleotoxicity. The injection can be repeated in 4 wk if vertigo persists without hearing loss.

Surgery is reserved for patients with frequent, severely debilitating episodes who are unresponsive to other modalities. Endolymphatic sac decompression relieves vertigo in some patients and poses minimal risk of hearing loss. Vestibular neurectomy (an intracranial procedure) relieves vertigo in about 95% of patients and usually preserves hearing. A surgical labyrinthectomy is done only if preexisting hearing loss is profound.

Unfortunately, there is no known way to prevent the natural progression of hearing loss. Most patients sustain moderate to severe sensorineural hearing loss in the affected ear within 10 to 15 yr.

Last full review/revision July 2007 by John S. Oghalai, MD  
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