

## Meniere's disease

Meniere's disease is one of the least understood common medical syndromes. This is understandable because of the wide variation in symptoms, difficulty in diagnosis, and because many forms of treatment are doubtful. In the past, this has left patients and doctors alike disillusioned and as a result, deprived many patients of good care.

### Recognizing Meniere's disease

A French physician named Meniere described this disease in 1861 and was the first to recognize that it was caused by the inner ear rather than the brain. Today, Meniere's disease can be precisely diagnosed. It is characterized by four major symptoms, including vertigo (dizziness), hearing loss, tinnitus (head noise) and pressure in the ears. All of these symptoms tend to occur intermittently and are variable in severity. Sometimes, only two or three of these symptoms are present.

Vertigo, a feeling of motion, and other forms of dizziness are the most frightening. These may be accompanied by vomiting and many patients wonder whether they are having a stroke during the first episode. Attacks usually last minutes to hours and leave a patient feeling tired and unsteady.

Meniere's disease affects approximately 46 out of 100,000 Americans. The majority of people with Meniere's disease are middle-aged; however Meniere's can occur in the very young as well as the elderly.

Atypical cases of Meniere's disease also occur and it is important for a physician to be able to recognize and properly treat those patients with symptoms not precisely conforming to medical textbooks.

### The Cause of Meniere's disease

The precise underlying cause of Meniere's disease is unknown. It is known that fluid pressure build-up of the inner ear results in the symptoms of Meniere's. Other examples of fluid pressure build-up occur in the spinal fluid (hydrocephalus), in the eye (glaucoma), or in the arteries (high blood pressure). As the fluid pressure increases over time damage occurs to the nerve endings of the inner ear.

### Diagnostic Methods

Meniere's disease is a common medical entity and is usually well recognized by primary care physicians. Initial treatment usually includes bed rest and medications to reduce the symptoms of dizziness, nausea, and vomiting.

In many cases, a patient is referred to an ear specialist.

The following tests may be indicated to confirm the diagnosis, establish the degree of damage, and indicate treatment.

**Audiogram:** Hearing test performed in a sound insulated room by a certified audiologist using calibrated equipment.

**ENG (Electronystagmography):** Balance test of the inner ear.



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**ABR (Auditory Brain Stem Responses):** Measures the electrical responses of the auditory system. It is highly sensitive to tumors which may mimic Meniere's disease.

**ECoG (Electrocochleography):** Highly sensitive and the most specific test available for endolymphatic hydrops of Meniere's disease. ECoG is currently being used experimentally during surgery.

**SHA (Sinusoidal Harmonic Acceleration, Rotary Chair):** The patient sits in a darkened chamber which slowly rotates.

**Posturography (Balance Platform):** Measures contribution of visual system and muscle-joint sense to chronic imbalance. It is also helpful in the diagnosis of inner ear membrane rupture (perilymph fistula)

**Urea Dehydration Tests:** The patient drinks medication which may temporarily reduce the amounts of pressure in the inner ear and result in temporary hearing improvement. This test helps determine whether the potential for hearing improvement following certain surgical procedures exists.

The patient's history, otologist's examination, and his/her experience treating Meniere's disease will determine which of the above tests are necessary for an individual patient. Only through the combination of these different modalities can the appropriate diagnosis and treatment be determined.

### Medical Treatment

Most patients with Meniere's disease can be expected to improve with conservative treatment. The purpose of treatment between attacks is to prevent or reduce the number of attacks of vertigo and to attempt to stabilize the hearing loss. Your physician may you to limit salt intake and avoid caffeine, alcohol, tobacco as well. In some cases, treatment of allergies is required. You should avoid loud noises and stress producing situations which tend to make symptoms worse.

In addition, the use of vestibular nerve suppressants (medications which limit conduction characteristics of the balance nerve), diuretics (which may reduce fluid overload) and vasodilators (which increases blood circulation to the inner ear), may also be necessary.

In 10-15% of patients, Meniere's disease is very severe and the attacks continue in spite of good conservative treatment. In such cases, surgery may be necessary.

### Surgical Treatment:

In the past decade three microsurgical procedures have come to the forefront in the management of those patients with very severe disease that does not respond to dietary and medical treatment. Each of these treatments has certain advantages and disadvantages.

### Transtympanic Gentamycin:

This procedure is often performed in the office setting. A drop of topical anesthetic is placed on the ear drum and a small opening is made. The inside of the middle ear is visualized with a tiny endoscope and medication is applied directly to the round window membrane of the inner ear. This new treatment has had excellent early results in selected cases.

### Shunt (Endolymphatic Mastoid Shunt valve):



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This procedure has the advantage of being non-destructive. A tiny pressure regulating valve is placed into the drainage duct of the inner ear to reduce fluid pressure causing the symptoms of Meniere's disease. The procedure generally takes about one hour and requires one night in the hospital. It is performed through a small incision behind the ear and the brain is not involved.

RVS (Retrolabyrinthine Vestibular Nerve Section):

This procedure requires opening of the outer covering of the brain and cutting the balance nerve. The operation generally takes approximately three hours and requires 4-5 days in the hospital.

The shunt operation is a smaller operation which is not designed to destroy any structures. Complications are fewer and recovery is quicker from this procedure.

RVS on the other hand, is a more effective operation. Over 90% of patients can be expected to improve from RVS whereas 80% of patients will improve from a shunt.

It is important in considering the type of surgery to keep in mind that Meniere's disease may occur in both ears in one third of all patients.

Surgical treatment such as VNS which causes permanent destruction cannot be performed on both ears. Hearing improvement has also been reported in shunt surgery but is not expected in RVS surgery.

Summary:

Meniere's is a disease of unknown cause which results in four primary symptoms; vertigo, hearing loss, tinnitus, and pressure in the ears.

Modern neurological techniques permit early definitive diagnosis and treatment of Meniere's disease.

Conservative medical treatment is usually effective.

Three surgical treatments are currently available for more severely affected patients, both of which are highly effective in treatment of Meniere's disease.