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Meniere's Disease

Definition

Meniere's disease is a disorder of the inner ear that causes spontaneous episodes of vertigo — a sensation of a spinning motion — along with fluctuating hearing loss, ringing in the ear (tinnitus), and sometimes a feeling of fullness or pressure in your ear. In many cases, Meniere's disease affects only one ear.

People in their 40s and 50s are more likely than people in other age groups to develop Meniere's disease, but it can occur in anyone, even children.

Although Meniere's disease is considered a chronic condition, various treatment strategies can help relieve symptoms and minimize the disease's long-term impact on your life.

Symptoms

The primary signs and symptoms of Meniere's disease are:

- **Recurring episodes of vertigo.** Vertigo is similar to the sensation you experience if you spin around quickly several times and suddenly stop. You feel as if the room is still spinning, and you lose your balance. Episodes of vertigo occur without warning and usually last 20 minutes to two hours or more, up to 24 hours. Severe vertigo can cause nausea and vomiting.

- **Hearing loss.** Hearing loss in Meniere's disease may fluctuate, particularly early in the course of the disease. Eventually, most people experience some degree of permanent hearing loss.
- **Ringing in the ear (tinnitus).** Tinnitus is the perception of a ringing, buzzing, roaring, whistling or hissing sound in your ear.
- **Feeling of fullness in the ear.** People with Meniere's disease often feel aural fullness or increased pressure in the ear.

A typical episode might start with a feeling of fullness in your ear, increasing tinnitus and decreasing hearing followed by severe vertigo, often accompanied by nausea and vomiting. Such an episode might last 20 minutes to four hours, after which signs and symptoms improve. Episodes often occur in clusters, with long periods of mild or no symptoms (remission) between.

Still, the severity, frequency and duration of each of these sensory perception problems vary, especially early in the disease. For example, you could have frequent episodes with severe vertigo and only mild disturbances in other sensations. Or you may experience mild vertigo and hearing loss infrequently but have frequent tinnitus that disturbs your sleep.

Causes



Inner ear and balance

The cause of Meniere's disease isn't well understood. It appears to be the result of the abnormal volume or composition of fluid in the inner ear.

The inner ear is a cluster of connected passages and cavities called a labyrinth. The outside of the inner ear is made of bone (bony labyrinth). Inside is a soft structure of membrane (membranous labyrinth) that's a slightly smaller, similarly shaped version of the bony labyrinth. The membranous labyrinth contains a fluid (endolymph) and is lined with hair-like sensors that respond to movement of the fluid.

In order for all of the sensors in the inner ear to function properly, the fluid needs to retain a certain volume, pressure and chemical composition. Factors that alter the properties of inner ear fluid may help cause Meniere's disease. Scientists have proposed a number of potential causes or triggers, including:

- Improper fluid drainage, perhaps because of a blockage or anatomic abnormality
- Abnormal immune response
- Allergies
- Viral infection

- Genetic predisposition
- Head trauma
- Migraines

Because no single cause has been identified, it's likely that Meniere's disease is caused by a combination of factors.

Tests and diagnosis

A diagnosis of Meniere's disease requires:

- Two spontaneous episodes of vertigo, each lasting 20 minutes or longer
- Hearing loss verified by a hearing test on at least one occasion
- Tinnitus or aural fullness
- Exclusion of other known causes of these sensory problems

If you have signs or symptoms associated with Meniere's disease, your doctor will ask you questions about your sensory problems, order tests that evaluate the quality of inner ear function and order other tests to screen for possible causes of the problems.

Physical examination and medical history

Your doctor will conduct a physical examination and ask questions about:

- The severity, duration and frequency of the sensory problems
- Your history of infectious diseases or allergies
- Medication use
- Past ear problems
- Your general health
- History of inner ear problems in your family

Hearing assessment

A hearing test (audiometry) assesses how well you detect sounds at different pitches and volumes and how well you distinguish between similar-sounding words. The test not only reveals the quality of your hearing but also may help determine if the source of hearing problems is in the inner ear or the nerve that connects the inner ear to the brain.

Balance assessment

Between episodes of vertigo, the sense of balance returns to normal for most people with Meniere's disease. But there may be some degree of ongoing balance problems. There are several tests that assess

function of the inner ear. Some or all of these tests can yield abnormal results in a person with Meniere's disease.

- **Videonystagmography (VNG).** This test evaluates balance function by assessing eye movement. Balance-related sensors in the inner ear are linked to muscles that control movement of the eye in all directions. This connection is what enables you to move your head around while keeping your eyes focused on a single point.

In a VNG evaluation, warm and cool water or warm and cool air are introduced into the ear canal. Measurements of involuntary eye movements in response to this stimulation are performed using a special pair of video goggles. Abnormalities of this test may indicate an inner ear problem.

- **Rotary-chair testing.** Like a VNG, this measures inner ear function based on eye movement. In this case, stimulus to your inner ear is provided by movement of a special rotating chair precisely controlled by a computer.
- **Vestibular evoked myogenic potentials (VEMP) testing.** VEMP testing measures the function of sensors in the vestibule of the inner ear that help you detect acceleration movement. These sensors also have a slight sensitivity to sound. When these sensors react to sound, tiny measurable variations in neck or eye muscle contractions occur. These contractions serve as an indirect measure of inner ear function.

Tests to rule out other conditions

Other tests may be used to rule out disorders that can cause problems similar to those of Meniere's disease, such as a tumor in the brain or multiple sclerosis. These tests include:

- **Magnetic resonance imaging (MRI).** This technique uses a magnetic field and radio waves to create images of soft tissues in the body. It can be used to produce either a thin cross-sectional "slice" or a 3-D image of your brain.
- **Computerized tomography (CT).** This X-ray technique produces cross-sectional images of internal structures in your body.

