

Meniere's disease

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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.

When to see a doctor

See your doctor if you experience any signs or symptoms of Meniere's disease. Because any one of these problems may be the result of other illnesses, it's important to get an accurate diagnosis as soon as possible.

Vertigo is an uncommon but possible sign of other disorders, such as stroke, brain tumor, multiple sclerosis, or diseases of your heart or blood vessels (cardiovascular disease). See your primary care doctor immediately if vertigo is accompanied by any of the following signs or symptoms:

- Headache that is unusual or severe for you
- Double vision or loss of vision
- Speech impairment
- Leg or arm weakness
- Loss of consciousness
- Falling or difficulty walking
- Numbness or tingling
- Chest pain

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.

Complications

The unpredictable episodes of vertigo are usually the most debilitating problem of Meniere's disease. The episodes often force a person to lie down for several hours and lose time from work or leisure activities, and they can cause emotional stress.

Vertigo can also increase your risk of:

- Falls
- Accidents while driving a car or operating heavy machinery
- Depression or anxiety in dealing with the disease
- Permanent hearing loss

Preparing for your appointment

You're likely to first see your family doctor or a general practitioner. Eventually, however, your primary care doctor may refer you to an ear, nose and throat (ENT) specialist, a hearing specialist (audiologist), or a nervous system specialist (neurologist).

Because appointments can be brief, and because there's often a lot of ground to cover, it's a good idea to be well prepared for your appointment. Here's some information to help you get ready, and what to expect from your doctor.

What you can do

- **Write down any symptoms you're experiencing**, especially those you experience during an episode and make a note of how frequently episodes recur. Note how long each episode of spinning lasts as well as how long until you feel back to normal after an episode.
- **Write down key personal information**, including any major stresses or recent life changes.
- **Make a list of all medications**, as well as any vitamins or supplements, that you're taking.
- **Write down questions to ask** your doctor, such as what's the best next step in your diagnosis or treatment plan. Also, don't hesitate to ask questions during your appointment.

What to expect from your doctor

Your doctor is likely to ask you a number of questions. Being ready to answer them may reserve time to go over any points you want to spend more time on. Your doctor may ask:

- When did you first begin experiencing symptoms?
- Have your symptoms been continuous or occasional?
- How severe are your symptoms?
- What, if anything, seems to trigger your symptoms?

- What, if anything, appears to worsen your symptoms?
- Does anything seem to improve your symptoms?

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.
- **Posturography.** This computerized test reveals which part of the balance system — vision; inner ear function; or sensations from the skin, muscles, tendons and joints — you rely on the most and which parts may cause problems. While wearing a safety harness, you stand in bare feet on a platform and keep your balance under various conditions.

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.
- **Auditory brainstem response audiometry.** This is a computerized test of the hearing nerves and hearing centers of the brain. It can help detect the presence of a tumor disrupting the function of auditory nerves.

Treatments and drugs

No cure exists for Meniere's disease, but a number of strategies may help you manage some symptoms. Research shows that most people with Meniere's disease respond to treatment, although long-term hearing loss is difficult to prevent.

Medications for vertigo

Your doctor may prescribe medications to be taken during an episode of vertigo to lessen the severity of an attack:

- **Motion sickness medications,** such as meclizine (Antivert) or diazepam (Valium), may reduce the spinning sensation of vertigo and help control nausea and vomiting.
- **Anti-nausea medications,** such as promethazine, may control nausea and vomiting during an episode of vertigo.

Long-term medication use

Your doctor may prescribe a medication to reduce fluid retention (diuretic), such as the drug

combination triamterene and hydrochlorothiazide (Dyazide, Maxzide). Reducing the amount of fluid your body retains may help regulate the fluid volume and pressure in your inner ear. For some people a diuretic helps control the severity and frequency of Meniere's disease symptoms.

Because diuretic medications cause you to urinate more frequently, your system may become depleted of certain minerals, such as potassium. If you take a diuretic, supplement your diet each week with three or four extra servings of potassium-rich foods, such as bananas, cantaloupe, oranges, spinach and sweet potatoes.

Noninvasive therapies and procedures

Some people with Meniere's may benefit from other noninvasive therapies and procedures, such as:

- **Rehabilitation.** If you experience problems with your balance between episodes of vertigo, you may benefit from vestibular rehabilitation therapy. The goal of this therapy, which may include exercises and activities that you perform during therapy sessions and at home, is to help your body and brain regain the ability to process balance information correctly.
- **Hearing aid.** A hearing aid in the ear affected by Meniere's disease may improve your hearing. Your doctor can refer you to an audiologist to discuss what hearing aid options would be best for you.
- **Meniett device.** For vertigo that's hard to treat, this therapy involves the application of positive pressure to the middle ear to improve fluid exchange. A device called a Meniett pulse generator applies pulses of pressure to the ear canal through a ventilation tube. The treatment is performed at home, usually three times a day for five minutes at a time. Initial reports on the Meniett device show improvement in symptoms of vertigo, tinnitus and aural pressure, but its long-term effectiveness has not been determined.

Middle ear injections

Medications injected into the middle ear, and then absorbed into the inner ear, may improve vertigo symptoms:

- **Gentamicin**, an antibiotic that's toxic to your inner ear, reduces the balancing function of your ear, and your other ear assumes responsibility for balance. The procedure, which can be performed during local anesthesia in your doctor's office, often reduces the frequency and severity of vertigo attacks. There is a risk, however, of further hearing loss.
- **Steroids**, such as dexamethasone, also may help control vertigo attacks in some people. This procedure can also be performed with local anesthesia applied by your doctor. Although dexamethasone may be slightly less effective than gentamicin, dexamethasone is less likely than gentamicin to cause further hearing loss.

Surgery

If vertigo attacks associated with Meniere's disease are severe and debilitating and other treatments don't help, surgery may be an option. Procedures may include:

- **Endolymphatic sac procedures.** The endolymphatic sac plays a role in regulating inner ear fluid levels. These surgical procedures may alleviate vertigo by decreasing fluid production or increasing fluid absorption.

In endolymphatic sac decompression, a small portion of bone is removed from over the endolymphatic sac. In some cases, this procedure is coupled with the placement of a shunt, a tube that drains excess fluid from your inner ear.

- **Vestibular nerve section.** This procedure involves cutting the nerve that connects balance and movement sensors in your inner ear to the brain (vestibular nerve). This procedure usually corrects problems with vertigo while attempting to preserve hearing in the affected ear.
- **Labyrinthectomy.** With this procedure, the surgeon removes the balance portion of the inner ear, thereby removing both balance and hearing function from the affected ear. This procedure is performed only if you already have near-total or total hearing loss in your affected ear.

Lifestyle and home remedies

Certain self-care tactics can help reduce the impact of Meniere's disease. Consider these tips for use during an episode:

- **Sit or lie down immediately when you feel dizzy.** During an episode of vertigo, avoid things that can make your signs and symptoms worse, such as sudden movement, bright lights, watching television or reading.
- **Rest during and after attacks.** Don't rush to return to your normal activities.
- **Be aware of the possibility of losing your balance.** Falling could lead to serious injury. Use good lighting if you get up in the night. Consider walking with a cane for stability if you experience chronic balance problems.
- **Avoid driving a car or operating heavy machinery** if you experience frequent episodes of vertigo. Doing so could lead to an accident and injury.

Dietary changes

Modifying your diet can reduce your body's fluid retention and help decrease fluid in your inner ear. Your doctor may suggest you follow these dietary changes to lessen the severity and frequency of Meniere's disease symptoms:

- **Eat regularly.** Distributing evenly what you eat and drink throughout the day helps regulate your body fluids. Eat approximately the same amount of food at each meal. You may also eat five or six smaller meals rather than three meals a day.
- **Limit salt.** Consuming foods and beverages high in salt can increase fluid retention. Aim for 1,500 milligrams (mg) or less of sodium each day.
- **Avoid monosodium glutamate (MSG).** Some prepackaged food products and prepared restaurant foods contain MSG, a type of sodium. MSG can contribute to fluid retention. Check ingredient labels or ask your restaurant server if the food you're considering ordering contains MSG.

Other lifestyle changes

Some evidence suggests that lifestyle factors may worsen symptoms of Meniere's disease or act as triggers for the onset of symptoms. Your doctor may recommend the following changes to alleviate symptoms or help prevent the onset of symptoms.

- **Avoid caffeine.** Foods and beverages that contain caffeine, such as chocolate, coffee, tea and certain soft drinks, have stimulant properties that can make symptoms worse. For instance, caffeine may make ringing in the ear (tinnitus) louder.
- **Stop smoking.** Avoiding nicotine may lessen the severity of Meniere's disease symptoms.
- **Manage stress and anxiety.** It's difficult to know whether stress and anxiety act as triggers for Meniere's disease symptoms or are the result of having the disorder. Some evidence suggests, however, that managing stress and anxiety may lessen the severity of symptoms and enable you to cope with the disorder. Professional psychotherapy may help you identify stressors and develop strategies for dealing with stress and anxiety. Medications to alleviate anxiety also may be beneficial.
- **Avoid allergens.** Some reports note an association between allergies and Meniere's disease. Controlling your exposure to allergens and managing allergies with appropriate treatment may help manage Meniere's disease, as well.
- **Migraine prevention.** Emerging evidence linking Meniere's disease and migraine suggest that migraine management may lessen the severity of Meneire's disease.

Coping and support

Meniere's disease may affect your interaction with friends and family, your productivity at work, and the overall quality of your life. You may find encouragement and understanding in a support group. Group members can provide information, resources, support and coping strategies. Your doctor may be able to recommend a group in your area, or you may find information about local groups from the Vestibular Disorders Association.

References

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