Vestibular neuritis and labyrinthitis

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Meets Patient's **editorial guidelines**
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Vestibular neuritis and labyrinthitis are thought to be caused by a viral infection that affects the inner ear. These two conditions typically cause vertigo, often with sickness (vomiting).

Vertigo is the sensation that you or your surroundings are moving. In most cases the symptoms gradually ease and go within a few days or weeks. Medication may help to ease symptoms.

In this article:

What is vestibular neuritis and labyrinthitis?

Vestibular neuritis and labyrinthitis are types of inner ear infection that cause vertigo.

These names were previously used interchangeably. However, they are in fact different conditions:

- **Vestibular neuritis** (sometimes called vestibular neuronitis) means inflammation of the vestibular nerve. This is the nerve that takes messages from the balance organ within the inner ear to the brain.
- **Labyrinthitis** is a condition that is due to inflammation of the labyrinth in the inner ear.

The causes and symptoms of vestibular neuritis and labyrinthitis are similar; both cause vertigo and vomiting.

However, the hearing is also affected in cases of labyrinthitis. This is because inflammation of the labyrinth in the cochlea affects hearing. Inflammation of the vestibular nerve alone does not affect hearing.

Symptoms of vestibular neuritis and labyrinthitis

Vertigo

The main symptom of vestibular neuritis and labyrinthitis is vertigo. Vertigo is the sensation that you or your surroundings are moving. If you have vertigo you may feel as if the world is spinning and you may feel very unsteady.

Often you will also feel sick or vomit. Typically, if a viral infection is the cause, you develop vertigo quite quickly.

Vertigo occurs because the inflamed labyrinth or vestibular nerve sends conflicting signals to the brain compared with the normal ear. The brain becomes very confused about your head posture and reacts to cause vertigo.

The vertigo is usually intense and constant for the first few days and you simply have to lie down until the symptoms ease. The vertigo may be less intense if you lie down and close your eyes but doesn't go away completely.

It is often made worse by sitting up, moving your head, or moving around. In milder cases the vertigo is less intense but you feel unsteady when moving or walking around.

Other symptoms

You may also have:

- **Nystagmus**. This is a 'shaking' of the eyes from side to side or in a rotating movement. You may not notice this but a doctor will look for it as it is often present when the vertigo starts. (Vestibular neuritis and labyrinthitis are both causes of nystagmus. There are other causes.)
- Other **symptoms of a viral infection** such as a sore throat, flu symptoms or a cold.

How long do symptoms last?

Symptoms of a viral vestibular neuritis or viral labyrinthitis can last anything from a few days to several weeks.

A typically symptoms are bad for 1-2 weeks and then gradually settle down over several days. There may be some slight unsteadiness for 2-3 months before symptoms clear completely.

However, in a very small number of cases, symptoms can persist for months or years. In these cases, the viral infection will have gone but the inflammation and damage caused by the infection may cause persistant, milder unsteadiness.

Causes of vestibular neuritis and labyrinthitis

Viral infection

A common cause of vestibular neuritis and labyrinthitis is infection with a virus. There are various viruses that can cause viral vestibular neuritis and viral labyrinthitis.

The infection may occur at the same time as, or just after, you have a common viral illness such as:

- A sore throat.
- Glandular fever.
- Flu.
- A cold.

The cold sore virus may also be a cause. The virus that causes shingles can be a cause too. Sometimes you may not be aware of any other viral infection and just develop symptoms of vestibular neuritis and labyrinthitis.

Other causes of vestibular neuritis and labyrinthitis

Other causes of vestibular neuritis and labyrinthitis are uncommon. However, the following conditions will all have other symptoms and problems but may also cause vestibular neuritis and labyrinthitis as a complication:

- Infection with a bacterial infection in the middle ear. Most ear infections do not spread into the inner ear but a vestibular neuritis or labyrinthitis is an uncommon complication.
- Meningitis: the infection may spread from the brain to the inner ear.
- Stroke: blockage of the blood circulation to part of the brain.
- Injury to the ear.
- Tumours.
- An uncommon side-effect of some medicines.

Diagnosing vestibular neuritis or labyrinthitis

If you have a typical episode of vestibular neuritis due to infection with a virus, then your doctor will usually be able to diagnose this on the basis of your symptoms and the examination. Tests are not usually needed or helpful.

You may be referred for other tests; hearing tests, balance tests, etc, if you have symptoms that suggest anything other than a viral infection, or if symptoms are not settling within 3-4 weeks.

However, if you develop sudden onset vertigo *with hearing loss* for the first time, assessment in the emergency department is required to perform a scan to ensure this has not been caused by interruption to the blood supply of the inner ear.

Treatment for vestibular neuritis and labyrinthitis

If you have a sudden attack of vertigo **accompanied by deafness in one ear** you should seek urgent medical help, as this could be a sign of blockage of the blood vessels to part of the brain and you may need urgent treatment.

Treatment options for vestibular neuritis and labyrinthitis include:

No treatment

No treatment will completely take away the symptoms - especially the main symptom of vertigo. You may simply have to accept that you will be dizzy and may need to stay in bed until the vertigo runs its course and the worst of the symptoms subside.

Anti-sickness medication

A doctor may prescribe anti-sickness medication if you are troubled by being sick (vomiting). Some medicines also help to quieten the nerve messages from the inner ear and may ease vertigo - for example, prochlorperazine.

Occasionally, some people become so lacking in fluid in the body (dehydrated) due to the vomiting that goes with vertigo that they need to be admitted to hospital. In hospital, a 'drip' (fluid through a vein) can be put in place until the vomiting stops.

Vestibular rehabilitation therapy

If symptoms do not clear within a few weeks then you may be referred to a physical therapy (physiotherapy) specialist who may recommend vestibular rehabilitation. This treatment uses physical and occupational therapy techniques to treat vertigo and balance disorders.

Treatment of other causes

Treatment of other less common causes depends on the cause. Your doctor will advise. For example, if you have an infection with a germ (bacterium) in your middle ear you may be prescribed antibiotic medication.

What is the outcome (prognosis)?

In most cases, the cause is infection with a germ (a viral infection) and this usually clears up on its own. Therefore, symptoms in most cases clear completely but this may take several weeks. Some cases are milder and you just feel slightly unsteady on your feet for a short time.

In a small number of cases, symptoms following a viral vestibular neuritis or viral labyrinthitis can persist for months or years. Also, there are more serious causes of vestibular neuritis and labyrinthitis but these are much less common. Therefore, tell

your doctor if you do not improve, or if you develop other symptoms, in addition to those described above.

What is the labyrinth and what does it do?

The labyrinth is in the inner ear. The inner ear includes the cochlea, vestibule and semicircular canals. These are small shell-like structures in which there is a system of narrow fluid-filled channels called the labyrinth. The semicircular canals sense movement of your head and help to control balance and posture. The cochlea is concerned with hearing.

There are three semicircular canals (anterior, lateral and posterior). These are roughly at right angles to each other and sense movement in different directions - left-right, forward-back and up-down head movements. The semicircular canals are connected to a larger fluid-filled chamber called the vestibule which in turn is connected to the fluid-filled canal in the cochlea.

Cross-section of the ear

Inner ear diagram

Head movements are sensed because when you move your head, the fluid in the labyrinth within the semicircular canals moves too. The movement of the fluid moves tiny hairs on the inside lining of the labyrinth.

When the hairs move, this triggers nerve messages to be sent to the brain via a nerve called the vestibular nerve. This gives the brain and nervous system information about the movement and position of your head, even when your eyes are closed.

What you can see and nerve messages from the joints and muscles of the body, also help to tell your brain about your position and posture. However, a properly working labyrinth in each ear is needed for a good sense of posture and balance.

Further reading and references

- Vertigo (https://cks.nice.org.uk/topics/vertigo/); NICE CKS, December 2022 (UK access only)
- Vestibular neuronitis (https://cks.nice.org.uk/topics/vestibular-neuronitis/); NICE CKS, January 2023 (UK access only)
- Agarwal K, Harnett J, Mehta N, et al (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Abstract&list_uids=35961676); Acute vertigo: getting the diagnosis right. BMJ. 2022 Aug 12;378:e069850. doi: 10.1136/bmj-2021-069850.

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