LET'S TALK ABOUT . . .
BILATERAL VESIBULOPATHY (BVP)

BALANCE & DIZZINESS CANADA

Key points

- Bilateral vestibulopathy (BVP) is damage to the balance parts of both inner ears.
- Hallmark symptoms are imbalance, unsteady gait, and "jumpy" vision with head movement.
- Imbalance is worse when walking on uneven ground or in in the dark.
- Avoid medications that can make the damage worse.
- Avoidance of unsafe situations can help prevent falls.
- Vestibular rehabilitation is a helpful treatment strategy.

What is bilateral vestibulopathy?

Bilateral vestibulopathy (BVP) is damage to the vestibular system in the inner ear, which is part of the balance system. "Bilateral" means the damage is on both sides.

BVP is a common cause of balance problems and falls, especially in older people. In one study, people with BVP were 31 times more likely to fall, and 1 in 4 said they had recently been injured in a fall. BVP can also cause blurred vision when the person is moving. The problems get worse in the dark or when the person is walking on uneven ground.

The Bárány Society, an international organization for vestibular research, published the classification of BVP in 2017. Some aspects of the syndrome were first described in 1882.

BVP is also known as bilateral vestibular weakness, bilateral vestibular hypofunction, bilateral vestibular failure or bilateral vestibular loss.

BVP can interfere with people's work and daily life. For example, many people with BVP change their driving habits to make up for their balance and vision problems. People may also have trouble taking part in sports or moving around at night.

It is not clear how many people have BVP, but one estimate is that 28 adults in 100,000 have it at any time. The problem gets more common with age: as many as 85% of people aged 80 or over have some vestibular problems. BVP is less common in children, but many children with sensorineural hearing loss may also have BVP.

Some people recover from BVP, while for other people the condition will be lifelong. Some people have more damage than others, and some people may have more damage on one side than on the other. People with BVP may or may not have hearing loss as well.

What causes it?

Many different things can damage the inner ear, including:

- damage to the inner ear by drugs such as gentamicin (jen-tuh-MAI-sn) similar antibiotics (vestibular toxicity)
- Ménière's disease in both ears
- acoustic neuroma in both ears, or surgery to treat acoustic neuroma
- a condition called neurofibromatosis Type 2, which is a common cause of acoustic neuromas
- meningitis
- autoimmune disorders, including autoimmune inner ear disease (AIED)
- sarcoidosis, a disease that causes inflammation and growths in different parts of the body
- some congenital (present at birth) conditions
- conditions known as neurodegenerative disorders, which cause gradual loss of function or death of nerve cells in the brain
- a condition called CANVAS syndrome, which stands for Cerebellar Ataxia, Neuropathy, Vestibular Areflexia Syndrome

For some people, though, it is not clear what caused the damage. This is called idiopathic BVP.

How BVP affects balance and vision

If the vestibular system is not working properly, it means that the brain's balance system is getting less information or no information from the vestibular system.

This can cause dizziness and unsteadiness, especially if the other parts of the balance system (the visual and proprioceptive systems) cannot make up for the missing information. This is why people with BVP have more trouble when it is dark or when they are walking on uneven ground:

- When it is dark, the brain cannot get balance information from the visual system, so it is harder to balance.
- When the ground is uneven, the proprioceptive system cannot send reliable information to the brain, which makes balancing and walking more difficult.

Problems with the vestibular system can also cause a problem called oscillopsia, which makes it seem as if objects are bouncing in the field of vision. This is because the inner ear is not sending information that is needed for the vestibular ocular reflex (VOR). The VOR is responsible for stabilizing the eyes when the head moves.

What are the symptoms?

The main symptoms of BVP are:

- loss of balance (also called postural imbalance or loss of postural control)
- unsteady gait (walking or running)
- feeling unstable or dizzy
- in some people, blurry or jumpy vision when the head moves, including when they are walking or running - the medical term for this is oscillopsia (oss-ill-OP-see-uh)

The balance and gait problems get worse when it is dark, or when the person is on uneven or springy ground or on a moving surface.

The person usually does not have symptoms when they are sitting still or lying down. People with BVP usually do not have feelings of spinning (vertigo).

Some studies suggest that people with BVP may have trouble with spatial memory and navigation. This is still being studied. People with BVP may also have trouble concentrating or feel like they are in a "brain fog."

How is it diagnosed?

BVP may be diagnosed by a primary care doctor, but it is more often diagnosed by a specialist, such as a neurologist, an otolaryngologist or an otologist.

Your doctor will ask about your symptoms. Try to be as specific as possible about your symptoms and when they get better or worse.

Your doctor will also ask about your medical history, including any medications you are taking or recently stopped taking. Your doctor will also do a thorough physical and neurological exam. Tests may include asking you to watch the doctor's nose while the doctor moves your head, or to watch your own thumbs while the doctor turns you in an office chair.

You may have some of the following diagnostic tests in order to confirm the diagnosis of BVP:

- vestibular function tests
- hearing tests
- balance tests
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The doctor may order other tests as well. These may help to identify the underlying cause of BVP.

How is it treated and managed?

There are four elements to managing BVP:

- avoiding situations that could be unsafe or could make your symptoms worse, such as driving or walking on uneven ground at night
- vestibular rehabilitation, which can improve the symptoms, help you cope with them better, and help you learn to use vision and proprioception more effectively for balance
- treatment of the underlying cause of BVP, if possible

- avoiding things that could make the damage worse

If the symptoms are very severe, people with BVP may need to use devices like walkers, crutches, canes or wheelchairs, especially for the first 3 to 6 months.

Vestibular rehabilitation

Vestibular rehabilitation is a type of exercise-based therapy. Its goal is to help your brain relearn how to balance and how to respond to signals from the visual, vestibular and proprioceptive systems, or how to compensate if some signals are missing. A vestibular therapist can help you set treatment goals and design an appropriate program.

Vestibular rehabilitation for BVP may include:

- habituation exercises to help you get used to symptoms that happen when you move your head
- gaze stability exercises to help you focus on an object while your head is moving; for instance, you may begin by moving your head slowly and watching an object that is not moving, and work up to watching a moving object while your head is moving fast
- balance exercises, including strength training
- gait exercises
- substitution exercises, which means learning to use your visual and proprioceptive systems more effectively for balance

Prevention

If you have BVP, you need to avoid ototoxic medication that could make the vestibular damage worse, if possible, including:

- aminoglycoside medications such as gentamicin, streptomycin and tobramycin
- erythromycin
- cisplatin, a chemotherapy drug
- loop diuretics such as furosemide and ethacrynic acid (trade name Edecrin®)
- quinine related drugs

In some cases, it may be important to take one of these medications. But you should let your doctor and pharmacist know that you have BVP. In some cases, your doctor may be able to prescribe a different medication that will not cause vestibular damage.

Other medications suppress the vestibular system and may temporarily make dizziness worse. It is a good idea to avoid taking these medications, if you can.

- ASA (Aspirin®) and other non-steroidal anti-inflammatory drugs (NSAIDs)
- anti-nausea medication such as dimenhydrinate), trade name Gravol®
- certain antidepressants
- benzodiazepines
- calcium channel blockers such as verapamil

You and your doctor should discuss other things you can do to avoid making the symptoms worse and avoid falls.

If you work at a job where balance is important, like roofing or construction work, you may need to think about changing to a job that is safer for you.

What to expect in the future

In some cases, depending on what causes your BVP, some of the damage may heal and your vestibular function may fluctuate or improve. In other cases, with proper rehabilitation, people can learn to compensate for the missing vestibular function and their symptoms improve. People who are diagnosed and treated sooner seem to recover better. But recovery is slow and can take up to 2 years.

Scientists are studying several new treatments for BVP, including:

- devices that give feedback (such as sounds or vibrations) if a person is tilted or swaying
- devices that work like an artificial vestibular system (vestibular prosthetic devices) and send electrical signals to your vestibular nerve
- ways to regrow the damaged cells in the inner ear

Scientists are also looking into ways to protect against damage from medication and predict who is most likely to have medication damage.

Sources

View sources used for this handout:
https://bit.ly/3izYzpV

Handout updated January 2021.

If you find the information in this handout helpful, we ask for your help in return. The cause of supporting those affected by balance and dizziness disorders with ad-free, up-to-date, evidence-based information written for Canadians needs you. Please become its champion – donate to Balance & Dizziness Canada.

This handout is intended as a general introduction to the topic. As each person is affected differently, speak with your health care professional for individual advice.

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