ORTHOSTATIC HYPOTENSION

What is Orthostatic Hypotension?

Orthostatic Hypotension (OH) is defined as a drop in blood pressure with a change in position. In individuals with OH, the body is not able to appropriately compensate and maintain an adequate blood pressure to send blood to the brain when standing.[1] OH can be acute (only occurring a few times and resolving) or chronic (lasting longer and occurring more frequently).[2] OH can also be asymptomatic (meaning one does not notice symptoms of the drop in blood pressure) or debilitating.[3-5]

Incidence/Prevalence

OH occurs in about 6% of the general population.[1] However, that frequency increases with age and comorbidities. In those over 65 years old, the prevalence increases to around 20%.[2,7]

Symptoms

Orthostatic hypotension symptoms include:[4-6]

- Lightheadedness (dizziness)
- Syncope/pre-syncope
- Fatigue
- Blurred vision
- Brain fog
- Weakness
- Nausea
- Headache
- Palpitations
- Chest pain
- Neck and shoulder pain
- Shortness of breath

Diagnosis

Diagnostic Criteria:[2,3]

- A drop in systolic BP >20 mmHg OR drop in diastolic BP >10 mmHg within 3 minutes of standing (or with 60 degrees of tilt on a tilt table test)
- This increases to a drop of >30 mmHg in systolic or >15 mmHg diastolic in individuals with supine hypertension

Diagnosis is typically made through assessing orthostatic vital signs. This can be done at the bedside with a poor man's tilt or by using a tilt table test.[1]

Other tests that are sometimes used to distinguish neurogenic versus non-neurogenic OH include:[5]

- Valsalva maneuver,
- Autonomic reflex screen,
- Ambulatory blood pressure monitoring,
- Thermoregulatory sweat test,
- Measurement of supine and standing norepinephrine, and
- 24-hour urinary sodium.

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Types/Cause

Orthostatic Hypotension can be classified as neurogenic OH (nOH) and non-neurogenic OH.

Both forms of orthostatic hypotension can present as initial, classic, or delayed. [2,4,12]

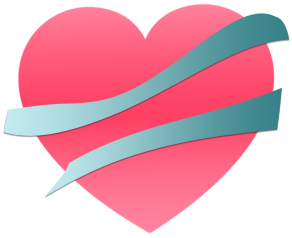
- Initial OH involves a drop of blood pressure within about 15 seconds of standing.
- Classic OH involves a drop of blood pressure within 3 minutes of standing.
- Delayed OH involves a drop of blood pressure after 3 minutes of standing.

Non-Neurogenic OH

Non-neurogenic OH is the most common form of OH. It is typically caused by: [5]

- Hypovolemia (low blood volume),
- Cardiac pump failure (problems with the heart pumping effectively),
- Venous pooling (blood pooling in the lower extremities), and
- Certain medications.

Non-neurogenic OH is frequently fully treated if the underlying cause is identified and is able to be addressed. An example of a cause that may not be able to be remedied is heart failure. [5-7]



Neurogenic OH

Neurogenic Orthostatic Hypotension (nOH) occurs when there is an autonomic vasoconstrictor failure resulting from decreased norepinephrine signaling for vasoconstriction through the body. [7,8]

nOH is commonly seen in those who are older with neurodegenerative conditions such as: [7,8]

- Parkinson's disease (PD),
- Dementia with Lewy bodies (DLB),
- Multiple system atrophy (MSA), and
- Pure autonomic failure.

These individuals have a consistent and severe drop in blood pressure upon standing due to the autonomic failure but may not have an appropriate increase in heart rate to compensate. [3,6]

Those with nOH typically experience more severe symptoms than those with nonneurogenic OH. [10] Some patients can experience hypotensive symptoms after eating meals. [6]

Approximately half of the individuals with nOH experience elevated blood pressure upon lying down (supine hypertension). [11] Supine hypertension can sometimes lead to hypertensive emergencies and nocturnal pressure diuresis. [3,5,11] This nocturnal diuresis can then worsen orthostatic symptoms upon standing due to fluid reduction. [11]

The wide swing of blood pressure changes with positional alterations can decrease quality of life due to worsening symptoms, passing out, injuries from falling, and fear of falling. [1,5,11]

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Treatment

Many of the treatments for nOH and chronic, symptomatic non-neurogenic OH are similar. This includes pharmacologic and non-pharmacologic methods that aim to help:[6,13]

- Reduce symptoms,
- Improve orthostatic blood pressure without exacerbating supine hypertension, and
- Improve standing time.

In the case of acute, non-neurogenic OH, treatment generally involves treating the underlying cause, which will usually then resolve the OH . If it cannot be resolved, then the strategies below are recommended.

Treatment of nOH is often complicated by supine hypertension and other factors. For example, efforts to increase blood pressure and fluid volume during the day can worsen supine hypertension at night, and treatments to reduce supine hypertension at night can worsen orthostatic intolerance during the day.[7]

Factors that worsen or aggravate OH, such as the use of hypotensive medications, anemia, dehydration, and vitamin deficiencies, should be assessed and corrected.[7]

Each patient with nOH needs to be evaluated as a whole and treated for their individual situation. With appropriate and ongoing evaluation and treatment, symptoms can lessen, and individuals with nOH can experience a better quality of life.

Non-pharmacologic Treatments

These center around:[6,7,13]

- Avoiding large meals,
- Limiting alcohol intake,
- Increasing fluid intake to balance fluid losses,
- Increasing the amount of sodium ingested (through dietary intake and/or supplements),
- Compression garments stockings and abdominal binders,
- Counter maneuvers to help increase blood pressure, and
- An exercise program focused on conditioning and core strength.

Additionally, increasing the head of the bed at night can help reduce supine hypertension, nocturnal diuresis, and sodium loss due to the nocturnal diuresis.[7,11,13]

Decreasing the consumption of diuretic beverages such as coffee, tea, sodas, and alcohol will help retain fluid volume that would have been lost through urination.[13]

Pharmacologic Treatments

Medications that focus on increasing fluid volume (fludrocortisone), constricting blood vessels (midodrine), and improving neurotransmission of acetylcholine which triggers the reflex that controls blood pressure (Mestinon) can be used.[6,7] Droxidopa has been FDA-approved for neurogenic orthostatic hypotension.[14]

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