

Vertigo

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stimulation of these hair cells is often caused by canaliths.

The most common cause of BPPV in people younger than age 50 is head injury. In older people, the most common cause is degeneration of the vestibular system of the inner ear. BPPV becomes much more common with advancing age. In half of all cases, BPPV are idiopathic.

WHAT ARE CANALITHS?

Canaliths are tiny particles of calcium carbonate, or limestone, attached to tiny hairs in the inner ear. They are found in all normal ears, but sometimes become detached from the hair cells and can cause dizziness when they move about within the inner ear canals.

DESCRIBE THE THREE BASIC TYPES OF BPPV: POSTERIOR, ANTERIOR, AND HORIZONTAL CANAL BPPV.

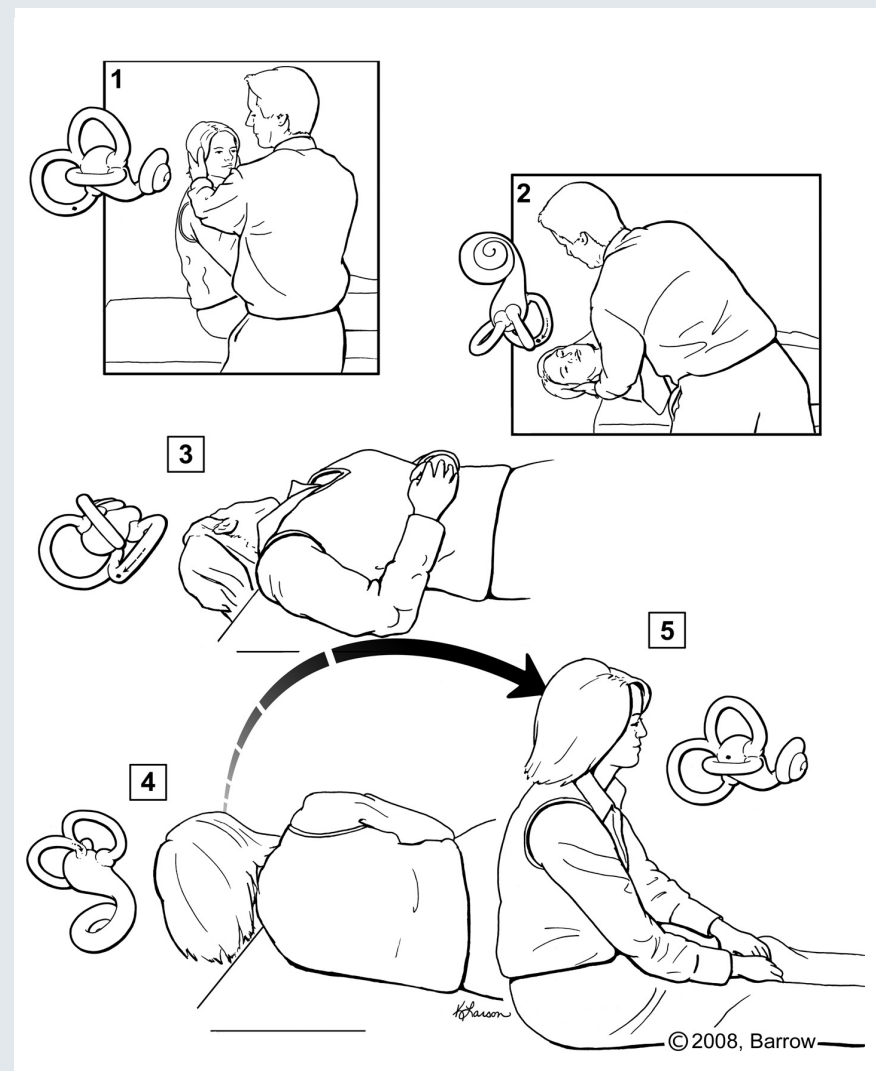
Within the inner ear there are three semi-circular canals, and a specific type of BPPV is associated with each one. The most common type is posterior canal (PC) BPPV. It is the most common because it is the lowest canal in the inner ear and therefore detached canaliths tend to remain there. In PC BPPV, dizziness

and nystagmus are triggered when the head rotates about the axis of the PC, usually, but not always, when a patient lies down on one side. PC BPPV is only triggered on one side. The nystagmus direction — a mixture of upbeating and torsion — is unusual in other conditions, so PC BPPV can be easily diagnosed. [Nystagmus can be horizontal (on lateral gaze) or vertical (upbeating or downbeating, determined by the faster component — up or down).]

The second most common type of BPPV is horizontal canal (HC) BPPV. Canaliths that fall into it also tend to easily move out again. In HC BPPV dizziness and nystagmus is triggered when the head is moved to either side. HC BPPV nystagmus is horizontal rather than upbeating, and it is generally stronger than the nystagmus of PC BPPV. Horizontal nystagmus similar to that of HC BPPV can occur in other conditions, such as cerebellar disorders, but HC BPPV is nevertheless the most common source of this nystagmus pattern.

The least common type of BPPV is anterior canal (AC) BPPV. In order to get into the anterior canal, canaliths must migrate upward with respect to the upright head, and this is unusual. In AC BPPV, symptoms are mainly triggered with the positioned head straight but turned backwards, and nystagmus is down beating, although this can also occur in other central conditions.

CANALITH REPOSITIONING TREATMENT FOR RIGHT-SIDED BENIGN PAROXYSMAL POSITIONAL VERTIGO



Steps 1 and 2 are identical to the Dix-Hallpike maneuver. The patient is held in the right head hanging position (step 2) for 20 to 30 seconds, and then (step 3) the head is turned 90 degrees toward the unaffected side; the head is held for 20 to 30 seconds before turning the head another 90 degrees (step 4) so the head is nearly in the face-down position. The movement of the otolith material within the labyrinth is depicted with each step, showing how otoliths are moved from the semicircular canal to the utricle. It is the patient's head position that is the key to a successful treatment.

A Hypothetical Case Workup for Vertigo

BY JOSEPH M. FURMAN, MD, PHD

A 57-year-old man presents to a neurologist complaining of episodes during the past week of a spinning sensation that is sometimes accompanied by mild nausea. The duration of the episodes is less than one minute. The episodes are all triggered by certain types of head movements including tilting the head back and turning toward the right side while lying in bed. He denies any other neurologic symptoms, tinnitus, or hearing loss. Past medical history is unremarkable.

On physical examination, the patient is in no acute distress. His vital signs are normal. The cranial nerve examination is normal, including normal ocular motor function. The remainder of the neurological examination is also normal. Gait is intact.

POSITIONAL TESTING

A Dix-Hallpike maneuver was performed into the head-hanging left position, which did not trigger any symptoms or nystagmus. The patient was then brought back up to the sitting position. Next, a Dix-Hallpike maneuver was performed into the head-hanging right position. After approximately five seconds in this position, the patient reported the onset of his typical symptoms of vertigo. A burst of upbeat-torsional nystagmus was seen. The torsional component was such that the upper poles of the eyes beat toward the right shoulder. The intensity of the vertigo and nystagmus gradually decreased over 20 seconds until they were no longer present. A canalith repositioning treatment was performed.

The diagnosis in this case was BPPV involving the right posterior canal. The nystagmus was triggered in the right Dix-Hallpike position. With BPPV of the posterior canal, upbeat-torsional nystagmus is triggered by the Dix-Hallpike test toward the affected side, as in this case toward the right.

According to the AAN BPPV Guidelines, treatment in this case should include a canalith repositioning treatment. The Epley maneuver is an effective and safe therapy, while weaker evidence supports the Semont maneuver. There is insufficient evidence to indicate any benefit of mastoid vibration during a canalith repositioning maneuver, post-treatment restrictions such as keeping the head more or less erect for one to two days, or prescription of medications. Note that if a patient is not treated with a canalith repositioning maneuver, that transitory downbeat torsional nystagmus may be triggered after the patient is brought from the Dix-Hallpike position back up to the sitting position. •

WHAT IS THE RECURRENCE OR RELAPSE RATE FOR BPPV?

Short-term relapses rates range from 7 percent to nearly 23 percent within a year of treatment. Over about five years, long-term recurrences may approach 50 percent.

WHAT TECHNIQUES CAN BE USED TO TREAT POSTERIOR CANAL BPPV?

Canalith repositioning maneuvers, originated by John Epley, MD, and Alain Semont, MD, are used for treating PC BPPV. Both maneuvers take about 10 minutes to

of the inner ear. There is strong evidence for the effectiveness of the Epley maneuver. The Semont maneuver does not have as much evidence for effectiveness, but the head positioning is similar to the Epley maneuver.

WHAT TECHNIQUES CAN BE USED FOR ANTERIOR AND HORIZONTAL CANAL BPPV?

Similar canalith repositioning maneuvers for treatment of anterior and horizontal canal BPPV have been proposed, but convincing evidence for their effectiveness is

‘There is strong evidence for the effectiveness of the Epley maneuver.’

perform, and involve a series of positions of the head in which canaliths are allowed to move within the inner ear. At the end of a successful maneuver, the canaliths have been moved into an insensitive part

not yet available. Maneuvers for PC BPPV do not work for HC BPPV. The head positions of the proposed specific maneuvers are modified in order to move canaliths within these canals which are