

Vertigo Explanation and Treatment

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Vertigo is defined as the illusory sensation of motion, either of the body or the surrounding environment, occurring while an individual is stationary. It is often associated with a feeling of spinning, nausea, emesis and diaphoresis. Sudden simple movements or change of posture may provoke vertigo, which can be accompanied by disequilibrium. The condition of vertigo can arise from disturbances in the vestibular system, central nervous system (brainstem or cerebellum) or cardiovascular system. Lesions in the vestibular system may result in pathological vertigo.

Benign paroxysmal positional vertigo (BPPV), is a disorder of the inner ear labyrinth, is one of the most common forms of vestibular positional vertigo. Positional pathological vertigo is precipitated by a change in head position, usually recumbent with the head turned to either right or left. BPPV is characterized by positional vertigo and positional nystagmus (repeated rhythmic oscillations of the eye), which occur when the head moves in certain directions or positions. Patients report the sudden onset of vertigo associated with certain movements or head positions. Although BPPV can occur following head trauma, head surgery, viral labyrinthitis or stapes surgery, it is most often idiopathic in nature, BPPV typically involves a single semicircular canal usually posterior but may involve a posterior and lateral canal in the same inner ear. The attacks are generally fewer than 30 seconds but may last for several minutes.

Recent studies show that BPPV is a result of the mechanism of canalolithiasis, a condition that involves the free-floating particles called carbonate crystals which originate in the utricle. These crystals fall off of the hair cells located there and filter into the semicircular canal as they fall down the canal is being activated causing deflection of the cupula resulting in vertigo.

The standard-of-care for the definitive diagnosis of BPPV is a provocative test, the Dix-Hallpike test, which is based on theory of canalolithiasis. It involves the rapidly changing the patient's head position from sitting upright to lying down with the head to one side. The positional-provoked nystagmus has both torsional and vertical components. The Dix-Hallpike test is considered positive for BPPV if the maneuver provokes paroxysmal vertigo and nystagmus.

Particle Repositioning Maneuvers:

The Epley repositioning maneuver is the technique preferred for canalith repositioning. It is a series of rotational maneuvers to clear the offending particles (canaliths) out of the semicircular canals via the common crus to the utricle, where they no longer affect the dynamics of the semicircular canals (Epley, 1992). Unlike vestibular exercise therapy interventions, particle repositioning maneuvers treat the underlying pathology of BPPV.

A position statement describing the role of audiologists in vestibular rehabilitation by the American Speech-Language-Hearing Association (1999) states that the canalith repositioning procedures are the "accepted" method of treatment

Scientific literature contains evidence that particle repositioning maneuvers such as the Epley's are safe and effective for patients with BPPV. A number of randomized controlled trials have been performed with a success rates that range from 44-90%. Epley's initial study in 1992 noted an 80% success rate after a single treatment and 100% success when more than one treatment session was involved.

A recent meta-analysis was conducted by White at al (2005) evaluating the efficacy of repositioning maneuvers compared to the rate of resolution in the untreated controls. Nine randomized controlled trials consisting of 505 patients suggested that canalith repositioning is safe and effective for the treatment of BPPV.

References: