International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Benign Paroxsymal Positional Vertigo (A Hidden Myth in Dentistry)

Dr. M. A. Ateeq[1], Dr. Syeda Lubna Fathima[2]

[1]Senior Lecture Department of Mxillofacial Surgery, Tirumala Dental College Nizamabad, India

[2] BDS

Abstract: ***Benign paroxysmal positional vertigo is a subjective perception of rotational or transitional movement in the absence of external stimulus, in the case of BPPV, abberant signals from semicircular canals create an illusion of motion which results in vertigo.***

Keywords: Benign paroxysmal positional vertigo BPPV, Manouvers to Correct, No Stimulus

1. Introduction

Vertigo is defined as the subjective perception of rotational or transitional movement in the absence of an external stimulus. In the case of BPPV, aberrant signals from semicircular canals create an illusion of motion which results in vertigo.

BPPV is characterized by brief spinning sensations, usually lasting less than 1 minute, which are generally induced by a change in head position with respect to gravity. In clinical practice, some patients complain of vertigo when getting up in the morning an improvement in vertigo symptoms after a while, but a recurrence of symptoms when they lay back down in bed, roll over in bed, or get up again. BPPV brings discomfort, such as vertigo, fear and nausea, as well as an extremely high risk of falling. although it is usually self-limiting, it still inflicts a considerable personal and socio-economic burden.

BPPV is a rare but treatable peripheral vestibular disorder in dentistry in which 1 or more of the semicircular canals are abnormally stimulated by otoconia displaced from the otolith organs. As the head moves with respect to gravity, the otoconia also move, activating semicircular canal afferents and producing a false sense of head rotation and nystagmus.

Pathophysiology

The semicircular canals are the sensors of angular head acceleration. Each canal is filled with endolymphatic fluid, which passes in a loop through utricle and is sealed by the cupula, a flexible gelatinous mass which is attached to the ampul AAla. The sensory hair cells are embedded within the cupula. As the head moves in the plane of asemicircular canal, the flow of endolymphatic fluid within the canal deflects the cupula and bends the stereocilia of hair cells which are directionally polarized. Therefore the direction of endolymph flow and subsequent deflection of stereocilia, determines whether there is an excitatory or inhibitory response from the canal afferents.

Canal stimulation during natural head movements drives the occular muscles to produce an equal and opposite eye movement, thus maintaining gaze stability as we move(Epley, 2001). Canal stimulation by otoconia produces an illusion of head movement, a compensatory (slow phase) eye movement and oppositely directed excitatory nystagmus (fast phase) in the plane of that canal. Due to the anatomical orientation of canals and the otoliths, the lowermost posterior canal is most commonly affected by BPPV (90% of cases), while displaced otoconia in the lateral and anterior canals are more likely to fall back into utricle spontaneously through natural head movements (Korres et al, 2002).

The cardinal symptom is sudden vertigo induced by a change in head position: turning over on dental chair, lying down on dental chair, looking up, stooping, or any sudden change in head position. The symptoms can last for days, weeks, months or years, or be recurrent over many years. While BPPV can b present at any age, its peak onset onset occurs in 5th and 6th decades of life. Women to men ratio is 2:1 or 3:1.

2. Diagnosis

As with all vestibular patients, detailed clinical history is very important. The dentists should take care to differentiate the chief complaint from other forms of "dizziness" such as disequilibrium and pre-syncope. Other causes of episodic vertigo also should be ruled out including Meniere's disease, migraine and semicircular canal dehiscence. Central nervous system etiologies masquerading as BPPV should also be considered carefully.

The key to successful reduction is to identify the semicircular canal in which otoliths have fallen. The diagnosis of BPPV not only considers the patient's complaint, but also relies on the observation of charecteristic nystagmus induced by positional test

The onset of vertiginous symptoms in BPPV is sudden and provoked by specific head movements such as extending the neck, bending forward and rolling over. In posterior canal BPPV, the provoking side to which the head is turned in supine position usually predicts the affected ear.

3. Office Management

Diagnostic Maneuvers

The DIX-HALLPIKE MANEUVER is the definitive test for for posterior canal BPPV. It begins with the patient seated and head turned 45 degrees to the side being tested in order to isolate and vertically orient that side's posterior canal. the patient is then laid back into supine position with the tested

ear down. Dentists should be cautious of patients with neck, back, abdominal and hip problems as this may require special care during the diagnostic maneuver.

On being convinced with the patient's clinical history, the diagnosis of BPPV can be made if the Dix-Hallpike maneuver provokes the appropriate nystagmus. Characteristic nystagmus features include latency of onset, limited duration, torsional and upbeat directionality, reversibility and fatigability. The latency of onset between the beginning of Dix Hallpike and onset of vertigo or nystagmus, recorded is due to the inertia of endolymph particles. It varies from 2 to 5 seconds. Nystagmus and vertigo terminate once the endolymph particles migrate down to the most dependent position. Torsional nystagmus is due to activation of the ipsilateral inferior oblique and contralateral superior rectus, along with an upbeating component. The directions of nystagmus reverses on returning to upright position. The intensity of nystagmus usually correlates with the severity of a patient's vertigo.

Horizontal BPPV is diagnosed with a SUPINE ROLL test also known as the PAGNINI-Mc-CLURE Maneuver. This test is performed by first positioning the patient supine in a neutral head position with face directed upwards. The head is then rotated quickly 90 degrees to one side and the eyes are observed for the presence of nystagmus. If any nystagmus noted, has slowed down, the head is returned to the neutral position, and the contralateral direction can be tested in similar way. This test provokes both horizontal canals simultaneously. The affected side is determined by comparing the nystagmus on each side and its direction. In general, the provoked vertigo of horizontal canal BPPV is more intense, has a shorter latency, lasts longer and is less prone to fatigue.

Superior canal BPPV is comparatively rare. Anatomically, the superior semicircular canal lies in the same plane as the contralateral posterior semicircular canal. The Dix Hallpike maneuver tests for both entities. In a positive Dix Hallpike exam of the superior canal BPPV, the torsional component remains the same as for the posterior canal of the undermost ear with the main differentiating element being a down-beating component.

4. Case Report

A 60 year old male patient reported to our clinic with a complaint of toothache and he was diagnosed with vertical fracture of tooth and needed surgical extraction. Patient was known diabetic and hypertensive and under medication for that. Hence surgical extraction was planned under local anaesthesia. Ahigh speed micromotor was used to cut the tooth and bone and the extraction was done uneventfully.

After the surgery patient complained of giddiness (vertigo). At first we thought of hypoglycemia which was checked using at our set up and it came out to be in normal range. Then we suspected any fluctuations in blood pressure and even that was quite normal. Then the patient was stable after a period of time and was discharged home.

After discharge from clinic, next day the patient reported with same complaint of vertigo while waking up from bed. On checking the vitals turned out to be normal again. This continued for the next day. After being confirmed of no other relative clinical history and after ruling out all the possibilities, we concluded that the patient was having Benign Positional Vertigo since he was experiencing the vertigo in a particular posture. The vibration of high speed micromotor or position of dental chair during the procedure might be the reason for disturbance of ear and (BPPV). We prescribed normal vertigo tablet (beta histamine) for the treatment and it subsided by itself within 5 days of time.

5. Conclusion

BPPV is a hidden culprit most of the time during dental procedures leading to vertigo. Many of the times it gets undiagnosed due to lack of knowledge of this condition and underlying medical conditions of the patients.

References

[1] Hanley K, O'Dowd T, Considine N. A systematic review of vertigo in primary care. Br J Gen Pract 2001;51(469):666–671.
[2] Katsarkas A. Benign paroxysmal positional vertigo (BPPV): idiopathic versus post-traumatic. Acta Otolaryngol 1999;119(7):745–749.
[3] von Brevern M, Radtke A, Lezius F, et al. Epidemiology of benign paroxysmal positional vertigo: a population based study. J Neurol Neurosurg Psychiatry 2007;78(7):710–715.
[4] Kim J-S, Zee DS. Benign Paroxysmal Positional Vertigo. N Engl J Med 2014;370(12):1138–1147.
[5] Mizukoshi K, Watanabe Y, Shojaku H, Okubo J, Watanabe I. Epidemiological studies on benign paroxysmal positional vertigo in Japan. Acta Otolaryngol Suppl 1988;447:67–72.
[6] Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical practice guideline: benign paroxysmal positional vertigo (update). Otolaryngol Head Neck Surg 2017;156(Suppl 3):S1–S47.
[7] Fife D, FitzGerald JE. Do patients with benign paroxysmal positional vertigo receive prompt treatment? Analysis of waiting times and human and financial costs associated with current practice. Int J Audiol 2005;44(1): 50–57.
[8] Oghalai JS, Manolidis S, Barth JL, Stewart MG, Jenkins HA. Unrecognized benign paroxysmal positional vertigo in elderly patients. Otolaryngol Head Neck Surg 2000;122(5):630–634.
[9] Parnes LS, Agrawal SK, Atlas J. Diagnosis and management of benign paroxysmal positional vertigo (BPPV). CMAJ 2003;169(7):681–693.
[10] Parnes LS, McClure JA. Free-floating endolymph particles: a new operative finding during posterior semicircular canal occlusion. 1992. Laryngoscope 2015;125(5):1033.
[11] Lee S-H, Kim JS. Benign paroxysmal positional vertigo. J Clin Neurol 2010; 6(2):51–63.
[12] Kao WTK, Parnes LS, Chole RA. Otoconia and otolithic membrane fragments within the posterior semicircular canal in benign paroxysmal positional vertigo. Laryngoscope 2016;90:709–714.

[13] Kansu L, Aydin E, Gulsahi K. Benign paroxysmal positional vertigo after nonotologic surgery: case series. J Maxillofac Oral Surg 2015;14(Suppl 1): 113–115.
[14] Park S-K, Kim SY, Han K-H, Hong SK, Kim JS, Koo J-W. Benign paroxys-mal positional vertigo after surgical drilling of the temporal bone. Otol Neurotol 2013;34(8):1448–1455.
[15] Lee N-H, Ban J-H, Lee K-C, Kim SM. Benign paroxysmal positional vertigo secondary to inner ear disease. Otolaryngol Head Neck Surg 2010;143(3): 413–417.
[16] Balatsouras DG, Ganelis P, Aspris A, Economou NC, Moukos A, Koukoutsis G. Benign paroxysmal positional vertigo associated with Meniere's disease: epidemiological, pathophysiologic, clinical, and therapeutic aspects. Ann Otol Rhinol Laryngol 2012;121(10):682–688.
[17] El-Saied S, Joshua B-Z, Segal N, Kraus M, Kaplan DM. Sudden hearing loss with simultaneous posterior semicircular canal BPPV: Possible etiology and clinical implications. Am J Otolaryngol 2014;35(2):180–185.
[18] Anagnostou E, Kouzi I, Spengos K. Diagnosis and treatment of anterior-canal benign paroxysmal positional vertigo: a systematic review. J Clin Neurol 2015;11(3):262–267.
[19] Hornibrook J. Benign Paroxysmal Positional Vertigo (BPPV): history, pathophysiology, office treatment and future directions. Int J Otolaryngol 2011;2011:835671.
[20] Dix MR, Hallpike CS. The pathology symptomatology and diagnosis of certain common disorders of the vestibular system. Proc R Soc Med 1952; 45(6):341–354.
[21] Shim DB, Ko KM, Kim JH, Lee W-S, Song MH. Can the affected semicircular canal be predicted by the initial provoking position in benign paroxysmal positional vertigo? Laryngoscope 2013;123(9):2259–2263.