



BPPV IN A YOUNG FEMALE WITH PPPD ASSOCIATED WITH VESTIBULAR MIGRAINE: CASE REPORT

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ABSTRACT Benign paroxysmal positional vertigo (BPPV) is the most prevalent peripheral vestibular disorder, characterized by brief, positionally triggered vertigo. Persistent postural- perceptual dizziness (PPPD) is a chronic functional vestibular condition presenting with non-spinning dizziness, often triggered or exacerbated by motion, upright posture, or visual stimuli. Vestibular migraine is a recognized risk factor for both conditions. This report presents a rare case of a 28-year-old female with a history of 10-year imbalance and swaying due to PPPD associated with vestibular migraine, who later developed horizontal canal BPPV. Diagnosis was confirmed by McClure-Pagnini testing and resolved after the Gufoni manoeuvre. Persistent imbalance led to further assessment, confirming PPPD. Management included migraine prophylaxis with flunarizine, nutritional supplements, and vestibular rehabilitation incorporating balance control, core strengthening, and virtual reality exposure. The patient achieved complete recovery after six weeks. This case emphasizes the importance of identifying underlying vestibular comorbidities in young patients with BPPV and tailoring multimodal management for optimal outcomes.

KEYWORDS : PPPD, Vestibular migraine, BPPV, VNG, Gufoni maneuver, Dizziness, Vestibular rehabilitation.

INTRODUCTION

Benign paroxysmal positional vertigo (BPPV) is the leading cause of peripheral vestibular vertigo, characterized by transient episodes of spinning sensation triggered by changes in head position relative to gravity. Persistent postural-perceptual dizziness (PPPD) is a chronic vestibular disorder presenting with non-spinning dizziness, often precipitated by acute vestibular events such as BPPV, vestibular neuritis, or vestibular migraine. Vestibular migraine itself is a recognized risk factor for early-onset BPPV. The coexistence of PPPD and vestibular migraine preceding BPPV is rarely reported. This case illustrates such a scenario in a young female.

Case Presentation-

A female of 28-year-old presented on 2 May 2024 with complaints of spinning vertigo for 10 days, triggered by position changes such as lying down, turning in bed, or looking up. The vertigo lasted one to two minutes and was accompanied by a feeling of head heaviness.

Past Medical History

Ten years prior, she sustained a fall from a bike, resulting in a neck injury. During recovery, she experienced an episode of spinning and blackout, diagnosed as hypoglycemia. Subsequently, she developed a persistent sense of swaying imbalance, which gradually worsened over the years. She reported feeling unsteady while turning or standing up from a seated position and had a fear of falling.

She also experienced episodic headaches, occurring twice per month for the past six years, sometimes associated with mild spinning. Symptoms worsened in visually busy environments (e.g., supermarkets), with prolonged mobile phone use, and after inadequate sleep.

There was no history of hearing loss, tinnitus, or neurological deficits.

Clinical Examination

Blood pressure in supine and standing positions was normal. Otoloscopic examination, tuning fork tests, and audiometry were normal. Gait was steady under normal lighting but showed mild instability with eyes closed and on a foam surface.

Vestibular Testing

The head impulse test was normal bilaterally. Video nystagmography (VNG) revealed mild saccadic smooth pursuit on the vertical plane but otherwise normal oculomotor testing. Spontaneous nystagmus testing showed no nystagmus with fixation, but mild down-beating nystagmus without fixation, which was also elicited post-headshake, post-hyperventilation, and in all gaze positions. Subjective visual vertical was normal.

Positional Testing

The McClure-Pagnini (supine roll) test elicited horizontal geotropic nystagmus, more intense on the right side, confirming the diagnosis of right horizontal canal canalolithiasis.

Management of BPPV

A Gufoni manoeuvre was performed on the right side. The patient reported immediate resolution of positional vertigo, and repeat testing was negative for nystagmus.

Fig.1: Demonstration of Gufoni Maneuver



Follow-Up And Persistent Symptoms

Five days later, she returned with complete resolution of positional vertigo but persistent swaying imbalance. Repeat VNG again demonstrated mild down-beating spontaneous nystagmus without fixation and no positional nystagmus. Functional Assessment

- **Dizziness Handicap Index (DHI):**

52 (moderate handicap)

- **Hospital Anxiety and Depression Scale (HADS):** Anxiety score 8 (borderline abnormal), depression score within normal range.

- **Stabilometry:** Abnormal limits of stability in the forward and left directions; modified clinical test of sensory interaction on balance (MCTSIB) and Romberg tests were normal.

Final Diagnosis

Based on the persistent non-spinning dizziness lasting years, exacerbation by motion and visual stimuli, history of vestibular migraine, and absence of other causes, the patient was diagnosed with PPPD associated with vestibular migraine.

Management And Outcome

The Patient Was Counseled Regarding Her Diagnosis And Prognosis. Medical Management Included:

- Flunarizine 10 mg once daily

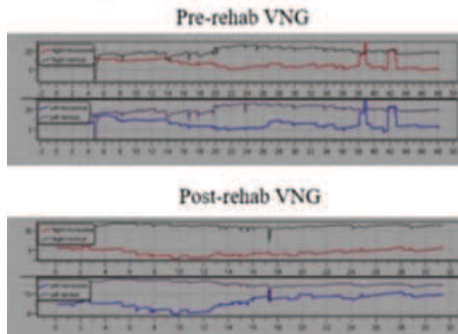
- Nutritional supplements: riboflavin, magnesium, and coenzyme Q10

Vestibular Rehabilitation Therapy Was Initiated Twice Weekly For Six Weeks, Including:

- Balance control and postural stability training
- Core muscle strengthening
- Virtual reality exposure therapy simulating visually challenging environments such as narrow bridges, high altitudes, and crowded supermarkets

At the end of six weeks, the patient reported complete resolution of the swaying sensation. Repeat VNG was normal, and functional scores improved significantly.

Fig.2: Pre and Post rehab VNG



CONCLUSION

PPPD with vestibular migraine can predispose to early-onset BPPV even in young adults. Recognition of overlapping vestibular disorders is essential to avoid underdiagnosis of chronic functional components once acute peripheral symptoms resolve. A comprehensive, multidisciplinary approach combining repositioning manoeuvres, migraine prophylaxis, vestibular rehabilitation, and patient education can lead to excellent outcomes. enables a complete recovery.

Fig.3: Pre and Post rehab Limits of stability test on stabilometry



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