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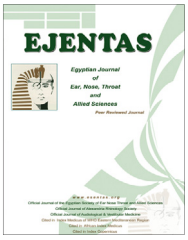

ORIGINAL ARTICLE

Diagnosis and management of posterior semicircular canal benign paroxysmal positional vertigo: A practical approach

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KEYWORDS

BPPV;
Unilateral;
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Abstract *Objectives:* To identify variables affecting outcome in patients with unilateral and bilateral BPPV.

Materials and methods: Retrospective review of 220 patients diagnosed with posterior SCC underwent treatment successfully with Canalith Repositioning Maneuver. Bilateral and severe cases received medical treatment before starting the maneuver. Scheme for management of the cases had been settled.

Results: One hundred seventy-four patients (74.5%) as the first BPPV episode while 25.5% with recurring episodes. Significant improvement was reported in 84% of patients. Etiology is not playing a role in unilateral or bilateral BPPV. Patients presented with bilateral BPPV were classified into true or unilateral mimicking bilateral BPPV. 46.7% of the patients reported sleeping using one pillow. Daily routine Brandt–Daroff exercises after the success of CRM affect the rate of recurrence.

Conclusion: Canalith repositioning Maneuver provides rapid relief of symptoms of BPPV. Patients with bilateral or severe BPPV required a special protocol to reach complete relief. In addition daily routine Brandt–Daroff exercises decrease the recurrence rate.

1. Introduction

First described in 1921 by Barany, benign paroxysmal positional vertigo (BPPV) is a common disorder wherein brief episodes of vertigo and nystagmus are produced by certain changes of head position relative to gravity.[1]

At least half of BPPV cases are idiopathic and most pathological associations provide no clue as to the reason why otoconia becomes dislodged.[2] BPPV may develop secondary to any of the inner ear diseases (e.g., vestibular neuritis, labyrinthitis, and Meniere's disease) that give rise to degeneration and detachment of the otoconia, but do not totally impair semicircular canal function.[3] Several other factors have been proposed as etiological factors for BPPV including: head

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trauma, circumstances in which the head is placed or maintained in an persistent inverted orientation (e.g., dental procedures, visits to the hairdresser, prolonged travels), migraine disease, and upper respiratory infection. BPPV may present bilaterally in 7.5–15% of cases.[4,5]

Although it has been historically commonplace to reassure patients diagnosed with BPPV that their condition is benign and is likely to spontaneously remit in the subsequent months, recent relatively high quality evidence supports active, expeditious treatment with particle repositioning maneuvers (PRMs).[6]

The aim of this study is to prospectively analyze the profiles of patients who were diagnosed with posterior semicircular canal (PSC) BPPV with special emphasis on their clinical presentation and the response to the PRMs.

2. Material and methods

A consecutive series of patients who were clinically diagnosed with BPPV at Al Ahli Hospital, Doha, Qatar between January 2009 and October 2011 was prospectively studied. Patients with history of brief vertigo provoked by changes in head position and associated with vertigo and nystagmus during the Dix–Hallpike test on physical examination were included in this study. The involvement of the posterior semicircular canal was confirmed during Dix–Hallpike test by the presence of geotropic up beating torsional nystagmus with its characteristic latency, duration, and fatigability and associated with the subjective perception of vertigo. Dix–Hallpike test was performed bilaterally. If characteristic findings of BPPV were identified bilaterally, the amplitude and frequency of nystagmus were compared. Eye movements were recorded by Micromedical two-channel visual eyes using standard test protocol of visual and vestibular stimulation. Patients with atypical clinical presentation with positive Dix–Hallpike test were excluded. In some elderly patients, we performed side lying test. A thorough evaluation was performed to rule out any neurological or otological pathology. This included: evaluation of spontaneous nystagmus, head thrust test, other positional maneuvers, Romberg test and audiological evaluation. Videonystagmography was only performed when the history and clinical findings raised the suspicion of an additional vestibular pathology.

Patients were treated using the Canalith repositioning procedure (CRP) described by Epley. Patients who experienced severe vertigo and cannot tolerate head movement were initially given a 3 day treatment with Betahistine hydrochloride. Patients were re-evaluated at 3–5 day interval to assess the response to treatment. CRP was repeated until successful repositioning had been achieved. In bilateral BPPV, the selection of the side for initiation of CRM was based on comparison of the observed nystagmus. The side in which nystagmus was of higher amplitude, faster or associated with more intensive subjective vertigo was selected for repositioning (Scheme 1). Treatment success was judged as complete relief of the symptoms of vertigo and conversion to a negative Dix–Hallpike test on physical examination. If the less affected side is still positive for Dix–Hallpike test we started to do CRP. BPPV was considered persistent if it did not respond to three sessions of CRP within two weeks of initial presentation. Recurrence was considered if positional vertigo developed after at least 2 weeks of a symptom-free interval following previous successful treatments. All patients were instructed to return if vertigo redeveloped. All patients were instructed to perform Brandt–Daroff exercises at home, starting 2 days after successful repositioning and for a period of 2 weeks. Patients were re-examined 3 months and 6 months after testing negatively for vertigo. Patients were instructed to contact us if they redevelop positional induced vertigo in the future. In addition, an attempt was done to contact patients every six months to inquire about the recurrence of the condition. Only patients with a minimum of 2 years follow up were included in the study.

Data were analyzed using SPSS software (Statistical Package for the Social Sciences, version 11.0, SPSS Inc., Chicago, IL, USA). Variables were expressed as numbers and percentages; continuous data were expressed as mean ± standard deviation. Fisher's exact test and logistic regression tests were used for comparisons.

3. Results

A total of 220 patients diagnosed were included in this study (Table 1). There were 123 females and 97 males with an age range of 19–73 years (mean age 44.3 ± 11.2 years). Duration of symptoms before diagnosis ranged from 2 to 28 days. 164 patients (74.5%) presented as the first BPPV episode, whereas 56 (25.5%) presented with recurring episodes. 93 patients (42.3%) gave a history of visiting general practitioners or emergency departments before consulting a specialist. The cause of the BPPV in the study population was presumed to be related to trauma in 41 patients (18.6%), peripheral vestibulopathy in 20 (9.1%), and it was idiopathic in 159 (72.3%). Female outnumbered males in the idiopathic group (2:1). The history of trauma within one week preceding the presentation was statistically more significant within the bilateral group ($P = 0.0153$). In 20 patients with peripheral vestibulopathy, unilateral sensorineural hearing loss associated with canal paresis was suggestive of underlying Meniere's disease in 7 patients. The remaining 13 patients gave a history suggestive of vestibular neuritis within 6 months prior to the presentation. The diagnosis was confirmed by the presence of canal paresis associated with normal cochlear functions. Review of the history revealed the diagnosis of migraine in 32 patients (14.5%) according to the criteria of international headache society. The statement of the patient regarding the direction of movement that precipitated the majority of attacks correlates with the involved ear in 123 patients (55.9%).

After reviewing the medical records of such patients, correct diagnosis was done in only 27 patients (29%). The remaining 66 patients were given nonspecific treatment with no improvement for an average period of 16 ± 5.3 days. Among the group of 127 patients who consulted specialists, incorrect diagnosis and non-specific treatment were reported in 43 patients (34%). The percentage of incorrect diagnosis and the delay in treatment was statistically more significant in the group of patients who initially consulted non-specialized physicians ($P < 0.0001$) (Table 2). Unilateral PSC BPPV was identified in 148 patients (67.3%). The right PSC was involved in 87 patients, the left canal in 61 patients and bilateral involvement was diagnosed in 72 patients (32.7%). In the patients with bilateral BPPV, symmetrical nystagmus was reported in 45 patients and the remaining 27 patients had