BENIGN PAROXYSMAL POSITIONAL VERTIGO: OUR EXPERIENCE AT A TERTIARY CARE CENTRE OF CENTRAL INDIA

Neurology

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ABSTRACT

Background: Benign paroxysmal positional vertigo (BPPV) is a common cause of vertigo. The diagnosis is often delayed and patients are unnecessarily investigated and treated with drugs.

Aim: To analyze the patient profile, duration of symptoms, etiology, associated co-morbidities, type of canal involvement and response to CRP in cases of BPPV.

Material & Methods: The present prospective study was conducted at a tertiary care centre from January 2015 to December 2016 in 90 patients with a clinical diagnosis of BPPV. Patient particular and disease specific data were recorded in preset proforma and analyzed. All these patients were treated by different CRP specific for the canal involved. All cases were reassessed for post procedural response.

Results: Total 90 patients were included in the study with age range of 20 to 76 year. Mean age was 46.74. Maximum patients (26.67%) were in the age range of 41-50 year with male: female was 1:1.43. The duration of symptoms was in from 2 days to more than 3 years. Most common morbidity was diabetes and most common cause was Idiopathic (82.22%). Most of these patients presented with positional vertigo (94.44%). Right posterior canal was involved in 52 cases (57.78%) and left in 30 (33.33%) cases.

Conclusion: BPPV is a common cause of vertigo. More awareness needed about its symptoms, early application of Dix-Hallpike test and Epley's procedure to reduce the suffering of patients and to reduce unnecessary diagnostic tests and costs.

KEYWORDS

BPPV, Dix-Hallpike test, CRP.

INTRODUCTION:

BPPV was first described by Barany in 1921, and he attributed the disorder to otolith disease.¹ The clinical diagnosis of this disorder was not well defined until Dix and Hallpike described the classic positioning which causes a characteristic nystagmus.² Benign paroxysmal positioning vertigo is a disorder characterized by brief attacks of vertigo, with associated nystagmus, precipitated by certain changes in head position with respect to gravity. Furthermore, BPPV is likely to be the most common vestibular disease as every third participant with vestibular vertigo had BPPV.⁴ The overall prevalence of BPPV is 10.7 to 140 per 100,000 populations.⁵ It is common in the age between 50 and 55 years in idiopathic cases⁶ and it is rarely seen in childhood. It is more commonly seen in older ages because of the degeneration of statoconia, arising from demineralization, shown in histopathology studies.⁷ Based on the theory of canalithiasis, Canalith Repositioning Procedure (CRP) was instituted at Portland Otologic Clinic in 1979. This was designed to treat BPPV throughout migration of free moving pathological densities in the endolymph of a semicircular canal using timed head maneuvers and applied vibration.⁸ This study will be plan to evaluate the prevalence, socio-demographic factors clinical presentation associate co-morbidities and response to the canalith repositioning procedures in cases of benign positional vertigo in central India.

OBJECTIVES:

1. To study the various socio-demographic characteristics and clinical presentation of cases with BPPV
2. To evaluate the site, associated symptoms and co-morbidities in cases with BPPV
3. To analyse the response to the canalith repositioning procedures in cases with BPPV.

MATERIAL & METHODS:

This prospective study was carried out in a tertiary care centre in central India from January 2015 to December 2016. All cases with rotatory dizziness on changing position attended in neurology clinic were evaluated. All cases were inquired about their age, duration of symptoms, side on which the symptoms develop, other symptoms as Positional vertigo, Nausea, Vomiting, Imbalance, Anxiety, Decreased sleep, ear ache or discharge, associated co-morbidities, history of head injury recorded in preset proformas. Suspected etiology of CNS cause was excluded from the study. BPPV was confirmed by Dix-Hallpike test, side lying test and roll test and all positive cases were enrolled for the study. Canalith repositioning procedure was performed and repeated three times immediate after the procedure, after 7 days and after 1 month in all the patients irrespective of nystagmus being present or absent to ensure complete removal of the particles. Response to Canalith repositioning procedure was entered into the preset proforma.

All data was statistical analyzed and conclusions were drawn.

Dix-Hallpike test: The examiner holds the seated patient's head 45° to the left or right. This aligns the posterior semicircular canal in the vertical plane. The patient should be asked to hold onto the examiner's arm for stability. The examiner then drops the patient back to the supine position, with the head hanging down off the stretcher 10°–30°. This causes a large rotation of the posterior semicircular canal within its own plane, moving the loose otolith and reproducing the symptoms. The test is considered positive if it provokes the characteristic torsional and vertical nystagmus.⁹

RESULTS:

Total 90 patients were included in the study with age range of 20 to 76 year. Mean age was 46.74. Maximum patients (26.67%) were in the age range of 41-50 year followed by 24.44% in the 51-60 year. In total 90 patients 37 were male and 53 were female with male:female was 1:1.43. The duration of symptoms was in from 2 days to more than 3 years. Maximum patients (55.55%) presented within a months. Total 9 patients were presented after 6 months of symptoms onset.

Most common morbidity was diabetes in 13 patients followed by hypertension (12), hypothyroid (6), CAD (4), Eye surgery (5) and ear surgery (3). Etiology wise most patients were in Idiopathic category (82.22%) followed by in post traumatic (8.89%), migraine (5.55) and meniere's disease (3.33).

In clinical presentation most of the patients presented with positional vertigo (94.44%). Other symptoms were nausea (51.11%), vomiting (22.22%), imbalance (38.89%), anxiety (57.78%) and decreased sleep (16.67%). Right posterior canal was involved in 52 cases (57.78%) and left in 30 (33.33%) cases. Posterior canal was involved in 87 (96.67%) cases, horizontal canal in 3 (3.33%) cases and anterior canal in 1 (1.11%) case.

Tables:

Table1: Distribution Of Cases According To Personal Profile, Duration Of Disease And Associated Co-morbidities:

S.N.	Variables	Number	Percentage (%)
1.	Gender	Male	37
		Female	53
2.	Age groups	≤30 year	4
		31-40 year	20
		41-50 year	24
		51-60 year	22
		61-70 year	15
		>70 year	5

3.	Duration of symptoms	<4 weeks	50	55.55
		4-8 weeks	15	16.67
		8-12 weeks	5	5.55
		12-16 weeks	4	4.44
		16-20 weeks	4	4.44
		20-24 weeks	3	3.33
		>24 weeks	9	10
4.	Co-morbidities	Diabetes mellitus	13	14.44
		Hypertension	12	13.33
		Hypothyroid	6	6.67
		CAD	4	4.44
		Eye surgery	5	5.55
		Ear surgery	3	3.33

Table 2: Distribution Of Cases According To Etiology, Clinical Features And Canal Involvement

S.N.	Variables		Number	Percentage (%)
1.	Etiology	Idiopathic	74	82.22
		Post Traumatic	8	8.89
		Migraine	5	5.55
		Meniere's disease	3	3.33
2.	Clinical features	Positional vertigo	85	94.44
		Nausea	46	51.11
		Vomiting	20	22.22
		Imbalance	35	38.89
		Anxiety	52	57.78
		Decreased sleep	15	16.67
3.	Canal involvement	Posterior canal	52	57.78
		Right	30	33.33
		Left	5	5.55
		Bilateral	3	3.33
		Horizontal	-	-
		Anterior	-	-
		Mixed	-	-

Table 3: Distribution Of Cases According To Response Of Canalith Repositioning Procedure

SN	Response of CRP	Immediate after CRP		7 days		1 month	
		Number	%	Number	%	Number	%
1.	Complete relief	82	91.11	80	88.88	69	76.66
2.	Partial relief	8	8.88	8	8.88	13	14.44
3.	No relief	-	-	-	-	-	-
4.	Recurrence	-	-	2	2.22	8	8.88

DISCUSSION:

Although BPPV is a one of the most common cause of vertigo, still it is under-recognized by non-specialist due to misbelieve as vertigo is a common presentation of cervical spondylosis, which is commonly seen in elderly population as such, is diagnosed late. There is a long delay between onset of symptoms and diagnosis, often with multiple healthcare contacts. Hence, it is important to increase awareness of primary care giving physician about this condition as it can be easily diagnosed by a simple bed side Dix-Hallpike test and can be treated easily by canalith repositioning procedures.

BPPV is known to affect all age groups, though it appears to be more common in the elderly in 5th to 7th decade of life and rarely seen in children. In our study, the mean age of the participants was 46 year with maximum number of patients in the age group of 41 to 50 years (26.67%) contrary to the literature.^{10,11,12} The reason for younger age in our study may be due to younger patients are seeking more medical help. In present study the sex distribution indicates a predilection for women which is similar to other studies.^{10,12}

In the present study the most common cause was idiopathic (82.22%) followed by trauma (8.89%), migraine (5.55%), and ipsilateral Menier's disease (3.33%). Similarly, in the literature in most of the cases the cause of BPPV is idiopathic and the most common identified etiologies are previous trauma, ipsilateral Meniere's disease, ipsilateral vestibular neuritis and severe systemic disease.^{13, 14, 15} In our study the most common presentation was positional rotatory vertigo (94.44%). Other symptoms were nausea (51.11%), vomiting (22.22%), and imbalance (38.89%). In the study by Kentala E et al reported that 80% of patients experience a rotatory vertigo and 47% presents with floating sensation.¹⁶

In our study only 55.55% of patients are presented within one month of symptoms onset. There was delay in the diagnosis in remaining 45.45% of patients. Almost 10% of patients are presented after six months of onset of symptoms. In the study by Wang H et al found that the average time between first symptoms and diagnosis was 70 months, with an average of eight hospital visits.¹⁷ The delay in diagnosis of BPPV is due to lack of clinician's awareness of this lesion. The delayed diagnosis is sometimes attributed to the atypical presentation of BPPV. Most common co-morbidity associated in our study was diabetes in 13% patients followed by hypertension (13.33%). Similarly, Diabetes was found to be unusually prevalent in BPPV patients in a study done by Cohen et al.¹⁸

In present study posterior canal was involved in 87 (96.67%) cases, horizontal canal involved in 2 (2.22%) cases and anterior canal in 1 (1.11%) case. In a study conducted by SotoVarela A et al on 614 patients of BPPV posterior semicircular canal was affected in 543 cases (88.4%), the horizontal in 39 (6.4%) and the superior canal in 32 (5.2%).¹⁹

In our study right posterior canal is more commonly affected than left which is consistent with studies conducted by Brevern MV et al²⁰, Marciano E et al²¹ and Soto-Varela A et al¹³. However, Gaur S et al¹⁸ had left ear predilection in their study. This is proposed to be due to increased preference of sleeping in the right lateral position.²⁰

In the present study the success rate of Epley's maneuver was 92% with complete relief of symptoms within 24 hours. There is no relief of symptoms in 2.22% of patients after 1 week and in 8.88% of patients after 1 month. Horizontal canal BPPV patient were treated with barbecue roll method. In the study conducted by Epley on 30 patients with BPPV, there was 90% cure rate seen after the maneuver.²² Similar study was conducted by Parnes et al. in 1993 on 38 patients with BPPV based on positive Dix Hallpike test and symptoms of BPPV and observed a cure rate of 68.5%.²³

There are chances of recurrence of BPPV after complete resolution and hence it is recommended that the patient should be told about a likelihood of recurrences and the patient should be periodically reassessed after the treatment.^{12,23}

CONCLUSION:

BPPV is a common cause of vertigo. In our study it is more common in female and in their fifth decade. Patients usually present with positional rotatory vertigo. Dix-hallpike test should be commonly used in clinic where there is a suspicion of BPPV. The diagnosis sometimes delayed up to 6 months. Posterior canal involvement is most common followed by horizontal. Causes were idiopathic in majority followed by trauma. Canalith repositioning procedure is very effective in treatment with very low risk of recurrence.

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