BENIGN PAROXYSMAL POSITIONAL VERTIGO- A PROSPECTIVE STUDY

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ABSTRACT

BACKGROUND

Benign Paroxysmal Positional Vertigo (BPPV) is one of the most common disorders of the vestibular system, which maybe unilateral or involve both labyrinths. It can be effectively treated by Canalith Repositioning Manoeuvers (CRM), but lack of awareness leads to delay in effective treatment.

MATERIALS AND METHODS

Study was conducted in a tertiary care center where 184 patients with BPPV were subjected to positional test and CRM.

RESULTS

M:F ratio was 1:2.1. 85% of BPPV patients were relieved of symptoms with one sitting of CRM.

CONCLUSION

CRM is very effective in treatment of BPPV. General practitioners and specialists should be more educated about this condition, which will reduce the delay in correct diagnosis and proper treatment.

KEYWORDS

Vertigo, Benign Paroxysmal Positional Vertigo, Canalith Repositioning Manoeuver.

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BACKGROUND

Benign Paroxysmal Positional Vertigo (BPPV) is a common clinical presentation and patient complains of episodes of spinning sensation of surrounding, which is provoked by movements of head in relation to gravity. Vertigo and nystagmus can be elicited by specific positional maneuvers.[1] BPPV is diagnosed mainly based on history and neurologic examinations and does not require any investigation.[2] Diagnosis is confirmed by positive Dix-Hallpike test and/or roll test.[1]

Causes of vertigo can be peripheral, central, psychogenic and undiagnosed.[3] It is important to differentiate between these as central causes will require investigations.[2] Central nervous system disorders causing vertigo include transient ischaemic attacks, brain stem diseases, cerebellar diseases, demyelinating diseases, cerebellopontine angle tumour, infections and migraine.[4] Peripheral vertigo arises from vestibular labyrinth and vestibular nerve where patients present with vertigo, vomiting and ear symptoms like tinnitus and hearing loss.[3]Nystagmus due to central cause usually persists as long as the head is kept in provoking position while that due to peripheral cause is always transient. Direction of nystagmus, its latency and fatigability may strongly suggest a peripheral vestibular cause of vertigo and does not usually require further investigations.[2] Benign Paroxysmal Positional Vertigo (BPPV) is the most common peripheral vestibular disorder and is not associated with hearing loss, tinnitus or neurologic symptoms.[1] BPPV causes significant morbidity, psychosocial impact and medical costs. Medicines are commonly given to improve the symptoms and different types of investigations are requested.[1,2] BPPV can resolve spontaneously, but symptoms may last for weeks to years.[2] BPPV can be effectively treated with Canalith Repositioning Manoeuver (CRM).[1] CRM was instituted at Portland Otologic Clinic in 1979 to treat BPPV through outmigration of free moving pathological densities in endolymph of semicircular canal using timed head maneuvers.[5]

Though a common problem, BPPV still remain underdiagnosed among physicians and even neurologists and ENT specialists.

Present study was designed to-1) Delineate the aetiology of BPPV and to note its variants;2) Observe the average delay in correct diagnosis and effective treatment; 3) To observe various treatments taken and investigations done from peripheral centres; 4) Study the efficacy of CRM in treatment of BPPV.

MATERIALS AND METHODS

A prospective study was conducted in the Department of Otorhinolaryngology in a tertiary care center, Thiruvananthapuram, South Kerala, where all patients who presented with symptoms of vertigo from March 1, 2016, to August 31, 2016, were evaluated.

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Among 35,047 patients who attended our outpatient department and emergency room, 392 patients had symptoms of vertigo or vertigo as one of the major complaint. Detailed history was taken and neurootologic examination was performed. Symptoms of vertigo like spinning sensation, floating and image moving in horizontal plane and drifting were enquired. Duration of vertigo, precipitating factors, associated symptoms like nausea, vomiting, tinnitus, deafness, diplopia, dysarthria, paraesthesias and weakness were charted. History of drug treatment and its duration, investigations done, procedures attempted from peripheral hospitals and time delay in referrals was enquired. Past history of migraine, trauma, surgeries, vestibular neuronitis, etc. were enquired. Ear was examined for any pathology. Fistula test and hearing tests with tuning forks were done. To exclude central causes, finger-nose-finger test, heel-knee-shin test, tandem walking and Romberg test were performed. Blood pressure was recorded and necessary haematological investigations done. Cases with suspected central causes of vertigo were referred to Neurology Department. Patients with history of postural hypotension and cardiovascular disease were sent for cardiologic evaluation.184 subjects fulfilled the criteria for BPPV and they were subjected to Dix-Hallpike (DH) test. Roll test was carried out to detect lateral canal BPPV while straight head hanging test was done to confirm superior canal BPPV.

All patients diagnosed to have BPPV were treated with Canalith Repositioning Maneuvers (CRM). Epley's manoeuver was performed in patients with posterior canal BPPV while Barbeque manoeuver was done for lateral canal BPPV. After the procedure, patients were instructed not to move the head violently to be in semi-recline position while sleeping for 48 hours and not to lie on the affected side. Patients were reassessed after one week when positional test was repeated. In case of incomplete remission, same manoeuver was performed again and patientsre-examined after one month. Criteria for successful cure were relief of vertigo and negative positional test. Patients above 80 years and those having physical disabilities in which it was not possible to perform diagnostic and treatment manoeuvers were excluded from the study.

RESULTS

Of the 392 patients who presented to us with vertigo, 184 (47%) fulfilled the criteria for BPPV. 125 patients were females, M:F ratio being 1:2.1. Maximum number of patients belonged to 51-60 years age group (n=52, 28.3%). Table 1 shows the age distribution of the BPPV patients in our study.

Age in Years	Number of Patients	Percentage
10-20	6	3.3
21-30	15	8.2
31-40	28	15.2
41-50	49	27
51-60	52	28.3
61-70	30	16.3
71-80	4	2

Table 1. Age Distribution of BPPV Patients

Youngest patient was a girl aged 15 years, the eldest being 76-year-old male.

Idiopathic BPPV accounted for maximum number of cases in our area (n=172, 93%). Table 2 depicts the causes of BPPV in the present study.

Cause of BPPV	Number of Patients	Percentage
Idiopathic	172	93
Head trauma	7	4
Post-surgery (thyroidectomy)	3	2
Post-dental extraction	2	1

Table 2. Causes of BPPV

179 (97.3%) patients had posterior canal BPPV. Lateral canal BPPV was diagnosed in the rest 5 patients (2.7%). None of our patients had superior canal type.

Average duration between onset of first symptoms and diagnostic positional test was three months. Table 3 lists the duration of symptoms in patients before presenting to us.

Duration in Months	Number of Patients	%
<1	16	8.7
1-2	44	23.9
2-3	58	31.5
3-4	30	16.3
4-5	24	13
5-6	12	6.5

Table 3. Duration Between Onset of Symptoms and Diagnosis

Fifty four patients presented to various ENT specialists before coming to us. 130 cases were referred to our hospital by other specialists and general practitionersdue to inadequate response to medical treatment. Even though, otorhinolaryngologists in the periphery suspected BPPV in 50 patients, Dix-Hallpike test was attempted in only10 cases. One sitting of Epley's manoeuver was tried in 3 patients. Several investigations like audiometry, x-rays, CT scan, etc. were done in these patients during their initial treatment period, i.e. before reaching our hospital. Table 4 lists the investigations done in our patients from peripheral hospitals.

Investigations	Number of Patients	Percentage
Audiometry	25	13.6
Tympanometry	1	0.54
Thyroid function test	20	10.86
X-ray cervical spine	30	16.3
CT brain	14	7.6
MRI	2	1.08

Table 4. Investigations Done Before Referral

Various labyrinthine sedatives and exercises were advised to these patients before being referred as shown in Table 5.

Treatment	Number of Patients	Percentage
Tab.Prochlorperazine	18	9.78
Tab.Cinnarizine	40	21.73
Tab.Betahistine	46	25
Tab.Betahistine+ Cinnarizine	14	7.6
Tab.Dimenhydramine	20	10.86
Neck exercises	8	4.34
Epley attempted	3	1.6
No previous treatment	35	19

Table 5. Treatments Taken By Patients from Peripheral Hospitals

All patients with BPPV were subjected to CRM and response observed after one week and one month. Table 6 shows the response of BPPV to CRM in our study.

Number of Sessions of CRM	Number of Patients	Percentage
1	156	85
2	19	10
3	9	5

Table 6. Response of BPPV to CRM

DISCUSSION

BPPV is a common vestibular disorder and more than 50% of patients with peripheral vestibular disorders are suffering from BPPV.[1] Lifetime prevalence of BPPV was found to be 2.4% in a population-based study.[6] Almost, 5.6 million Americans attend hospital with dizziness every year and 17-42% of these are finally diagnosed as BPPV.[2] In India, overall prevalence of vertigo is 0.71% in the general community.[7]

BPPV was diagnosed to be the cause in 47% of vertigo patients who presented to us. Arshad et al and Shami et al in their studies observed BPPV in 39.5% and 33.2% vertigo patients, respectively.[1,3]

Females outnumbered males in our study. Literature reports BPPV to be more common in females.[1,5] Majority of our patients belonged to 51-60 year age group, which is in accordance with other studies.[1,5] BPPV was idiopathic in 93.5% of our subjects. Verma et al observed BPPV to be idiopathic in 89% patients.[5]

Posterior semicircular canal is commonly affected in BPPV, but lateral and anterior canals may also be involved.[2] BPPV was due to involvement of posterior canal in 97.3% of our patients. Arshad etal in their project diagnosed posterior canal BPPV in 96.7% and lateral canal BPPV in rest of the patients.[1]

We observed an average delay of 3 months before the patients presented to us. In a study from Pakistan, average time between onset of symptoms and diagnosis was 19 months.[1]The early presentation in our area could be due to better awareness among doctors and more health consciousness of general population.

85% of our patients with BPPV were cured with one session of CRM. 19 patients needed 2 sessions while rest was relieved of symptoms in 3 sittings. Verma et al observed 92% cure after one session of CRM in BPPV patients.[5]

50% of our patients underwent various investigations, which were not needed to diagnose BPPV. Various medicines were taken by 75% of patients prior to correct diagnostic procedures. Response of BPPV to CRM in our study was 85% after one session, which increased to 95% after second session. Thus, CRM is a useful and cost-effective treatment for BPPV, which is simple to perform. There is no evidence to suggest that medications are effective or provide alternative treatment to canalith repositioning manoeuvers.

There is a delay in diagnosis in majority of BPPV cases and in older patients this delay is even more significant as they may experience greater incidence of fall due to vertigo, which leads to injuries like fractures, intracranial haemorrhage and permanent disabilities necessitating frequent hospital visits. So, early diagnosis and correct management of BPPV is very important. This points to the need for giving more awareness to specialists, general doctors and public about BPPV, its diagnostic clues and treatment.

CONCLUSION

We observed CRM to be highly efficacious in the treatment of BPPV. It is unlikely that these patients had a possibility of spontaneous remission of disease as the disappearance of vertigo was instantaneous after the procedure. Usually, it takes months for spontaneous remission of BPPV. Though the pathophysiology and treatment of BPPV is simple, it still remains underdiagnosed among general practitioners and even neurologists and ENT specialists. So, more training programs should be arranged, which should include demonstrations of correct procedure of Dix-Hallpike test, roll test, straight head hanging test and canalith repositioning manoeuvers.

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