

Approach to Benign Paroxysmal Positional Vertigo in Old Age

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Abstract

Background: Benign paroxysmal positional vertigo is a common and treatable vestibular disorder characterized by attacks of positional vertigo. Although elderly patients often complain about unsteadiness, the symptom of positional vertigo is seldom reported. Several studies on BPPV in the elderly reveal a low success rate in the treatment of this entity.

Objectives: To assess the clinical characteristics and treatment outcome of BPPV in elderly patients and to compare them with those of the general population treated at our dizziness clinic.

Methods: We reviewed the medical records of 23 patients above age 75 who were treated at our dizziness clinic for BPPV during the years 1998–2004. Their clinical data, BPPV characteristics and treatment outcome were compared with the data of 30 consecutive BPPV patients who represented the general population.

Results: No differences in gender distribution, duration of BPPV, treatment responsiveness or recurrence rate were found between elderly patients as compared to the general population. The duration of the last attack of positional vertigo was found to be longer in the elderly, probably due to the delay in recognition of symptoms and accessibility of a dizziness clinic.

Conclusions: Our study shows that BPPV characteristics and treatment effectiveness, as measured by negative Dix-Hallpike maneuver, are not age-dependent and there is no need for a special approach or cautiousness in prognosis prediction. It is important to search actively for this condition since treatment leads to amelioration of unsteadiness and improved well-being in these patients.

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One of the common and treatable vestibular disorders in the elderly is benign paroxysmal positional vertigo [1]. BPPV is a clinical entity characterized by rotational vertigo induced by head position changes in the plane of one of the semicircular canals. Patients typically complain of attacks of vertigo provoked by extending or turning the neck, getting up or lying down, or rolling over in bed. The attacks are often accompanied by a feeling of unsteadiness and loss of confidence while walking. Sometimes the vertigo remains unreported by the patient and the main complaint is loss of balance, especially in older patients. The diagnosis is confirmed by the Dix-Hallpike positioning testing that shows a characteristic geotropic, torsional nystagmus when the patient is dropped back from the sitting position to a head-hanging position with the head turned 45 degrees to the affected ear [1].

BPPV = benign paroxysmal positional vertigo

BPPV is considered to be caused by canalithiasis – i.e., otoconial debris, derived from the utricular macula, becomes trapped in the semicircular canal (most commonly in the posterior semicircular canal) and moves when the head position is changed quickly in the plane of the canal. This results in inappropriate stimulation of the sensory hair cells of the affected canal and causes vertigo [2]. Disorders affecting the peripheral vestibular system, such as vestibular neuronitis or head trauma, may precede the onset of BPPV [1]. However, BPPV is most commonly idiopathic and its prevalence increases with age [3,4].

The Epley particle repositioning maneuver is an effective treatment for BPPV and has been described in detail elsewhere [5]. Its effectiveness is assessed to be between 70% and 100% by different authors [5–7]. Some recent studies that dealt with the problem of BPPV in the geriatric population yielded controversial results [8–14]. However, most of the papers compared their results with the data of unselected BPPV patients reported by other authors.

We reviewed and compared the clinical characteristic of elderly patients with those of patients representing the general population who were treated at our dizziness clinic, and tried to establish possible treatment implications.

Patients and Methods

We reviewed the medical records of patients older than 75 years with BPPV (posterior canal variant) treated at our dizziness clinic during the years 1998–2004. Their clinical characteristics were compared with those of 30 consecutive, retrospectively evaluated patients with BPPV (general population of different ages) who were treated at our clinic during the same years.

The diagnosis was based on a history of recurrent positional vertigo and the presence of a geotropic torsional nystagmus directed towards the undermost ear on Dix-Hallpike testing. The observed nystagmus demonstrated the following features: latency of onset, crescendo-decrescendo course, reversal on returning the patient to the sitting position, and fatigue on immediate repeated testing.

All patients underwent the modified Epley particle repositioning maneuver performed by the same therapist (L.P.) [6]. The patients were treated during the diagnostic session. For patients who experienced severe nausea or vomiting during the testing (one in the elderly group and two in the general group of patients), the treatment was postponed to the next session (3–7 days) and premedication with anti-emetics and sedatives

was administered before treatment. All patients were reviewed on the 7th day following treatment. In cases of persistence of positioning nystagmus, patients were retreated and followed again at weekly intervals until signs disappeared. Treatment responsiveness was assessed as the number of treatments per ear. The mean follow-up of patients was 17.6 months, with a minimum of 8 months up to 39 months. Recurrence was considered as the reappearance of symptoms and signs after a symptom-free interval of more than 1 month following successful treatment.

Statistical methods included the chi-test for categorical variables and the Student *t*-test for continuous variables. The rate of recurrence was estimated by the Kaplan-Meier method.

Results [Table 1]

Among the 250 patients with BPPV we were able to identify 23 patients (9%) above the age of 75. Their mean age was 79.1 years; 16 of them were females. Trauma was the established etiology in two patients, whereas in one patient the symptoms appeared following prolonged bed-rest after cardiac surgery. The remaining cases were idiopathic. In three patients the BPPV was bilateral. The mean reported duration of positional vertigo prior to treatment (i.e., duration of the last attack) was 5.9 months (range 2 weeks to 3 years). The history of total duration of BPPV (i.e., the time since the first remembered attack) was 35.8 months (range 2 weeks to 30 years). The mean number of treatments per ear was 2.3 (range 1–10). During the follow-up period recurrence was documented in 30% of patients. According to the Kaplan-Meier curve, the percentage of patients who experienced recurrence was 22% at 18 months and 30.5% at 36 months [Figure 1].

Thirty consecutive patients with BPPV (15 of them females) represented the general population. Their mean age was 56.9 years, and four of them were older than 75. In three patients

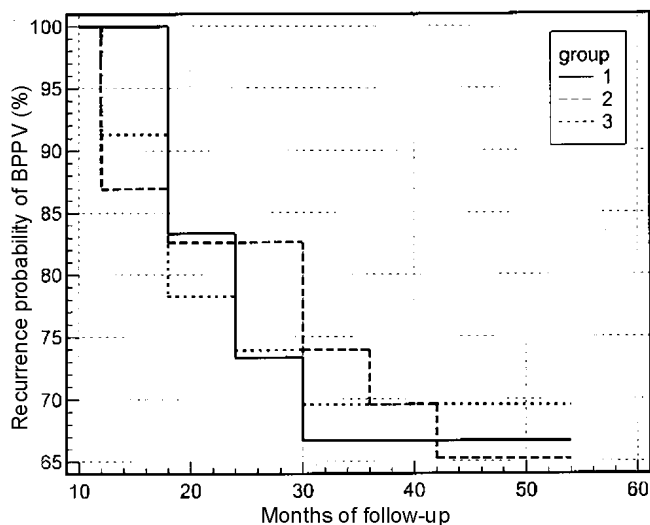


Figure 1. Recurrence rate of BPPV in patients of different age groups. Group 1 = unselected patients of general population, Group 2 = patients 65–74 years old, Group 3 = patients older than 75 years

Table 1. Clinical characteristics of elderly BPPV patients vs general BPPV population

	BPPV in elderly (n=23)	BPPV in general population (n=30)	P* (t-test)
Mean age	79.1 ± 4.0	56.9 ± 13.9	< 0.0001
(min-max)	(75–84)	(33–82)	
Gender	16 / 7	15 / 5	NS
(Females/males)			(chi-test)
Mean duration of symptoms (in months)	5.9 ± 8.6	2.5 ± 3.4	0.04
(min-max)	(0.5–86)	(0.1–12)	
Mean of total duration of symptoms (in months)	35.8 ± 86.1	29.6 ± 60.4	NS
(min-max)	(0.5–360)	(0.1 - 240)	
Mean number of treatments/ear	2.3 ± 2.2	1.6 ± 1.2	NS
(min-max)	(1–10)	(1–7)	
Patients with recurrence	30%	33%	NS

* Statistical power (significant if < 0.05)

NS = not significant

Table 2. Clinical characteristics of elderly patients with BPPV above and under the age of 75

	BPPV in patients age ≥ 75 (n=23)	BPPV in patients ≤ 65 age ≤ 74 (n=23)	P* (t-test)
Mean age	79.1 ± 4.0	68.3 ± 3.3	< 0.0001
(min-max)	(75–84)	(65–74)	
Gender	16 / 7	16 / 7	NS (chi-test)
(Females/males)			
Mean duration of symptoms (in months)	5.9 ± 8.6	5.6 ± 10.0	NS
(min-max)	(0.5–36)	(0.5–48)	
Mean of total duration of symptoms (in months)	35.8 ± 86.1	42.2 ± 78.3	NS
(min-max)	(0.5–360)	(0.5–360)	
Mean number of treatments/ear	2.3 ± 2.2	1.7 ± 1.2	NS
(min-max)	(1–10)	(1–6)	
Patients with recurrence	30%	35%	NS

* Statistical power (significant if < 0.05)

NS = not significant

the BPPV was of traumatic origin and 27 were idiopathic. Two patients suffered from bilateral BPPV. The mean duration of the last vertigo attack was 2.5 months (range 3 days to 1 year). The mean total duration of BPPV was 29.6 months (range 3 days to 2 years). The mean number of treatments per ear was 1.6 with one treatment as a minimum and seven treatments as a maximum. Recurrence was documented in 33% of patients. The recurrence rate was 17% at 18 months follow-up and 33.5% at 36 months [Figure 1].

We further analyzed retrospectively the data of patients with BPPV between the ages of 65 and 75 years [Table 2]. Their mean age was 68.3 years and 16 were females. The mean duration of symptoms in this subgroup was 5.6 months (range 2 weeks to 4 years). The history of attacks dated 42.2 months on

average (range 2 weeks to 30 years). On average, 1.7 treatments (range 1–6) per ear were needed until symptoms and signs disappeared. Recurrence was documented in 35% of patients. The recurrence rate was 17.5% at 18 months and 30.5% at 36 months of follow-up [Figure 1].

No differences were found in gender distribution, total duration, treatment responsiveness and recurrence rate between elderly BPPV patients versus the general BPPV population [Table 1]. The group of elderly patients aged 65–75 did not differ in the considered parameters from those older than 75 [Table 2]. However, the duration of the last vertigo attack was found to be longer in the elderly patients as compared to the general population [Table 1].

Discussion

The fact that the prevalence of idiopathic BPPV increases with age has led to the proposal of the “aging” hypothesis of BPPV, which explains the detachment of otoconia from the macula as being the result of degenerative changes in the utricle, possibly due to chronic ischemia [12,15]. Katsarkas [8] examined the prevalence of BPPV in the elderly population attending a specialized dizziness clinic and identified BPPV in 40% of more than 1,000 patients above 70 years. This number decreased to 4% at a geriatric medicine unit as reported by Colledge et al. [9]. Oghalai and colleagues [10] detected unrecognized BPPV in 9% of geriatric patients who did not report dizziness spontaneously. These patients were more likely to have depression and reduced scores of activity of daily living, and they had a higher prevalence of falls in the previous 3 months. No relationship was found between BPPV and other medical conditions, including dementia.

Angeli and co-workers [13] evaluated the effectiveness of BPPV treatment in elderly patients, comparing those who received treatment with those who did not. The researchers found less treatment effectiveness than generally accepted (64%), demonstrating that customized vestibular rehabilitation can improve the treatment results achieved by the PRM in the elderly. The authors also stressed the importance of reassurance, fall prevention, and the teaching of coping skills in elderly BPPV patients. However, other studies deny the influence of age on the PRM success rate [12–14]. Gámiz and Lopez-Escamez [11] examined the health-related quality of life in BPPV patients above age 60 and found that BPPV has a high impact on quality of life and functioning, which improve after BPPV has been treated. The treatment outcome in their study was 82%, which allowed them to state that elderly patients can be treated as effectively as younger patients. In the recent study by Salvinelli et al. [12], the Semont liberatory maneuver was found to be highly effective in elderly patients and was proposed as a first-choice treatment [16].

Recently, Zur and associates [17] compared vestibular function between two groups of geriatric patients: one with a recent history of a hip fracture and the other without. Even though

patients with hip fracture demonstrated defects on vestibular testing, BPPV was found at a similar rate in both groups. The risk of hip fracture in patients with BPPV was somewhat higher than that of patients without BPPV, but the difference was not statistically significant.

In view of the continuously increasing life span in the modern world, in the geriatric population of our study we included patients older than 75 years, which represents a higher age limit than in previous works dealing with this subject [8–14]. Furthermore, the comparison was made within our own group of patients treated for BPPV and not with the previously reported findings in the general population.

We have shown that the characteristics and treatment responsiveness of BPPV in elderly patients are similar to those in the general population. In our opinion, there is therefore no need for a special or more cautious attitude regarding prognosis of positional vertigo in these patients. However, the final functional outcome may be less favorable in elderly patients due to the coexistence of multiple morbidity and continuous anxiety of falling that characterizes the geriatric population [18]. The only difference between the elderly and the general population BPPV group was found in the duration of the last attack before treatment. This might be due to associated medical problems that often overwhelm the complaint of vertigo and thus escape the attention of the patient or the nursing staff. The elderly person's dependence on assistance for visiting the dizziness clinic may be another reason for delay in treatment. Moreover, information on the duration of attacks depends mostly on the patient's recall and might be inaccurate.

In conclusion, we did not find support for age being a factor in BPPV characteristics or treatment effectiveness. Despite multiple co-morbidity and anxiety in the elderly population, the physician should actively look for this condition since treatment leads to amelioration of unsteadiness and improved well-being in these patients.

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PRM = particle repositioning maneuver