

Chronic Otitis Media in The Etiology of Benign Paroxysmal Positional Vertigo

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ABSTRACT

Objective: The aim of this study is to examine the place of chronic otitis media in the etiology of benign paroxysmal positional vertigo (BPPV).

Material and Method: Who had presented with vertigo, positive Dix-Halpike test and who had been diagnosed with BPPV, 234 patients were included in the study. The findings of ear examinations were recorded, particularly questioning for previous ear diseases and surgery, and evaluated for middle ear pathology.

Results: The ages of the patients were between 18 and 75 years and the mean age was 49,16±11,76 years. Patients consisting of 148 (63,2%) were female and 86 (36,7%) were male. The right ear was affected in 143 patients (61,1%), the left ear was affected in 89 patients (38%), and the ears of 2 patients (0,8%) were affected bilaterally. In the evaluation performed for etiology according to history, the symptoms were: post-traumatic in 12 patients (5.1%), following an upper respiratory tract infection in 3 patients (1.2%), following post-operative long term bed rest in 2 patients (0.8%) and following septoplasty operation in 1 patient (0.4%). However, in 216 patients (%92.3), no etiological cause was found. In the ear examination of the patients, all of the tympanic membranes were observed to be intact. Chronic otitis media was observed in none of the 234 patients (a total of 468 ears).

Conclusion: The absence of findings in the history and physical examination of chronic otitis media in patients determined with BPPV suggested reviewing the role of chronic otitis media in the etiology of BPPV.

Key Words: Benign paroxysmal positional vertigo, Chronic otitis media, Etiology.

ÖZET

Benign Paroksizmal Pozisyonel Vertigo Etiyolojisinde Kronik Otitis Media

Amaç: Bu çalışmanın amacı kronik otitis medianın benign paroksizmal pozisyonel vertigo (BPPV) etiolojisindeki yerini irdelemektir.

Gereç ve Yöntem: Çalışmaya baş dönmesi şikayetiyle başvuran, Dix-Halpike testi pozitif olan ve BPPV tanısı konulan 234 hasta dahil edildi. Kulak muayene bulguları özellikle geçirilmiş kulak hastalığı ve cerrahisi sorgulanarak, orta kulak patolojisi açısından değerlendirilerek bulgular kaydedildi.

Bulgular: Hastaların yaşları 18 ile 75 yaş arasında olup ortalama yaş 49,16±11,76 idi. Hastaların 148'i (%63,2) bayan, 86'sı (%36,7) erkekti. Hastaların 143'ünde (%61,1) sağ kulak, 89'unda (%38) sol kulak etkilenmiş olup, 2 tanesinde (%0,8) bilateral idi. Hastaların anamnezlerinde etiyojolojiye yönelik yapılan araştırmada semptomların 12 (%5.1) hastada travma sonrası, 3 (%1.2) hastada üst solunum yolu enfeksiyonu sonrası, 2 (%0.8) hastada cerrahi sonrası uzun dönem yatak istirahati sonrası, 1 (%0.4) hastada ise septoplasti operasyonu sonrası başladığı görüldü. Ancak hastaların 216'sında (%92.3) etiyojik olarak bir sebep bulunamadı. Hastaların kulak muayenesinde tüm kulak zarlarının intakt olduğu görüldü. 234 hastanın (toplam 468 kulak) hiçbirinde kronik otitis mediaya rastlanmadı.

Sonuç: BPPV tespit edilen hastalarda kronik otitis mediayı düşündürülen anamnez ve fizik muayene bulgularının yokluğu, BPPV etiolojisinde kronik otitis medianın rolünün tekrar gözden geçirilmesi fikrini düşündürmüştür.

Anahtar Kelimeler: Benign paroksizmal pozisyonel vertigo, Kronik otitis media, Etiyoloji.

Benign Paroxysmal Positional Vertigo (BPPV) is a state characterized with rotating, short term and severe vertigo episodes that occur with movements of the head against gravitation. It was first defined by Barany in 1921 (1). It is an entity that comprises 17-25% of the patients that resent with the complaint of severe vertigo (2, 3). Dix and Hallpike defined the characteristics and

the diagnostic test maneuver for BPPV in 1952 (4). Two theories named cupulolithiasis and canalolithiasis, have emerged to explain the pathophysiology of BPPV (4, 5).

The most widely accepted theory today is the canalolithiasis theory, which suggests that free floating

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particles called otoconia in the semi-circular canal play a role in the etiology of the disease. Posterior semi-circular canal is the mostly affected canal due to its anatomical position (4-6).

The most commonly determined causes of the disease etiology are skull and temporal bone traumas; the other less commonly detected causes are viral labyrinthitis, vestibular neuronitis, stapedectomy, perilymph fistula, Meniere disease, chronic otitis media and post operative absolute bed rest following any surgery; however, the reason is unknown in 58% of the patients (2, 7-11).

Generally, the history of the patient is the guide to the differential diagnosis for the clinician. Vertigo, which begins in certain positions, lasts for at least one week. However, it can prolong for up to several weeks or a month. In chronic cases, it may last for up to a year. Imbalance may also be present in between the short term vertigos. The patient avoids sudden movements.

The aim of this study was to evaluate the place of chronic otitis media in the etiology of BPPV. In particular, our clinical experiences regarding the absence of findings in the history and physical examination of chronic otitis media in patients determined with BPPV have made us consider the idea of reviewing the role of chronic otitis media in the etiology of BPPV. In this line of thinking, in our study, we aimed to evaluate the frequency of chronic otitis media with findings of the history and physical examination in patients diagnosed with BPPV.

MATERIAL AND METHOD

The study was conducted with 1826 patients who had presented to the Ear, Nose and Throat polyclinics of Firat University and Sütçü İmam University School of Medicine, with the complaint of vertigo between January 2012 and July 2014. The study was approved by the Clinical Researches Ethics Committee of Firat University School of Medicine. Who had a typical history of BPPV, positive Dix-Halpike test and who had been diagnosed with BPPV, 234 patients were included in the study. Consisting of 1592 patients who had vestibular complaints other than BPPV were excluded from the study.

The criteria of positivity of the Dix-Hallpike maneuver were accepted as: 1) After a latent period of 10-15 seconds, generally observing a torsional nystagmus for less than 30 seconds with the right ear below in the counter-clockwise direction, and with the left ear below in the clockwise direction, 2) with the patient in the seated position, observing a torsional nystagmus in the opposite direction, 3) slowdown and loss of nystagmus the maneuver is repeated, and 4) observing simultaneous vertigo with nystagmus.

Furthermore, the duration of vertigo, the type of vertigo, accompanying hearing loss, tinnitus, feeling of fullness in the ear, neurological deficit together with episodes (facial paralysis, mental fogging, loss of power, syncope, etc), systemic diseases, continuous drug use, and history of trauma were questioned. Routine ear, nose and throat, and neurological examinations of the patients were performed. The findings of ear examination, particularly previous ear disease and surgery were questioned and evaluated for middle ear pathology and the findings were recorded. The otological histories of the patients were carefully questioned.

RESULTS

The study group consisting of 234 patients who had presented to the Ear, Nose and Throat Diseases polyclinics of Firat University and Sütçü İmam University School of Medicine, with the complaint of vertigo, whose Dix-Halpike tests were positive and who had been diagnosed with BPPV, were included in the study. The ages of the patients were between 18 and 75 years and the mean age was $49,16 \pm 11,76$ years. Patients consisting of 148 (63,2%) were female and 86 (36,7%) were male. The right ear was affected in 143 patients (61,1%), the left ear was affected in 89 patients (38%), and the ears of 2 patients (0,8%) were affected bilaterally.

In the evaluation performed for the etiology according to the history, the symptoms were: post traumatic in 12 (5.1%) patients, followed by upper respiratory tract infection in 3 (1.2%) patients, following post operative long term of bed rest in 2 (0.8%) patients, and after septoplasty operation in 1 (0.4%) patient. However in 216 (92.3) patients, no etiological cause was found (Figure 1). On questioning of the systemic diseases accompanying BPPV, it was learnt 24 patients had hypertension, 14 patients had diabetes mellitus, 6 patients had hypothyroidism, 4 had migraine, 2 had asthma, 4 patients had depression, and 4 patients had ischemic heart disease.

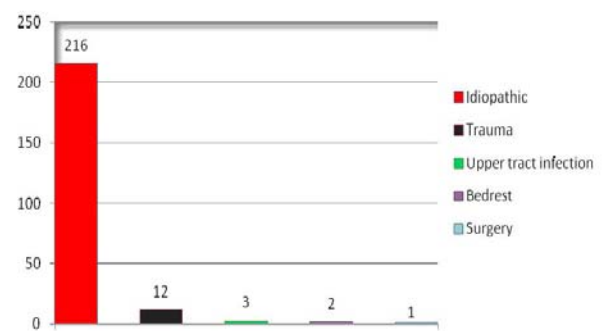


Figure 1. Distribution of the etiological factors

On the ear examination of the patients, all of the tympanic membranes were observed to be intact. Chronic otitis media was observed in none of the 234

patients (total 468 ears). There was no observation of any findings suggesting perforation in the tympanic membrane, adhesion, cholesteatoma or chronic otitis media. In the otologic history, it was learnt that 2 patients had undergone previous operation due to chronic otitis. A 42-year-old female patient with BPPV in the left ear had undergone a tympanoplasty operation 5 years ago due to right chronic otitis. However, on examination, the graft was seen to be intact and there were no findings suggesting chronic otitis media. The other 39-year-old female patient had undergone myringoplasty operation 13 years ago due to left chronic otitis media. On examination, the graft was seen to be intact and the patient had right BPPV.

In two patients who were 24 and 28 years of age, there was a history of ventilation tube insertion due to otitis media with effusion at childhood period. In these patients, there was no perforation or adhesion in the tympanic membranes, either, except for minimal myringo-sclerosis. In a 52-year-old male patient who had been diagnosed with BPPV in the right ear, otosclerosis was determined in the left ear. As the hearing was normal in the right ear, there was a 46 dB conduction type hearing loss in the left ear.

DISCUSSION

In spite of being a disease that is easy to diagnose and treat, benign paroxysmal positional vertigo is the most common type among the peripheral vestibular system diseases, which significantly disturbs the quality of life as long as the patient experiences it.

There are several publications in the literature that have evaluated the etiology of BPPV. In the etiology of BPPV, idiopathic cases are at the top rank (4-7). These are followed by head trauma (5-8). The less common causes are viral labyrinthitis, vestibular neuronitis, stapedectomy, mastoid surgery, perilymph fistula, Meniere disease and post-operative absolute bed rest (4-12). Since the patients with vestibular complaints other than positional vertigo were not included to the study, in order to avoid confusion in the diagnosis, and in particular, to put forth the relationship of BPPV with chronic otitis media, the majority of the cases comprised 216 (92,3%) of the idiopathic group.

Although chronic suppurative otitis media is a disease that is blamed for the etiology of BPPV, the numbers of studies related to this subject are limited. The effect of chronic suppurative otitis media in the formation of BPPV is not clear pathophysiologically. It has been suggested that toxic inflammatory metabolites are produced in chronic otitis media, and that these metabolites leaking from the oval and round window membranes have a role in the formation of BPPV. It is widely accepted that these toxins permeate to the semicircular canals by damaging the utricular macula and releasing otoconias, and consequently forming BPPV (13, 14). However, due to the characteristics of

vertigo due to chronic otitis media mimicking BPPV, there are some differences in the diagnosis and treatment. In some studies, the terms pseudo-BPPV or symptomatic BPPV have been used for this state, which has been seen in diseases such as chronic otitis media, Meniere disease, cerebellopontine corner tumors, stroke, labyrinth fistula, multiple sclerosis, which mimic BPPV (15-17).

In studies conducted with patients diagnosed clinically as BPPV, the frequency of chronic otitis media was reported as 36% in 1952, as 3% in 1978, as 1% in 1987 and recently as 0% in a study conducted in 1997. Increased treatment rates of chronic otitis media have been considered as the reason for this decrease (4, 15, 7, 16).

In the study they conducted with 100 patients in 1952, Dix and Halpikie determined suppurative or severe catarrhal otitis media in 36 patients. However, 15 of these patients had unilateral middle ear disease and BPPV had been determined on the same side. In the other cases, the other ear had been blamed for (4). In 1978, of the 255 BPPV patients, Katsarkas et al. (15) determined chronic otitis media in 5 patients and otosclerosis in 2 patients. 9 years later, of a total 240 BPPV patients, Baloh et al. (7) determined chronic otitis media in only 2 of the patients and otosclerosis in 1 patient. In 1997, of a total of 151 patients with BPPV, Hughes and Proctor encountered no chronic otitis media in any of the patients. However, in 6 of these patients, BPPV was observed following middle ear surgery (16).

In our prospective study, inner ear diseases that may have led to incorrect diagnoses were excluded from the study. Patients who had a typical history of BPPV, positive Dix-Halpikie test, and patients who had recovered following the Epley maneuver, were included in the study. There was no tympanic membrane perforation in any of the 234 patients. There was a history of operation due to chronic otitis media years ago in 2 patients only. However, in these patients, the contralateral ear was responsible for BPPV. In the 52-year-old male patient diagnosed with right BPPV, non-operated otosclerosis had been determined in the left ear. As the hearing was normal in the right ear, a 46 dB conduction type of hearing loss was present in left ear.

In the study in which Karlberg et al. (17) researched the relationship between middle ear diseases and BPPV, in total 2847 BPPV patients, they determined non-operated chronic otitis media and otosclerosis in a few of them. Since the effect of middle ear diseases on BPPV was evaluated in the study, the number of the diseases of the middle ear was not provided. However, in more than half of these cases, it was observed that BPPV was on the side without any middle ear pathology. For this reason, they

concluded that these middle ear diseases were seen coincidentally with BPPV.

In our study, active middle ear pathology was not determined in any of the 234 BPPV patients. With these results, it cannot be stated that chronic otitis media does not cause BPPV. However, the absence of history and physical examination findings of chronic otitis media in patients determined with BPPV made us consider the idea of reviewing the role of chronic otitis

media in the etiology of BPPV. The second step of this study will be investigated the incidence of BPPV in patients with chronic otitis media. Furthermore, the low number of cases in our is the limitation of our study and larger series are required to determine the etiology.

The authors declare that they have no conflict of interest.

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