

Benign Paroxysmal Positional Vertigo Caused By Swimming

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Benign paroxysmal positional vertigo (BPPV) is characterized by mechanical dysfunction of the vestibular system in the inner ear. Displacement of otoconia from utricle to semicircular canals is held responsible for the development of BPPV. Etiologic factors are mostly classified as idiopathic. Head trauma, viral labyrinthitis and otologic surgery are also included [1,2].

A 58 year old, female patient was admitted to Ear Nose Throat Clinic with sudden onset of vertigo and nausea. In her detailed history, she had had a long-term swimming activity just before the onset of symptoms. She reported that her house is on the seaside in Antalya, and she swims as a recreational activity for 3-5 days/week every summer. She had been using the freestyle swimming technique (front crawl) and rotating her head to the left for breathing. Different from previous swimming sessions, she had swam faster at the last session. She did not have a history of head injury, upper respiratory tract infection or drug usage that affect the vestibular system in the last 2-3 weeks. Otoloscopic examination was normal. Head shake, head thrust and Romberg tests were positive. Dix-Hallpike test was positive on the right side. During the test, horizonto-rotatuar nystagmus with latency period was observed. Other neurological examination findings were normal. Pure tone audiometry and tympanometry tests showed normal values. There was no limited range of motion of the neck. The patient was diagnosed as BPPV. There was no need for imaging of central nervous system because the Dix-Hallpike test was positive (peripheral vertigo) and neurological examination was greatly normal.

Right Epley maneuver was performed for therapeutic approach (1 session). The patient's symptoms dramatically declined after the particle repositioning maneuver. In addition, the patient was referred to Sports Medicine Clinic for recommendations about the swimming sport. In order to prevent the possible recurrence, it was recommended to mainly use

the backstroke style in which the head is in a more fixed position. It was also told to her that she should avoid rapid head movements during stroke, and should breathe on both sides while swimming in freestyle. Additionally, "ear band" was advised to use. After two weeks, she was able to return to swimming. After 12 months, the patient was called by phone. There was no symptomatic recurrence in 1 year. She could continue swimming activity without any problem in the subsequent summer.

There are various studies in the literature showing the relationship between water sports and inner ear disorders. However, the majority of these studies are focused on diving related (inner ear decompression sickness) and water skiing related (traumatic audiovestibular injury) problems [3-6]. There is limited information in the literature about vestibulopathies due to surface swimming. Among the surface swimming styles (freestyle, breaststroke, backstroke, butterfly etc.); the freestyle swimming requires the fast rotational movements of the head. Aksoy and Sennaroglu [7] showed that the freestyle swimming takes a place in the etiology of BPPV. They also reported that there is no correlation between BPPV with duration and frequency of swimming. However, in our case, the patient had increased the speed of swimming at the last swimming session. Her head movements had accelerated toward the left for breathing. For this reason, swimming speed may play a greater role in development of BPPV than swimming duration and frequency. In another study, Giacomini et al. described two cases of BPPV due to intense swimming activity [2].

Conditions different from BPPV can cause vertigo in swimmers. It has been reported that asymmetric thermal inputs following water exposure may cause vertigo in swimmers who had undergone mastoidectomy [8]. A swimmer was reported as a case of vertigo that had been induced by compression of the vertebral artery [9]. This vertigo was a part of the complex clinical picture due to cerebellar stroke. Therefore, treatment had

become intensive. Heidenreich et al ^[10] described the abnormal afferent activity in the neck due to recurrent head movements while swimming as "cervicogenic dizziness". Their patient had neck pain which was effectively treated with physiotherapy.

We concluded that a detailed history will help to reduce the cases which are classified as idiopathic BPPV. Freestyle swimming should be noted in the etiology of BPPV because it contains repetitive rotational movements of the head. Increased swimming speed seems to trigger the development of BPPV in our case. However, extensive studies are needed to reveal the effects of speed, duration and frequency of swimming on the vestibular system. After diagnosis of BPPV, the Epley maneuver should be preferred in treatment because it is simple, safe, non-invasive and has a high success rate.

Key Words: Vertigo; Benign Paroxysmal Positional Vertigo Swimming; Epley Maneuver

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