Case Report

Simultaneous idiopathic benign paroxysmal positional vertigo and labyrinthitis on different side of ear: A rare occasion of acute vestibulopathy lead to delay in management

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Abstract

Dizziness and acute vertigo are common presenting complaints in the Emergency Department or primary care setting. The etiology can be broadly divided into peripheral and central vestibular disorders and need to be differentiated expeditiously as management is completely different. Diagnosis of unilateral peripheral vestibular disorder (PVD) is usually straight forward based on clinical bed side examination finding. Diagnosis becomes more challenging when a patient presents with bilateral PVD or concomitant pathologies that can lead to delay in diagnosis and management. We report a case of rare simultaneous idiopathic benign paroxysmal positional vertigo (BPPV) and labyrinthitis occurring on different side of the ear.

Keywords: acute vestibulopathy, benign paroxysmal positional vertigo, labyrinthitis

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Introduction

Dizziness is one of the commonest chief complaints in patient seeking medical attention. This accounts for about 2-3% of total consultations in Emergency Department.[1]It is non-specific symptom and may be provoked by various disorders, including neurological, cardiovascular, vestibular and multisensory dysfunctions. The differential diagnosis is very wide, generally divided into benign peripheral and more sinister central causes. Vertigo is a distinct subtype of it and defined as illusion of spinning.[2]

BPPV remains the most common cause of acute PVD with lifetime prevalence 2.4%.[3] It is characterized by brief, episodic and intermittent attacks of vertigo and typical nystagmus induced by changing head position.[4] Most cases are unilateral and idiopathic BPPV, in which the etiology factors are not known.[4] Secondary BPPV are usually due to various inner ear disorders like head trauma, viral labyrinthitis, prior ear surgery and Meniere's disease of the same side of the ear.

Labyrinthitis is inflammation or infection of inner ear involving vestibular and auditory system, presenting with acute onset of vertigo and hearing impairment. The etiology is either virus or bacterial infections with the former usually associated with history of upper respiratory infection.[5] It is different from vestibular neuritis as auditory system is not affected, thus hearing is normal. Vertigo in labyrinthitis is continuous and last longer than BPPV, up to few days.

Most of PVD can be diagnosed with detailed history and proper physical examination without requiring specialized equipment like imaging.[3] Hearing assessment like pure tone audiometry (PTA) may be required to support the diagnosis. However, atypical presentation with persistent of symptom normally warrants imaging mainly to rule out posterior circulation infarct. We present a case of uncommon simultaneous presentation of two PVD, BPPV and labyrinthitis on different side of ear. The symptoms are mixed, atypical and mimicked central pathology which eluded us at initial stage.

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Case report

A 63-year-old lady with underlying diabetes mellitus type II and hyperlipidemia, presented with sudden onset, intermittent vertigo for six days duration. It started when patient woke up from bed in the morning and described as feeling of spinning of surrounding objects. The symptom lasted for about two hours and followed by imbalance sensation. It recurred for a few episodes, shorter in duration and lesser in intensity compared to the first episode. It was also associated with nausea and vomiting. Vertigo was aggravated by turning head to right side and sitting positing, relieved by lying down, keeping head still and eyes closed. At the same time, she experienced reduced hearing on the left side as well as persistent high-pitched, non-pulsatile tinnitus. There were no similar symptoms on right side and no history of otalgia or otorrhea on both sides. She had fever and upper respiratory tract infection two weeks ago which completely resolved during current presentation. She denied any head trauma. Other than that, she denied any chest pain, shortness of breath, palpitation, body weakness or blurring of vision. She was admitted to secondary center hospital for five days and was treated with vestibular suppressant medication, oral prochlorperazine maleate 5 mg three times per day. Finally, she was referred to our tertiary center hospital as her symptoms persisted with very minimal improvement.

On examination, patient was lying on the bed with eyes closed and refused to move initially due to fear of vertigo. Dix-Hallpike test on the right side revealed presence of rotatory down-beating nystagmus and patient complained of spinning sensation which lasted for around one minute. The test was normal on the left side. There was no spontaneous nystagmus, however head impulse test showed distinct catch-up saccade when the head was rapidly turned to the left. The test was normal on the right side. Finger to nose test was normal and dysdiadochokinesia was absent on both sides. Gait assessment, Romberg and Unterberger tests were not performed due to patient feeling unstable on standing.

Otoscopy examination revealed normal findings on both sides. Rinne test was positive on both sides, however she was unable to appreciate sound on Weber test. Free field voice test showed normal hearing on right side and at least moderate hearing loss on left side. The test was confirmed by PTA which showed generally normal hearing on right side except mild sensorineural hearing loss (SNHL) at frequency 1000Hz and 8000Hz and moderate to profound high frequency SNHL on left side (Figure 1). Computerized tomography (CT) scan of brain showed normal findings. Blood investigations and electrocardiogram were normal.

Patient was admitted for six days and treated as right posterior canal BPPV and left labyrinthitis. Epley maneuver was performed repeatedly on right side and oral cinnarizine was given as vestibular suppressant. Intravenous dexamethasone 8mg three times per day was given for three days with close monitoring of blood sugar. In addition, she also was also started on with oral mecobalamin and betahistine.

Upon discharge, vertigo has resolved but she still experienced floating sensation especially when turning head to right side and on sitting position. She was able to sit on the bed, however she needed support during standing and walking due to imbalance feeling. Repeated PTA showed same level of hearing loss on left side.

During follow up, right posterior BPPV has resolved, however she developed left posterior BPPV about one month after discharge and improved with Epley maneuver. Her hearing level remained the same based on PTA repeated two months after first presentation (Figure 2). Her routine daily activities are still restricted and partially dependent.

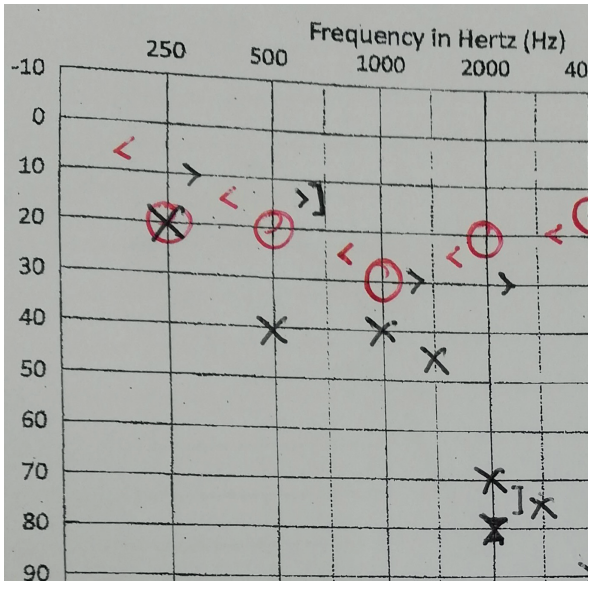

Figure 1. PTA shows generally normal hearing on right side except mild SNHL at frequency 1000Hz and 8000Hz and moderate to profound high frequency SNHL on left side.

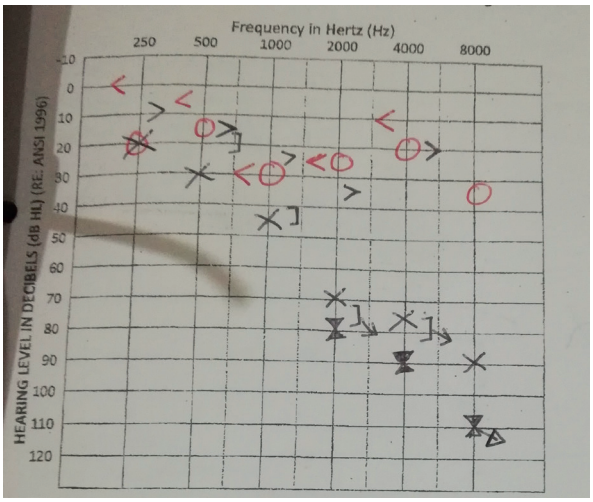

Figure 2. PTA repeated two months after first presentation shows similar moderate to profound high frequency SNHL on left side.

Discussion

Vestibular vertigo accounts for about a quarter of dizziness complaints with annual incidence of 1.4%, based on a study done in German.[6] Acute onset of vertigo may represent common benign disorders or rare life-threatening condition. Differential diagnosis of acute vestibulopathy can be BPPV, Meniere's disease, vestibular neuritis, labyrinthitis, migrainous vertigo, vestibular paroxysmia, posterior circulation infarct, perilymphatic fistula and superior semicircular canal dehiscence.[3]

Detailed history taking is very important because most patients complain that they are dizzy without specifying the nature of it such as spinning, imbalance or impending fainting sensations. Brief, episodic and recurrent spinning sensation in relation to head position changes is suggestive of BPPV, while Meniere's disease is usually associated with other otological symptoms like tinnitus, aural fullness, and fluctuating hearing loss. Otalgia and otorrhea are another important otological symptoms that help narrow down the diagnosis towards periphery cause. However, posterior circulation infarct specifically involving anterior inferior cerebellar artery can present with acute vertigo and hearing loss. This should be suspected in patients with risk factors for thromboembolic event presenting with other neurological symptoms. In addition, persistent feeling of imbalance without aggravating or relieving factors and impending fainting sensation are more suggestive of central cause.

Although PVD are common, they are always misdiagnosed at Emergency Department or primary care.[2] This could be due to unfamiliarity of primary medical practitioners of appropriate vestibular assessments. In addition, patients who has double PVD usually present with atypical presentation because of mixing of symptoms that do not fit into one diagnosis. Therefore, the symptoms may mimic central pathology. The history should be obtained in detail and physical examination especially vestibular assessment should be performed thoroughly in this type of cases. Head impulse, head shake, nystagmus, test of skew, Dix-Hall pike, Romberg, Unterberger, gait, finger to nose, dysdiadochokinesia and heel to shin are among very important vestibular tests that can be performed at Emergency Department or primary care. Furthermore, patients should be referred to appropriate team with experience in managing vertigo as soon as possible to avoid delay in management and poorer prognosis.

Diagnosis of right posterior canal BPPV in our patient was based on the detail history of vertigo and typical findings on Dix-Hall pike. It is likely idiopathic as no cause or risk factor identified. Left labyrinthitis is diagnosed based on long duration of vertigo, reduced hearing, history of upper respiratory tract infection and positive finding on head impulse test. However, these important findings were not detected initially. She was only given vestibular suppressant during the first admission, and this may contribute to the prolonged recovery period. Vestibular suppressant should only be used during acute vertiginous phase because continuous use of it can hinder central compensation.[3] As her symptoms were not typical for PVD and her condition did not improve, she was referred to our tertiary center hospital and CT scan was performed to rule out central pathology.

The management of BPPV is mainly canalith repositioning maneuver (CRM) like Epley maneuver as in our case. Semont, Lemper-BBQ roll and Gufoni maneuvers are other alternatives CPM depending on which semicircular canal is involved. Successful rate of CRM to eliminate vertigo and nystagmus is relatively high, 89.4% when performed in one or multiple sessions.[4] The recurrence rate of BPPV is around 22% to 29%, but found to be higher in patient with endolymphatic hydrops, central nervous system–related dizziness, Meniere's disease, hypertension, migraine and hyperlipemia.[4,7] There was no

recurrence in our case, however she developed new onset of BPPV on different site about one month later. Labyrinthitis is a known etiology of secondary BPPV and most likely the cause of left posterior BPPV in our case. Unfortunately, initial CRM success rate was found to be low in post-labyrinthitis patient with slow recovery.[4]

Concomitant BPPV and labyrinthitis either on the same or different side of ear explained slow recovery of symptoms in our patient. The treatment of viral labyrinthitis is similar to idiopathic sudden SNHL, mainly steroid and anti-viral medications. However, the treatment is still controversial as evidence is lacking.[8,9] Some studies showed early administration of steroid within the first 3 days of symptoms can improve vestibular function testing, however functional outcome improvement is still unclear.[3] As for hearing loss, increasing age, hypertension, diabetes, severe vertigo and profound hearing loss are poor prognostic factors.[10] Furthermore, recovery rate in the initial 3 weeks is another prognostic factor and recovery is rare after 3 months.[11] Thus, patients may benefit from hearing aid as in our case as there was no improvement of hearing level after two months and she has other poor prognostic factors.

Conclusion

Acute vertigo may be caused by dual pathologies. Hence, detailed history-taking and vestibular examination are vital in evaluating patients with atypical symptoms and mixed clinical findings. Delay in diagnosi and initiation of appropriate management will lead to slow recovery and poor prognosis.

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Conflict of Interest

The authors have disclosed no conflict of interest.

Ethical Approval Issue

There was no ethical approval sought other than getting consent from the patient.

Authors' contribution

Conception and design: VSKED

Critical revision of the article for important intellectual content: RS

Final approval of the article: VSKED, RS

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