
Pitfalls in Which Otolaryngologists Often Are Caught in the Diagnosis and Treatment of Vertigo

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Abstract: We have been clinically treating vertigo patients for the last 45 years. As is well-known, vertigo is not a simple otolaryngological disease. In fact, it is associated with various diseases in various clinical fields, including internal medicine, neurosurgery, and ophthalmology. As otolaryngologists, we have learned a few lessons from our experiences with patients having vertigo and in working with other otolaryngologists. Here, we discuss and share pitfalls in which otolaryngologists often are caught in diagnosing and treating vertigo.

Key Words: ear, nose, and throat doctor; pitfall; treatment; vertigo

As otolaryngologists, we have learned a few lessons from our experiences with patients having vertigo and in working with other otolaryngologists. Here, we discuss and share pitfalls in which otolaryngologists often are caught in diagnosing and treating vertigo.

First, from our experience in treating patients with vertigo, we have learned that young doctors, especially young otolaryngologists, spend too little time on actually interviewing patients. It is our belief that most younger doctors do not have enough knowledge and experience in the study of hearing to provide adequate care. Young doctors are inadequately familiar with various tests' uses (e.g., computed tomography, magnetic resonance imaging, positron emission tomography) and are relying too heavily on morphological tests.

BENIGN PAROXYSMAL POSITIONAL VERTIGO

Younger doctors tend to diagnose and treat Ménière's disease and benign paroxysmal positional vertigo (BPPV) without careful consideration [1-7]. Generally accepted is that positional vertigo might result from lesions in both the central nervous system and in the peripheral vestibular organ. In 1921, Bárány described a charac-

teristic paroxysmal vertigo and nystagmus occurring in a certain critical position, and he suggested that the pathogenesis of this condition was related to otolithic disease. In 1952, Dix and Hallpike [8] described BPPV, a type of nystagmus attributable to a disorder of the otolith. This nystagmus is very characteristic and nowadays is widely accepted among clinicians as a nystagmus due to otolithic lesions. Furthermore, this characteristic nystagmus has become one of the most reliable signs for diagnosing vertigo due to a disorder of peripheral vestibular organs. Although numerous published papers have described positional vertigo due to lesions within the central nervous system [9-13], most of these cases are not of the benign paroxysmal type.

Recently, we treated several patients with typical nystagmus of the benign paroxysmal type due to lesions in the cerebellar vermis. We divided the differential diagnoses of BPPV, pseudo-BPPV, and malignant paroxysmal positional nystagmus (Fig. 1). By so doing, we should be able to understand the pathophysiology of BPPV as more functional.

Care is required in treating patients with sodium bicarbonate as, in some cases, treatment with this agent is contraindicated (e.g., patients having nephritis chronica or pregnancy-related renal disturbance) [1,2].

SPECIAL CARE OF ELDERLY PATIENTS

When we examine elderly patients, we must pay special attention to various points. First, elderly patients

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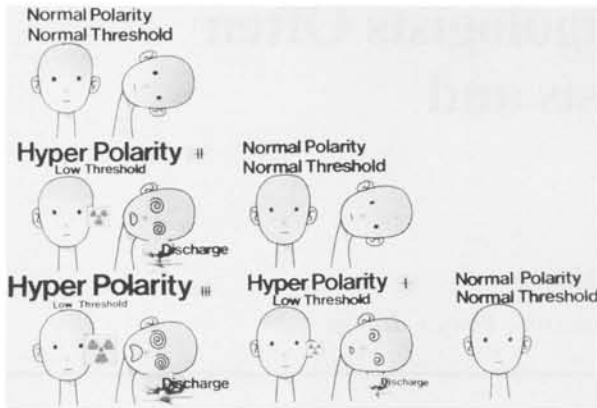


Figure 1. Understanding the pathophysiology of benign paroxysmal positional vertigo as a functional disorder.

may have different disorders simultaneously. Even if they have the same disorders as those of younger people, they are less likely to manifest typical symptoms. Rather, elderly patients are liable to present with unexpected symptoms. Because they are more or less conscious of death in daily life, elderly patients have a strong sensation of fear and thus visit with a variety of complaints. Because of brain atrophy with aging, the elderly are less likely to present, for example, symptoms of increased intracranial pressure even if they

Table 1. Comparison Between Younger and Elderly People

Factor	Younger (%)	Elderly (%)
Fat	15	30
Tissue	17	12
Bone	6	5
Water		
Extracellular	20	20
Intracellular	42	33

have brain tumor. When they have cerebral infarction, in particular, they experience a dizziness that is unexpectedly transient. Thus, it requires careful attention to discern the culpable disorder. To a certain extent, this is also the case with cerebral hemorrhage. With an increase in the elderly population, the pattern of diseases changes, and the age factor has to be considered in diagnosis and treatment. The field of ear, nose, and throat treatment also requires consideration of changes in organs and diseases associated with age and of corresponding treatment approaches.

In daily clinical practice, we have seen that elderly patients complain most frequently of dizziness, tinnitus, and hearing loss. In listening to those complaints, do we not tend simply to attribute them to age? Against this background, let us review vertigo in elderly patients briefly and consider the key points of its treatment.

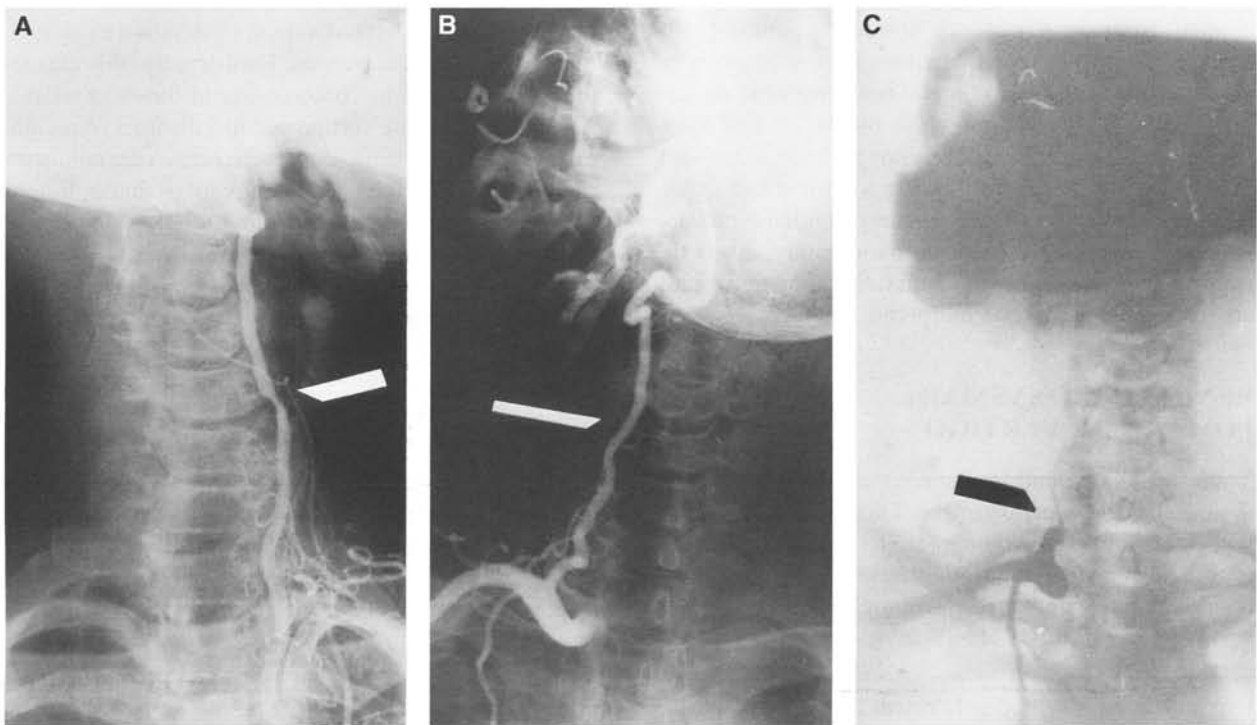


Figure 2. (A–C) So-called Epley and Seymont maneuvers should never be performed on elderly patients.

In contrast to younger people, what is first noticeable about elderly people is that they have a good deal of fat in the body and a markedly low level of intracellular water. In other words, elderly people are always at risk of dehydration and liable to fall into a shock state (Table 1). The dorsal root in the elderly is also degenerated, and this explains many diverse complaints, including dizziness, tinnitus ringing in the head, headache, neck and shoulder stiffness, and lumbago. However, these complaints cannot be dismissed simply as an “unidentified syndrome.” Behind these complaints is invariably some organic disorder or other, as we have concluded from our day-to-day clinical practice [14,15].

Administration of oral and intravenous osmotic diuretic agents (e.g., oral isosorbide, intravenous furosemide) to elderly patients should always be carried out with caution, because in such patients there is always danger of dehydration.

So-called Epley or Seymont maneuvers should never be performed on elderly patients. For instance, vertigo due to spondylosis cervicalis, vertebral artery sclerosis and the like (Fig. 2A, B), and scalenus anticus muscle syndrome after whiplash injury often induce “cervicogenic shower embolism.” Clearly, such maneuvers are extremely dangerous. In traumatic cervical injuries, too, scarring of the soft tissue and deformation of the cervical spine and osteophytosis result in vertebral artery insufficiency, disorders of the cervical sympathetic system, and abnormalities of the neck reflex. These disorders lead to various symptoms, beginning with vertigo, and seem to be related to traumatic intracranial hypotension. Furthermore, when the condition persists for a long time, we cannot ignore its effects on the distribution area of the vertebral artery (i.e., the brainstem and cerebellum); on the occipital lobes that are supplied by the posterior cerebral artery; and on the inner ear, which receives blood flow from the anterior inferior cerebellar artery. “Schwer Embolisms” may follow occasionally because of arterial bending and angiospasm due to a sympathetic stimulus (see Fig. 2C). Finally, in diagnosing and treating patients, their lifestyle must be taken into account (Table 2) [16–18].

Administration of antihypertensive drugs and anti-coagulant agents should be carried out with attention

Table 2. Risk Factors for Vertigo and Dizziness

Pathological blood pressure
Heart disease
Hyperlipidemia
Diabetes mellitus
Hyperthyroidism
Gout

paid to the precautions concerning their use (i.e., the former in the morning and latter in the evening).

OTHER SPECIAL CASES

Persistent blurred vision and oscillopsia have negative impacts on quality of life, and the burden of these symptoms is more severe than that of rotationally vertiginous attack. We doctors should take patients’ pain as our own and treat them accordingly, However, because these cases are rather rare in daily clinical situations, in reality we tend to treat these patients as neurosis cases and send them home without providing adequate care.

We have conducted a retrospective study with 182 patients recently treated clinically and found that “jumbling of objects,” which is thought to be caused by bilateral peripheral vestibular lesions, was more often observed in patients with central vestibular lesions. We named this phenomenon the pseudo-Dandy syndrome [19,20].

Tinnitus aurium is defined as a noise or ringing in the ears. It is derived from the Latin, *tinnire*, “to ring.” It is usually subjective and audible only to the complaining patient. When tinnitus is slight, the patient may not notice the ringing during most of the day. However, when tinnitus is continuous and loud, it may actually interfere with the quality of life and may be so annoying that it triggers a neurosis. Some patients with an inner-ear problem experience such overwhelming tinnitus that they would “cut off their ear” or “poke a hole in it with an ice pick” to try to relieve it (Fig. 3). In rare instances of severe tinnitus, a patient may consider suicide. We otologists working at the diagnosis and treatment of persistent tinnitus should never give up [21–24].



Figure 3. Vincent van Gogh heard strange sounds in his left ear and cut it off to silence the disturbing sounds.

REFERENCES

1. Sakata E, Sawaki S, Suzuki J. Bine Betrachtung zur Pathophysiologie des Morbus (Ménière). *HNO* 11(9): 254–259, 1963.
2. Sakata E, Itoh Y, Teramoto K. The Treatment of Ménière's Disease. Transtympanic Infusion of 4% Lidocaine and Steroid-Solution into the Tympanic Cavity. In *Vertigo, Nausea, Tinnitus, and Cardio-Vascular Diseases*. Amsterdam: Elsevier Science BV, 1986:485–491.
3. Sakata E, Ohtsu K, Itoh Y, et al. Positional Nystagmus of Benign Paroxysmal Type (BPPN) due to Cerebellar Vermis Lesion. Pseudo-BPPN. In *Vertigo, Nausea, Tinnitus, and Hypoacusia in Metabolic Disorders*. Amsterdam: Excerpta Medica, 1988:87–90.
4. Sakata E, Ohtsu K, Hiratsuka H, Kim Y. Lagenystagmus des gutartigen paroxysmalen Types (benign paroxysmal positional nystagmus, BPPN), auf Grund von Läsionen des Kleinhirnwurms (pseudo-BPPN). *HNO* 13:265–269, 1988.
5. Sakata E. Positional Nystagmus of Benign Paroxysmal Type due to Cerebellar Vermis Lesions, Pseudo-BPPN. In *From Neuron to Action*. Heidelberg: Springer-Verlag, 1989.
6. Sakata E, Ohtsu K, Itoh Y. Positional nystagmus of benign paroxysmal type (BPPN) due to cerebellar vermis lesions, pseudo-BPPN. *Acta Otolaryngol Suppl (Stockh)* 481:254–257, 1991.
7. Sakata E, Ohtsu K, Endo M, Kudo H. Differential diagnosis of BPPV, Pseudo-BPPV and MPPV. Vertigo, Nausea, Tinnitus, and Hearing Loss in Central and Peripheral Vestibular Disease. In CF Claussen, E Sakata, A Itoh (eds), *International Congress Series 1087*. Amsterdam: Elsevier, 1995:29–32.
8. Dix MR, Hallpike CS. The pathology, symptomatology, and diagnosis of certain common disorders of vestibular system. *Ann Otol Rhinol Laryngol* 61:987–1062, 1952.
9. Bruns H. Neuropathologische demonstration. *Neurol Centralbl* 21:561–567, 1902.
10. Alpers BJ, Yaskin HE. The Bruns syndrome. *J Nerv Ment Dis* 100:115–134, 1944.
11. Allen G, Fernandez C. Experimental observation on postural nystagmus: I. Extensive lesions in posterior vermis of the cerebellum. *Acta Otolaryngol (Stockh)* 51:2–12, 1960.
12. Fernandez C, Alzate L. Experimental observation on postural nystagmus: II. Lesions of the nodulus. *Ann Otol Rhinol Laryngol* 69:94–101, 1960.
13. Sakata E, Ohtsu K, Takahashi K. Pathophysiology of positional vertigo of the malignant paroxysmal type. *Aurix Nasus Larynx (Tokyo)* 11:79–90, 1984.
14. Sakata E. Das neurootologische Studium tibet die Läsion des Kleinhirnwurms. *Equilib Res Suppl* 1:30–48, 1971.
15. Sakata E, Takahashi K. Sylvian aqueduct syndrome. Chronology of Tumors in the Pineal Region with Special Reference to Early Diagnosis. In *Proceedings of the World Congress of Otorhinolaryngologists*, 1981:429–435.
16. Sakata E. Neurootological Approach to Whiplash Injuries. Presented at the Second Extraordinary Scientific Congress of the Neurootological and Equilibriometric Society.
17. Nagashima C, Iwama K, Sakata E, Miki Y. Effect of temporary occlusion of a vertebral artery on human vestibular system. *J Neurosurg* 33(4):338–394, 1970.
18. Sakata E, Teramoto K, Baba K, Ohtsu K. Recent development of the study on clinical significance of abnormal eye movement. *Aurix Nasus Larynx (Tokyo)* 12:169–182, 1985.
19. Itoh Y, Sakata E, Teramoto K. Acquired Pendular Oscillation of Wandering Type. In *Vertigo, Nausea, Tinnitus and Hearing Loss in Cardio-Vascular Disease*. Amsterdam: Elsevier Science BV, 1986:423–428.
20. Sakata E, Ohtsu K, Endo M, Kudo H. Pseudo-Dandy-Symptom with Special Consideration of Acquired Pendular Nystagmus. Its Pathophysiology and Treatment. In CF Claussen (ed), *Proceedings of the Twenty-Fifth Annual Meeting of the International Neurootologic and Equilibriometric Society*. Amsterdam: Elsevier, 1997.
21. Sakata E, Umeda Y. Treatment of cochlear tinnitus. Blocking therapy with 4% lidocaine. *Aurix Nasus Larynx (Tokyo)* 3:133–138, 1976.
22. Sakata E, Kitago Y, Murata Y, Teramoto K. Behandlung der Ménièreschen Krankheit. Paukenhöhlen-infusion von Lidocain-und Steroidlösung. *Aurix Nasus Larynx (Tokyo)* 13(2):79–89, 1986.
23. Sakata E, Nakazawa H, Iwashita N. Therapie des Ohrensaurens. Paukenhöhleninfusion von Lidocain-und Steroidlösung. *Aurix Nasus Larynx (Tokyo)* 11:11–18, 1984.
24. Sakata E, Itoh A, Itoh Y. Treatment of cochlear-tinnitus with dexamethasone infusion into the tympanic cavity. *Int Tinnitus J* 2:129–135, 1996.