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A clinical epidemiological study in 2169 patients with vertigo

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Abstract

Objective: To investigate the clinical epidemiological characteristics of vertigo.
Methods: Retrospective study on 2169 patients with vertigo (male 883, female 1286, 7–90 years old) of the past 20 years.
Results: More than 50 kinds of causative diseases were recognized. Peripheral, central, and unclassified vertigo took up 33.8, 17.2 and 26.8% of patients, respectively, while vertigo of unknown origin was around 22.2%. Vertigo patients increased according to age and reached its peak in the 1960s among all three categories. Although female patients were seemingly overwhelmed the male, no significant difference in the incidence rate was recognized in two genders. Only 2.2% (48 cases) of the total vertigo patients were children, while elders occupied 30.0% (650 cases). Compared to younger patients, the elderly have a high tendency of suffering central vertigo.
Conclusion: Vertigo attacks patients in all age spans, with various causative diseases.

Keywords: Vertigo; Central; Peripheral; Causative disease

1. Introduction

Vertigo is a very common complaint in clinical practice. The epidemiological knowledge on vertigo is still limited, whether on its prevalence or incidence character. Present studies might be divided into two aspects: population study and clinical study. Both of them have advantages and disadvantages.

Some population studies were carried out by means of questionnaire survey mainly in a defined region and people [1–3], which could be expected to reveal the prevalence of vertigo or dizziness. However, dizziness or vertigo is a non-specific symptom. In many cases, diagnosis must be based on clinical evidences, despite of accurate expression of vertigo or dizziness, together with the detailed attacking story that might lead to a diagnosis to some extent. A definitive cause may not be confirmed by means of a questionnaire only. As a result, the population study may be based on a relatively correct diagnosis, but it could not furthermore tell the epidemiological character of the causative disease.

Clinical studies were usually performed in selected patient groups [4–6]. Other studies were also focused on children and elders [7,8]. On this occasion, the general prevalent characteristic of the diseases could not be suggested, as it is not conducted in a certain population. However, a relative definitive diagnosis could be available, and the incidence of specific vertigo could possibly be discussed. As vertigo or dizziness is a clinical symptom with multiple causative diseases, a selected patient group with a small population will lead to quite different results as suggested in previous studies [4–6]. Due to the variety of causative diseases of vertigo, a certain number of patients should be necessary to describe its character for clinical study.

In order to investigate the clinical characteristics of the incidence of vertigo and its causative disease, our study was specially designed in a university hospital that is a core hospital in the district. We retrospectively reviewed 2169 patients with vertigo in this study. We hope this will become a reference for clinical work.

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2. Patients and methods

This study included all patients who complained of vertigo and consulted our department in the past 20 years. The total subjects were 2169 (male 883, female 1286) and aged between 7 and 90 years.

All patients complaining of vertigo were examined by doctors (co-authors of this paper) specialized in neuro-otology. A clinical history was first taken carefully for each patient precisely about the attack and development of vertigo either rotatory or not, duration, intensity, accompanied symptoms, frequency, possible causes, and so on. Neuro-otological examinations were performed for each patient including otoscopy, pure-tone/speech audiometry, rentorgenmetry of Stenver's and Schueller's position, Schellong test, nystagmus test (spontaneous and gaze nystagmus, positional and positioning nystagmus test, by CCD camera), and standard electronystagmography (including spontaneous nystagmus, saccade, eye tracking, optokinetic nystagmus, optokinetic after nystagmus, caloric and visual suppression test). Further audiological examinations (self-recording audiometery, speech discrimination, auditory brain stem response, evoked otoacoustic emission, etc.), stabilometric and locomotion tests, and CT/MRI scan would be applied when necessary. Patients were properly treated and followed up on at least for 4 weeks.

A final and standard diagnosis of each case would be made under a fine discussion with a neuro-otology expert (the professor of our department) in a weekly held vertigo conference, and databased. Examinations and diagnoses were based on the diagnostic criteria of the Japan Society for Equilibrium Research [9].

In this study, gender, age, diagnosis and causative disease of the vertigo patients were summarized based upon the database of our vertigo conference. The vertigo was distinguished into four categories: peripheral, central, unclassified (vertigo of known causes but neither peripheral nor central) and unknown (vertigo with unknown origin). In occasion of the return patients, only their first diagnosis was counted (the return patients with different causes were excluded). Cochran armitage trend test and χ^2-test were applied for statistical analysis.

3. Results

3.1. The causative diseases of vertigo

The constituent of peripheral, central, and unclassified vertigo were 33.8%, 17.2% and 26.8%, respectively, and relative frequent causative diseases were listed in Table 1.

Peripheral vertigo was frequently induced by benign paroxysmal positional vertigo (BPPV), vestibular neuronitis, Meniere's disease. In addition, it also attributes to impairment of inner ear (three cases, the same in below), complication of cochlear implant (3), otitis media (3), perilymph fistula (2), malformation of inner ear (2), labyrinth syphilis (1), Bell's palsy (1), and so on.

Table 1
The main causative diseases of vertigo

	n	%
Peripheral	734	33.8
Benign paroxysmal positional vertigo	149	6.9
Vestibular neuronitis	108	5.0
Meniere's disease	96	4.4
Sudden hearing loss	31	1.4
Vestibular dysfunction	20	0.9
Delayed endolymphatic hydrops	19	0.9
Hearing loss	7	0.3
Labyrinth concussion	5	0.2
Hunt's syndrome	5	0.2
Superior canal dehiscence syndrome	3	0.1
Others	291	13.4
Central	373	17.2
Vertebro-basilar insufficiency	231	10.7
Spinocerebellar degeneration	36	1.7
Wallenberg's syndrome	4	0.2
Tumor of cerebella and brain stem	8	0.4
AICA syndrome	3	0.1
Arnold–Chiari syndrome	2	0.1
Others	89	4.1
Unclassified	581	26.8
Acoustic tumor	137	6.3
Positional vertigo	109	5.0
Orthostatic hypotension	81	3.7
Depression state	26	1.2
High blood pressure	20	0.9
Cervical vertigo	16	0.7
Congenital nystagmus	11	0.5
Others	181	8.3
Unknown	481	22.2
Total	2169	100

Vertebro-basilar insufficiency (VBI), and spinocerebellar degeneration (SCD) were recognized as the main causative diseases in central vertigo. Besides, impairment of cerebellum (3), brain stem (5), mitochondrial myopathy (2), olivopontocerebellar atrophy (2), one and half syndrome (2), Fisher syndrome (1), Cogan syndrome (1), cervico-vestibular syndrome (1), Freidleich ataxia (1), neurocascular compression syndrome (1), post traumatic syndrome (2), basilar impression (1), Wernicke–Korsakoff syndrome (1), and so on were also recognized.

Acoustic tumor, positional vertigo, and orthostatic hypotension (OD) were considered as the main causes in the unclassified vertigo. Vogt–Koyanagi–Harada syndrome (4), drug (phenytoin, 3), low blood pressure (3), sleep disorder (3), heart disease (2), virus (1), measles (1), polyarteritis nodosa (1), and so on, were also defined. Besides, VBI and OD were concurrent in 37.2% of VBI and 51.5% of OD patients.