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Negative prognostic factors for psychological conditions in patients with audiovestibular diseases

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ABSTRACT

Objective: To examine the backgrounds of patients with audiovestibular disease regarding what influences their psychological state.

Methods: During a 12-year period, 375 successive patients with audiovestibular diseases were enrolled in this study. Diseases included unilateral ($n = 174$) and bilateral ($n = 51$) Menière's disease, sudden deafness with vertigo ($n = 70$), and vestibular neuritis ($n = 80$). Diagnosis, sex, age, duration of disease, vertigo frequency, persistent nystagmus, and ipsilateral/contralateral hearing levels were recorded. Cornell Medical Index (domains III–IV = neurosis) and Self-Rating Depression Scale (score > 40 = depression) were applied during acute vertigo remissions in all patients.

Results: Neurosis and depression, respectively, were diagnosed in 62.7% and 82.4% of bilateral Menière's, 32.7% and 48.9% of unilateral Menière's, 15.7% and 38.6% of sudden deafness/vertigo, and 12.7% and 31.3% of vestibular neuritis patients. Multivariable logistic regression analysis showed that Menière's disease with longer disease duration (Oz 1.212; $P = 0.021$) and worse hearing in the secondary affected ear (Oz 1.131; $P = 0.042$); sudden deafness/vertigo with persistent nystagmus (Oz 1.895; $P = 0.005$); and vestibular neuritis with longer disease duration (Oz 1.422; $P = 0.019$) and persistent nystagmus (Oz 1.950; $P = 0.0003$) had mental illness significantly more often than those with shorter-duration disease, better hearing and no persistent nystagmus.

Conclusion: Mental disorder increased in accordance with solo vertigo, vertigo/hearing loss, repeated symptoms, and bilateral lesions. Treatment strategies should be carefully constructed for patients with persistent nystagmus, long disease duration, and hearing loss in the secondary affected ear to avoid psychological disorders.

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1. Introduction

We often find neurosis and/or depression in patients with audiovestibular diseases at the daily ear-nose-throat clinic. In previous studies, patients with Menière's disease [1] and those with vestibular schwannoma [2] developed mental illness in

accordance with hearing impairment on the contralateral side (i.e., in the better-hearing ear). Mental problems in these patients may hinder good communication between patients and physicians. Mental health care is thought to play an important role in good therapeutic compliance, resulting in effective medical [3,4] and surgical [5] results.

To treat patients with intractable audiovestibular diseases effectively, we need to understand the psychological condition of each patient [6,7]. In this study, we first examined the state of neurosis and depression in these patients using the Cornell

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Medical Index (CMI) and the Self-Rating Depression Scale (SDS). We then examined the correlation between the patient's mental state and his or her background.

2. Materials and methods

The Hospital Ethics Committee approved the study (certificate number 0421). It is registered by ClinicalTrials.gov of the US Food and Drug Administration (certificate number NCT00500474).

Between April 1998 and March 2010, a total of 375 successive patients with audiovestibular diseases were enrolled in the present study at our hospital. Their diagnoses included the following.

- Vestibular neuritis (disease category 1): *n* = 80; M38, F42; age 45.7 ± 13.3 years; duration of disease 26.4 ± 16.8 months; vertigo frequency 0.0 ± 0.0/month; persistent nystagmus (+) *n* = 20, (–) *n* = 60; ipsilateral hearing 15.5 ± 6.7 dB; contralateral hearing 13.2 ± 6.8 dB.
- Sudden deafness with vertigo (disease category 2): *n* = 70; M32, F38; age 49.8 ± 12.9 years; duration of disease 25.8 ± 31.9 months; vertigo frequency 0.0 ± 0.0/month; persistent nystagmus (+) *n* = 16, (–) *n* = 54; ipsilateral hearing 61.1 ± 21.4 dB; contralateral hearing 14.1 ± 7.0 dB.
- Unilateral Menière's disease (disease category 3): *n* = 174; M85, F89; age 48.3 ± 13.7 years; duration of disease 65.9 ± 49.9 months; vertigo frequency 1.8 ± 1.1 times/month; persistent nystagmus (+) *n* = 53, (–) *n* = 121; ipsilateral hearing 55.0 ± 18.2 dB; contralateral hearing 11.9 ± 6.9 dB.
- Bilateral Menière's disease (disease category 4): *n* = 51; M23, F28; age 53.5 ± 9.9 years; duration of disease 89.3 ± 46.7 months; vertigo frequency 1.4 ± 0.9 times/month; persistent nystagmus (+) *n* = 19, (–) *n* = 32; ipsilateral hearing 59.2 ± 15.5 dB; contralateral hearing 54.0 ± 8.4 dB.

Menière's disease [8], sudden deafness with vertigo [9], and vestibular neuritis [10] were diagnosed according to criteria described previously. Diagnosis, sex, age, duration of disease, vertigo frequency (the number of attacks during the last 6 months), persistent nystagmus (at least five rhythmical consecutive beats of positional/positioning and/or head shaking after nystagmus under an infrared CCD camera (Daiichi Seiko, Ogori, Japan)), and the ipsilateral and contralateral hearing levels at their first visit were included in the records of the patients' backgrounds.

We applied the CMI and SDS during remission of acute vertigo attacks in all of the patients to evaluate their psychological status. CMI domains III and IV were defined as neurosis [11] and SDS scores of >40 as depression [12].

All statistical analyses were performed using Statistical Package for the Social Sciences, version 14.0 (SPSS, Chicago, IL, USA). The Kruskal–Wallis and Mann–Whitney tests were used to compare the rates of patients with psychological disturbance associated with each of the diseases (Figs. 1 and 2). Univariate regression analysis was used to identify statistically

The ratios of neurosis in patients with audio-vestibular diseases (using CMI)

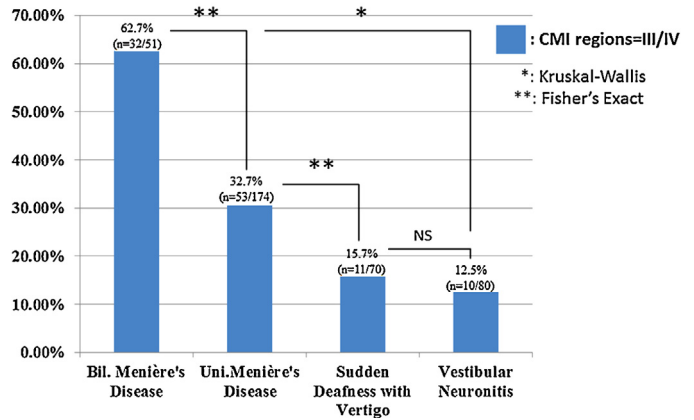


Fig. 1. Neurosis diagnosed by the Cornell Medical Index (CMI). Neurosis was diagnosed by CMI in the III and IV regions (bars) in 62.7% (32/51) of patients with bilateral (Bil.) Menière's disease, in 32.7% (53/174) of patients with unilateral (Uni.) Menière's disease, in 15.7% (11/70) of patients who had sudden deafness with vertigo, and in 12.5% (10/80) of patients with vestibular neuritis.

The ratios of depression in patients with audio-vestibular diseases (using SDS)

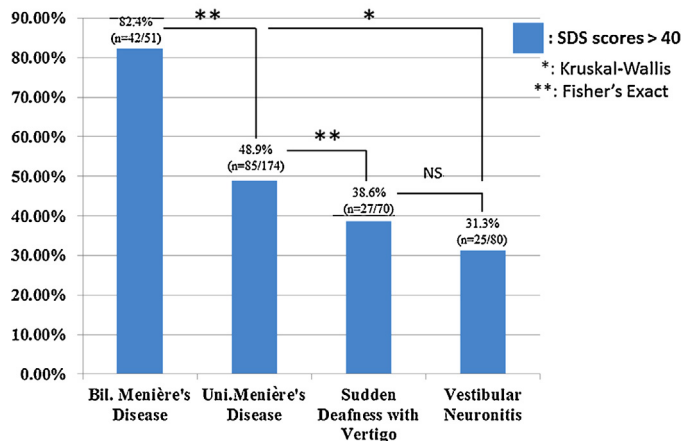


Fig. 2. Depression diagnosed by the Self-Rating Depression Scale (SDS). Depression was diagnosed by an SDS score of >40 (bars) in 82.4% (42/51) of patients with bilateral (Bil.) Menière's disease, in 48.9% (85/174) of patients with unilateral (Uni.) Menière's disease, in 38.6% (27/70) of patients who had sudden deafness with vertigo, and in 31.3% (25/80) of patients with vestibular neuritis.

significant demographic variables (Tables 1–5). Multivariate regression analysis was used to determine which factor was the most significant contributor to psychological state (Tables 1–5). The level of statistical significance was set at *P* < 0.05 for the Kruskal–Wallis, Mann–Whitney, and multivariate regression analyses. For the univariate analyses, *P* < 0.1 was considered tending toward significance.

3. Results

As seen in Fig. 1, neurosis was diagnosed by CMI in 62.7% (32/51) of patients with bilateral Menière's disease, in 32.7%

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