Prevalence of Thyroid Dysfunction in Patients With Ménière’s Disease

Michael Brenner, MD; Dick L. Hoistad, MD; Timothy C. Hain, MD

Objective: To estimate the prevalence of hypothyroidism in a population of patients with Ménière's disease (MD).

Design: Retrospective case-control study comparing the use of thyroid hormone supplements between patients with MD and controls.

Setting: Outpatient neurology clinic specializing in the management of patients experiencing dizziness.

Patients: Fifty patients who met the 1995 American Academy of Otolaryngology criteria for MD and 50 controls matched for age and sex also experiencing dizziness.

Results: The 50 patients who met the criteria for MD were identified from a database of more than 2000 patients with dizziness seen over a 5-year period. Of these, 16 (32%) were taking thyroid hormone supplements in contrast to 2 (4%) of the 50 matched controls ($P<.001$). The median age of the patients with MD was 60 years, and 5 (19%) of the 26 patients younger than 60 years were taking thyroid hormone supplements, compared with 11 (46%) of 24 patients 60 years or older ($P<.05$). There were no statistically significant differences in the severity of hearing loss, pattern of hearing loss, or prevalence of bilateral hearing loss between patients with MD who were taking thyroid hormone supplements and patients with MD who were not.

Conclusion: Ménière’s disease is associated with corrected hypothyroidism.

Arch Otolaryngol Head Neck Surg. 2004;130:226-228

MÉNIE`RE'S DISEASE (MD), first described by Ménière in 1861, is a disorder characterized by episodic vertigo, hearing loss, tinnitus, and aural fullness. Although the association of MD with endolymphatic hydrops is well recognized, the precise etiology of MD remains unknown and may be multifactorial. Previous studies that attempted to determine the prevalence of hypothyroidism among patients with MD before sensitive tests of thyroid function were available resulted in prevalence estimates that varied from 3% to 17%. We sought to determine whether patients with MD were more likely to have treated hypothyroid disease than a control group of patients with dizziness alone.

METHODS

For this retrospective case-control study, we searched a computerized text database consisting of all clinic notes for more than 2000 patients with dizziness seen over a 5-year period by the same physician (T.C.H.) and identified several hundred records with the mention of MD. Patients with potentially confounding diseases were excluded. Criteria for exclusion were a history of cerebrovascular accident, multiple sclerosis, the Arnold-Chiari malformation, major psychiatric disturbance, seizures, or other otologic disease including glomus tumor, congenital hearing loss, otitis media, cholesteatoma, otosclerosis, perilymphatic fistula, vestibular neuritis, labyrinthitis, postransmural vertigo, otosyphilis, or previous ear surgery for a reason other than MD.

From this pool of patients, 50 were found to meet the criteria determined by the 1995 American Academy of Otolaryngology for MD. From the same 2000-patient database, a control group, matched for age and sex, of 50 patients with dizziness but no history of hearing loss, tinnitus, or aural fullness was generated randomly.

All patients diagnosed with MD were classified as having unilateral or bilateral involvement based on the diagnostic criteria described by Kitahara, with the exception that, in accordance with the 1995 American Academy of Otolaryngology criteria for unilateral MD, a hearing loss documented by audiogram did not need to fluctuate to be considered significant.

Patients in the MD pool who had been prescribed thyroid hormone supplements among their medications were contacted by telephone. They were asked about the cause of their...
thyroid disease, the possibility of an association of that disease with MD symptoms, and whether they had a history of systemic autoimmune diseases.

### RESULTS

Of the 50 patients with MD and a documented significant hearing loss, 16 (32%) had been prescribed thyroid supplements compared with 2 (4%) in the control group. The χ²-test comparison of thyroid supplement use by patients with MD and by a control group of patients with dizziness alone and matched for age and sex was highly significant (P<.001).

There was a significant interaction between thyroid use and age among the 50 study patients. Their median age was 60 years, and 5 (19%) of the 26 patients younger than 60 years were taking thyroid hormone supplements, compared with 11 (46%) of the 24 patients 60 years and older (P<.05).

An analysis of audiograms of the patients with MD is shown in the Table. There were no statistically significant differences in the severity of hearing loss or the prevalence of bilateral hearing loss in the patients with MD who were taking thyroid hormone supplements compared with those who were not.

All 16 patients taking thyroid supplements were contacted. No consistent temporal relationship between the onset of thyroid disease and the onset of MD was noted. Three patients believed that elevated or depressed levels of circulating thyroid hormone influenced their MD symptoms. None of the patients taking thyroid hormone supplements reported a history of thyroid cancer or surgery. In addition to having corrected hypothyroidism, 4 patients also had one of the following systemic autoimmune diseases: severe rheumatoid arthritis; CREST syndrome (calcinosis cutis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly, and telangiectasia); Sjögren’s syndrome; and systemic lupus erythematosus.

### COMMENT

We found a significantly higher rate of thyroid hormone supplement use among patients with MD (32%) than among controls matched for age and sex (4%). We further found that more than 50% of MD patients older than 60 years were taking thyroid hormone supplements, which greatly exceeds the rate of thyroid hormone supplementation in the general population. There have been no recent studies of the prevalence of thyroid disease among patients with MD. In the older literature, Pulec and House⁴ reported that 3% of 120 patients with MD had a history of hypothyroidism and Powers² found hypothyroidism in 17% of his MD subjects. Thus, our more recent survey shows a higher incidence of hypothyroidism. This finding may be caused by the recent availability of high-sensitivity thyroid-stimulating hormone tests for hypothyroidism, which has made it possible for persons with less severe thyroid dysfunction to be diagnosed and treated.⁷

It is unlikely that the association of thyroid dysfunction with age is solely a reflection of the higher overall prevalence of thyroid dysfunction in the elderly population, as the prevalence of thyroid disease in persons older than 55 years is less than 10%.⁶-¹¹ Thus, our data support the possibility of a much higher prevalence of thyroid medication use in patients with MD in general, and an especially high prevalence in older patients.

Autoimmune thyroid disease is the most common autoimmune disorder in the population of the United States,¹² and thyroid supplementation is highly correlated with that disease. In a recent study by Diez¹³ of 655 patients with hypothyroidism, Hashimoto disease accounted for 47% of all cases, followed by postoperative hypothyroidism (26.7%), an unknown cause (13.1%), and therapy for a previous hyperthyroidism (9.6%). None of the patients taking thyroid hormone supplements in our study had a history of thyroid surgery or thyroid ablation. Thus, autoimmune thyroiditis is the most likely diagnosis in our patients taking the supplements.

There are several possible explanations for our findings. Historically, a number of investigators initially suggested that the metabolic changes occurring in hypothyroidism were capable of producing the symptoms seen in MD.²,³,¹⁴-¹⁷ Others later refuted this explanation, however.¹⁸-²¹

Another possibility would be that autoimmune thyroid disease may directly cause some cases of MD; yet, this also seems unlikely as a clear association between MD and clinically significant autoimmune thyroid disease (ie, disease requiring treatment) has been reported in only a handful of patients.²¹-²⁶

A less direct connection might be a shared susceptibility factor between autoimmune thyroid disease and MD. Autoimmunity remains a potential mechanism for some cases of MD.²⁷-³¹ This idea is supported by our observation that 4 of the patients taking thyroid hormone supplements had comorbid systemic autoimmune diseases. Both autoimmune thyroid disease and autoimmune MD might derive from an underlying common susceptibility to autoimmune disturbance.

Our findings demonstrate an association between active MD and thyroid hypofunction. Clinicians should therefore consider screening for thyroid dysfunction in patients with MD who are not already taking supplements. The likelihood of finding hypothyroidism is highest in MD patients older than 60 years.

Submitted for publication November 18, 2002; final revision May 6, 2003; accepted June 24, 2003.

Corresponding author: Timothy C. Hain, MD, Northwestern University, Department of Physical Therapy and

### Analysis of Audiograms of Patients With Ménière’s Disease

<table>
<thead>
<tr>
<th>Patients Taking Thyroid Hormone</th>
<th>Patients Not Taking Thyroid Hormone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with unilateral disease, No. (PTA in symptomatic ear)</td>
<td>7 (44.3 ± 21.8) 17 (45.5 ± 27.4)</td>
</tr>
<tr>
<td>Patients with bilateral disease, No. (average PTAs between ears)</td>
<td>9 (62.4 ± 22.5) 17 (47.7 ± 26.3)</td>
</tr>
</tbody>
</table>

Abbreviation: PTA, pure-tone average, given as mean ± SD decibel hearing level.
REFERENCES