

Meniere's Disease or Migraine Associated Dizziness That is the Question?



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Clinical Case

- 42 year old female
 - Complaint of dizziness for 6 months:
 - Last attack was 72 hours ago.
 - Lightheadedness, and imbalance for years, worse with head movement, or riding in the car or on a boat.
 - Five attacks of severe vertigo lasting 4-5 hours in durations which cause nausea and vomiting.
 - Not sure if the hearing changed during the vertigo attack since she was vomiting and very sick.
 - Intermittent tinnitus that fluctuates in pitch and loudness in both ears. She felt a humming sensation in the left ear prior to the attack and phonophobia.
 - Severe headache prior to the first attack and a mild headache after the last attack.
 - Headaches are intermittent with severe pain behind the left eye and side of head. History of migraines for the past 15 years. She has 2-3 migraine headaches per year with photophobia and phonophobia.



Clinical Case

- Past medical history
 - Unremarkable.
- Medication
 - Excedrin for migraines.
- Family history
 - Mother, sister, aunt, and brother all have migraines.
 - Father has hearing loss and vertigo.
- Physical Examination
 - Neurological exam is normal.
 - ENT exam is normal except head-shaking test demonstrates a right beating nystagmus.



Clinical Case

- Audiogram
 - Left low frequency sensorineural hearing loss at 250, and 500 Hertz at 30 decibels
- ENG
 - 18% left unilateral weakness
 - Abnormal saccades and tracking
- **What is your diagnosis?**



History of Meniere disease

- In 1861, before the Paris Academy of Medicine, Prosper Meniere first described a group of patients with symptoms of vertigo, hearing loss, nausea, and vomiting.
- He pointed out that the symptoms come from the inner ear and not the brain (apoplectiform cerebral congestion).
- Meniere's triad: 1. Tinnitus, 2. Fluctuating hearing loss, 3. Repeated attacks of vertigo
- Prosper Meniere, in his original article, noted an association to migraines.



History of migraines

- Headaches first described as early as 3000 B.C.
- Migraines first described as early as 100 A.D.
- Recently, increasing reports in the literature of association of migraines and vertigo.



Diagnostic dilemma

- Vertigo, dizziness, light-headedness, disequilibrium are common symptoms.
- Headaches and migraines are common symptoms.
- There are no specific diagnostic tests for migraines or Meniere's disease.
- Diagnosis for Meniere's disease and migraines is made mostly on medical history.
- Migraines associated dizziness (MAD) patients may have dizziness independent of migraine headaches.
- There is a high prevalence of migraine headaches with patients suffering from Meniere's disease.¹



Meniere's disease

- A clinical disorder defined as the idiopathic syndrome of endolymphatic hydrops. A disease is a pathophysiologic state.¹
- Etiology is unknown.
- Symptoms of early stage Meniere's disease are episodic rotational vertigo, transient low frequency sensorineural hearing loss, low pitch tinnitus, and aural fullness.
- Symptoms of late stage Meniere's disease are persistent disequilibrium, permanent sensorineural hearing loss, permanent low pitch tinnitus and aural fullness.
- Usually affects one ear.



Meniere's disease

- NIH estimates 545,000 people in the U.S. and that 38,250 are diagnosed each year.¹
- No gender preponderance.
- Age: widely variable with a peak age range around 40-60 year age group.
- Affect only one ear 70-80%.
- Familial occurrence: around 10-20%.



1995 Guidelines Meniere's disease

- Possible Meniere's disease
 - Episodic vertigo without documented hearing loss, or sensorineural hearing loss, fluctuating or fixed, with disequilibrium but without definitive episodes, and other causes excluded.
- Probable Meniere's disease
 - One definitive episode of vertigo, audiometrically documented hearing loss on at least one occasion, tinnitus or aural fullness in the treated ear, and other causes excluded.
- Definite Meniere's disease
 - Two or more definitive spontaneous episodes of vertigo 20 minutes or longer, audiometrically documented hearing loss on at least one occasion, tinnitus or aural fullness in the treated ear, and other causes excluded.
- Certain Meniere's disease
 - Definite Meniere's disease, plus histopathologic confirmation.



Meniere's disease

- Primary types
 - Classic Meniere's disease
 - Cochlear Meniere's disease
 - Vestibular Meniere's disease
 - Crisis of Tumarkin
- Secondary types
 - Infectious:
 - Viral, bacterial, and syphilitic
 - Trauma:
 - Closed head injury, noised induce-hearing loss
 - Autoimmune:
 - Allergy, autoimmune inner ear disease, Cogan's syndrome



Migraines

- A primary headache disorder that is intermittent, varies in pain intensity, duration, pattern associated features, and frequency of occurrence.
- Etiology is uncertain.
- Approximately 18-25% of the general population.¹
 - Migraine in men 4.0-6.5%.²
 - Migraine in women 11.2-18.2%.²
- Onset in the first and second decade of life.
- Peak prevalence occurred in third and fourth decade of life.
- Declines slowly with aging.

1. Radthke A. et al, Migraine and Meniere's disease: Is there a link? Neurology 2002; 59:1700-1704.

2. Henry P., et. al Prevalence and clinical characteristics of migraines in France. Neurology 2000; 59:232-237.



Migraines

- High incidence of family history of migraines.
- Migraines without aura is a multi-factorial disorder, caused by combination of genetic and environmental factors.
- Migraine attacks are associated with a large number of hereditary diseases which may help in chromosomal linkage studies.
 - Usher syndrome, Childhood epilepsy, Hereditary essential tremor, Tourette's syndrome, Hereditary hemorrhagic telangiectasia
- Familial hemiplegic migraine
 - Rare migraine that causes cerebellar ataxia and nystagmus.
 - Chromosome 19p13.
 - Mutation in the CACNA1A gene coding for the alpha 1A subunit of neuronal calcium channel, which is heavily expressed in the cerebellum.²
- Benign paroxysmal vertigo of childhood
 - Strong family history of migraines.



IHS 2004 Classification of Migraines

- Migraine without aura
- Migraine with aura:
 - Typical aura with migraine headache
 - Typical aura with non-migraine headaches
 - Familial hemiplegic migraine
 - Sporadic hemiplegic migraine
 - Basilar-type migraine
- Childhood periodic syndromes that are commonly precursors of migraine:
 - Cyclical vomiting
 - Abdominal migraine
 - Benign paroxysmal vertigo of childhood
- Retinal migraine
- Complications of migraine:
 - Chronic migraine
 - Status migrainosus
 - Persistent aura without infarction
 - Migrainous infarction
 - Migraine-triggered seizure
- Probable migraine:
 - Probable migraine without aura
 - Probable migraine with aura
 - Probable chronic migraine



IHS 2004 Classification of Migraines

- IHS classification of migraine headaches requires five attacks which fulfill the following criteria:
 - Headaches lasting between 4-72 hours
 - Headaches having at least two of the following four features:
 - Unilateral
 - Pulsating quality
 - Moderate or severe intensity
 - Aggravated with physical activity
 - Headaches associated with nausea, vomiting, photophobia, or phonophobia.
- IHS classification of migraines with aura is based on aura symptoms and not headache with the following criteria:
 - One or more fully reversible aura symptoms, indicating focal cerebrocortical or brain-stem dysfunction.
 - At least one of the aura symptoms develops gradually for over more than four minutes, or two or more aura symptoms occur in succession.
 - Aura lasts no longer than 60 minutes.
 - Headaches usually follow the aura symptoms with a symptom-free interval of less than 60 minutes. Headaches may also begin before or simultaneously with the aura.



Migraines and Vertigo

- Benign paroxysmal vertigo of childhood:
 - Vertigo in very young children ages 3-5.
 - No symptoms of headaches.
- Basilar-type migraine:
 - Posterior fossa symptoms of vertigo, ataxia, dysarthria, and tinnitus along with visual phenomena consistent with ischemia in the distribution of the posterior cerebral arteries.
 - Vertigo lasting 5 to 60 minutes.
 - Headaches range from mild to severe. Occur in the occipital region. In children the headaches can occur any region of the head



Migraine in Meniere's disease

- Radtke Study

- Higher lifetime prevalence of migraine in patients with Meniere's disease (56%) as compared to age and sex matched controls (25%).
- Migraine and Meniere's attacks occurred at same time in 28% of patients.
- 45% of patients experienced at least one migraine symptom with vertigo.
- Study suggests common etiology and pathophysiology between Migraines and Meniere's disease.



Migraines in Meniere's disease

- Kayan and Hood Study
 - Identified vestibular symptoms in 54.5% of patients with migraines as opposed to 30.2% of patients with tension-type headaches.¹
 - Vertigo was present in 26.5% of migraine patients and 7.8% of tension type headache patients.¹
- Bayazit Study
 - Reported 30% dizziness and 25% vertigo in migraine patients.²