Migraine-related vertigo or Ménière’s Disease?

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From BBC archive, with permission
Personal audit of 100 referrals

- 9 were referred as Meniere’s disease
  - 3 had Meniere’s disease
  - 6 had something else
    - 4 had vestibular migraine
- 3 were referred as migraine related
  - All 3 had vestibular migraine
- 17 additional patients had vestibular migraine
- No additional patients were diagnosed with Meniere’s disease
• Meniere’s disease is more common in the referrals

• Vestibular migraine is more common in the final diagnoses
A diagnosis is worth making if it:

• Helps patients (and others around them) understand what is wrong

• Gives information about prognosis

• Leads to a specific and effective treatment
What is migraine related vertigo?

- In a migraine clinic, 25% patients report vertigo and 30% report dizziness (Bayazit 2001)
- Vestibular symptoms are present in 55% migraineurs and 30% tension headache sufferers (Kayan and Hood 1984)
- In the dizzy clinic, 38% patients have migraine vs 24% orthopaedic clinic patients (Neuhauser 2001)
Migraine without aura
ICHDIll beta (2013)

A. At least 5 attacks
B. Headache 4 – 72 hours duration
C. At least 2 of:
   – Unilateral;
   – Pulsating;
   – Moderate/severe;
   – Aggravation by routine physical activity
D. During headache at least one of
   – i. nausea and/or vomiting or
   – ii. photo- and phonophobia
E. Not attributed to another disorder
Migraine with Aura

- fully reversible symptoms
  - sensory, visual, speech disturbance

- at least two of:
  - 1. homonymous visual symptoms and / or unilateral sensory symptoms
  - 2. at least one aura symptom develops gradually over ≥5 minutes and/or different aura symptoms occur in succession over ≥5 minutes
  - 3. each symptom lasts between 5 and 60 minutes

- migraine headache begins during the aura or follows aura within 60 minutes
Basilar type migraine

- A. At least 2 attacks fulfilling criteria B–D
- B. Aura consisting of at least two of the following fully reversible symptoms, but no motor weakness:
  - dysarthria
  - vertigo
  - tinnitus
  - hypacusia
  - diplopia
  - visual symptoms simultaneously in both temporal and nasal fields of both eyes
  - ataxia
  - decreased level of consciousness
  - simultaneously bilateral paraesthesias
- C. At least one of the following:
  - at least one aura symptom develops gradually over ≥5 minutes and/or different aura symptoms occur in succession over ≥5 minutes
  - each aura symptom lasts ≥5 and ≤60 minutes
- D. Headache fulfilling criteria for migraine without aura begins during the aura or follows aura within 60 minutes
- E. Not attributed to another disorder
Is it just chance?

• The co-incidence of migraine and vertigo is three times higher than would be expected by a merely statistical interaction of common disorders.

• Fewer than 10% patients with migraine and vestibular symptoms have basilar type migraine.
Vestibular migraine

A  At least 5 episodes with vestibular symptoms of moderate or severe intensity lasting 5 mins to 72 hours

B  ICHD migraine

C  Migraine feature with >50% of attacks
   − Headache with 2 of unilateral, throb, mod-severe, aggravation by movement
   − Photo and phonophobia
   − Visual aura

D  Not better accounted for by another disorder

Probable vestibular migraine

A  At least 5 episodes with vestibular symptoms of moderate or severe intensity lasting 5 mins to 72 hours

B  Only one of B and C for vestibular migraine fulfilled

C  Not better accounted for by another disorder

Definite MD

A. Two or more spontaneous episodes of vertigo\(^{(1,2)}\), each lasting 20 minutes to 12 hours\(^{(3)}\).

B. Audiometrically documented low- to medium-frequency sensorineural hearing loss\(^{(4,5)}\) in one ear, defining the affected ear on at least one occasion before, during or after one of the episodes of vertigo\(^{(6,7)}\).

C. Fluctuating aural symptoms (hearing, tinnitus or fullness) in the affected ear\(^{(8)}\).

D. Not better accounted for by another vestibular diagnosis\(^{(9)}\).
Meniere’s disease
AAO-HNS 1995 criteria

mal. Consequently, sensorineural hearing loss must be documented audiometrically in the treated ear on at least one occasion to permit the diagnosis of Meniere’s disease. Hearing loss in Meniere’s disease is usually easy to identify but is difficult to define precisely. Diagnostic hearing loss may take any of the following forms:

1. The average (arithmetic mean) of hearing thresholds at 0.25, 0.5, and 1 kHz is 15 dB or more higher than the average of 1, 2, and 3 kHz.

2. In unilateral cases, the average of threshold values at 0.5, 1, 2, and 3 kHz is 20 dB or more poorer in the ear in question than on the opposite side.

average of 0.5, 1, 2, and 3 kHz takes into account the impor-
tances in normal hearing. The average is consistent with the guidelines and the Academy of hearing handicap.

TINNITUS AND AURAL FULLNES

We reaffirm the Committee that tinnitus and aural fullnesses are independent of results for control of vertigo. Investigators create and validate scales for other measures.
Nature of the dizzy spells

Vestibular migraine
• Vertigo, head motion intolerance, visual motion intolerance
• Very variable, probably hours

Meniere’s disease
• Vertigo
• 30 mins to several hours
Associated symptoms

**Vestibular migraine**
- Migraine headaches
- Phonophobia
- Photophobia
- Aura

**Meniere’s disease**
- Unilateral tinnitus
- Unilateral aural fullness
- Unilateral fluctuating hearing loss
- Vomiting
Top tips for generalists

• Ask about:
  – Headache, photo, phonophobia, aura, migraine?
  – Unilateral auditory symptoms?

• Examine for any signs of unilateral audiovestibular loss
Epidemiology

Vestibular migraine
• Lifetime prevalence in community
  – 0.98% (Germany)

• Female preponderance

• In Guy’s Balance clinic
  – 173 new cases in last 2 years (1563 patients)

Meniere’s disease
• Point prevalence estimates in community
  – 0.12% (Germany)
  – 0.5% (Finland)

• Female preponderance

• In Guy’s Balance Clinic
  – 54 new cases in last 2 years (1563 patients)
Vestibular migraine is often underdiagnosed

- 2/3 have consulted a doctor
- 1/5 have the correct diagnosis
  - Neuhauser 2008
Vestibular migraine is much commoner than Meniere’s disease...

...so it is statistically a much more likely *a priori* diagnosis for any patient with episodic vertigo
Examination

**Vestibular migraine**
- Usually normal
- May show signs of motion sensitivity
- May show a range of neuro-otological findings

**Meniere’s disease**
- Usually normal
- May show signs of unilateral audiovestibular loss (e.g. positive head thrust test)
- Can show irritative or paretic nystagmus
Other investigations?

**Vestibular migraine**

- Blood tests normal (not usually done)
- Imaging usually normal (not usually done unless secondary cause under consideration)
- PTA normal

**Meniere’s disease**

- Blood tests usually normal (but need to exclude secondary cause)
- Imaging usually normal (but usually done when there are asymmetries on audiovestibular testing)
- PTA – unilateral SNHL
A diagnosis is worth making if it:

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• Gives information about prognosis

• Leads to a specific and effective treatment
Pathology

**Vestibular migraine**

**Meniere’s disease**
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Prognosis: vestibular migraine

Figure 1 Evolution of frequency and severity of vertigo attacks and migraine headaches in 61 patients with vestibular migraine at follow-up

Radtke Neurology 2012
Prognosis: Meniere’s disease

- frequency of vertigo attacks diminishes within 5-10 years.
- Hearing loss (of about 50-60 dB) and vestibular function decrement (of about 35-50%) take place mainly in the first 5-10 years of disease.
- Bilaterality of the condition increases with increasing duration of the disease (up to 35% within 10 years, up to 47% within 20 years).
A diagnosis is worth making if it:

- Helps patients (and others around them) understand what is wrong

- Gives information about prognosis

- Leads to a specific and effective treatment
Treatment – acute relief

Vestibular migraine

• Vestibular suppressants/antiemetics for acute relief

• Analgesia

• Triptans

Meniere’s disease

• Vestibular suppressants/antiemetics for acute relief
Treatment – prevention

**Vestibular migraine**
- Propranolol
- Topiramate
- Amitriptyline
- Gabapentin

**Meniere’s disease**
- (betahistine)
- (Diuretics)
- (low salt diet)
- Intratympanic steroids
- Intratympanic gentamicin

Cochrane: Maldonado  
Cochrane: James, Pullens, Burgess, Pullens
Treatment – supportive

Vestibular migraine
  • Vestibular rehabilitation physiotherapy
  • Psychological

Meniere’s disease
  • Vestibular rehabilitation physiotherapy
  • Auditory rehabilitation – for tinnitus
  • Auditory rehabilitation – for hearing loss
  • Psychological
General Principles of Management of VM

1. Manage migraine headache along standard lines


   NICE 2012 guidelines on headache

   BASH guidelines

2. Take vestibular attacks into account when judging whether prophylaxis is indicated

3. Consider vestibular rehabilitation

4. Information counselling is key
What can the neuro-otology department do?
When to refer on: Diagnosis

- Grey cases
- Chronic cases
- Mixed pathologies
- Rare conditions
Chronic cases look similar

• Chronic vestibular migraine
• Meniere’s disease in active severe cases
• Conditions can co-exist and exacerbate each other
• Go back to the start – how did it all begin?
• Look for secondary anxiety
Audiovestibular Investigations

Vestibular migraine

• Pure tone audiometry is normal

• Caloric test – normal, canal paresis, directional preponderance (or incomplete results...)

Meniere’s disease

• Pure tone audiometry shows fluctuating low frequency sensorineural hearing loss

• Caloric test – may show ipsilateral canal paresis
PTA in VM
PTA in MD
Caloric in Meniere’s disease

Test Comment  RVR (UW): L ear 48% weaker. DP: L btg 8% stronger

**Caloric Summary**

**Left Ear**
- SCV (avg): 9
- FI (F/NF): 0

**Right Ear**
- SCV (avg): 23
- FI (F/NF): 0.09

Graphs showing ear response over time.
Acute oculographic findings

- n=20
- 6/20 spontaneous nystagmus
- 5/20 positional nystagmus
- 3/20 mixed
- 10/20 central
- all resolved at follow up

Von Brevern 2005
CVEMP
cervical vestibular evoked myogenic potential
Migraine and vestibular compensation

• migraine is associated with poor recovery from an acute vestibular episode

Best, 2009

• These patients often have an intermediate presentation

• This phenomenon is sometimes seen in the compensation from the unilateral vestibular dysfunction in MD
Vertigo attacks in Meniere’s disease can trigger migraine headaches

ABSTRACT

Background: It is reported in some individual patients that vestibular stimuli can trigger migraine attacks. This study used a case-control design to examine systematically the hypothesis that vertigo induced by vestibular stimulation (rotation/caloric testing) can act as a specific migraine trigger.

Methods: A total of 123 new patients attending neuro-otology or neurology clinics were studied with questionnaires and physician interview to ascertain migraine history according to International Headache Society criteria. A total of 79 who underwent rotation/caloric vestibular testing (test group) were compared with 44 control patients in whom no such testing was carried out (control group). The principal outcome measure was the occurrence of a migraine attack within 24 hours of exposure to vestibular stimulation.

Results: Of those participants with a past history of migraines, 19/39 (49%) of the test group experienced a migraine in the study time window, compared with 1/21 (5%) of the control group. Binary logistic regression analysis confirmed that vestibular testing was associated (p < 0.05) with migraine attacks.

Conclusions: The results indicate that induced vertigo can act as a migraine trigger, a finding with implications for the diagnosis of patients with episodic vertigo and migraine headache. While such patients may well have basilar migraine or migrainous vertigo, alternatively, another disorder causing episodic vertigo (e.g., benign paroxysmal positional vertigo or Ménière disease) may be triggering migraine headaches. Neurology © 2009;73:638-642.
For the future: Imaging to distinguish MD from VM
When to refer on: treatment

• Co-ordinating MDT care when required
• Psychological disorder
• Failure to improve with basic treatment
Take home thoughts for difficult cases

• How did this all start?

• Careful history will help most

• Careful audiovestibular assessment helps a bit more

• Stay friends with the neuroradiologists