



OVERVIEW 2013

**MIGRAINE,
MÉNIÈRE'S
DISEASE,
AND
VESTIBULAR
MIGRAINE**

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THE DIFFERENCES BETWEEN

(and among) migraine, Ménière's disease (MD), and vestibular migraine (VM) are not as clear cut as we would like. Indeed, many signs and symptoms of these conditions overlap (Shepard, 2006; Neff et al, 2012). As health-care professionals, we know patients with dizziness, vertigo, aura, aural fullness, headache, migraine, and unrelenting tinnitus may not appear to be ill, uncomfortable, or incapacitated to others; however, each of these conditions is potentially life changing and can be quite debilitating. Of course, this is why it is so important to get the correct diagnosis and treatment.

Patients with migraine, MD, and VM often see many professionals during the process of identification and treatment of their symptoms, including general practitioners, neurologists, ENTs, audiologists, and vestibular rehabilitation therapists for evaluation and treatment. The initial intake interview, questionnaire, and careful dissection of the patient's history and symptoms are critical starting points for identifying each of the three conditions. Next, an in-depth battery of tests is typically performed to assess, quantify, and classify the patient's symptoms into a preliminary diagnosis. This lengthy and costly test battery can include audiograms, impedance testing, auditory brainstem response (ABR), computerized vestibular function tests (including positional testing, oculomotor testing, gaze stability testing, functional gait testing, bi-thermal caloric and/or rotational chair testing), electrocochleography, and vestibular-evoked myogenic potentials (VEMP).

Unfortunately, migraine, MD, and VM cannot be measured objectively, and indeed, the general practitioner is at a disadvantage with regard to diagnosing these same patients. Geser and Straunmann (2012) indicate that patients with benign paroxysmal positional vertigo (BPPV), multisensory dizziness, and vestibular migraine are generally underdiagnosed by the referring physician. Therefore, the specialist

professional (audiologist, otolaryngologist, neurologist) is tasked with relying on and interpreting the patient's history and physical findings, combined with subjective reports and non-exclusive test findings to establish a differential diagnosis.

It appears likely that these three clinical entities may well share a common pathogenesis and be components of a larger entity or process, and as the signs and symptoms manifest the diagnosis continues to emerge and evolve.

In this article, we'll review and explore the contemporary literature and discussion with respect to the issues and clinical signs and symptoms of migraine, MD, and VM.

Migraine

Unfortunately, migraine is not one clear-cut set of signs, symptoms, and experiences. Migraine can be experienced in many ways and multiple types of migraine exist. According to Bernstein and McArdle, (2008), the most common variants of migraine are chronic migraine (15 days per month or more) episodic (several occurrences per month) migraine, evolved/transformed migraine (occur every day or almost every day) ocular/ophthalmic migraine (unusual visual changes without headache), abdominal migraine (occurs mostly in children), classic/common migraine (usually with an aura), and others.

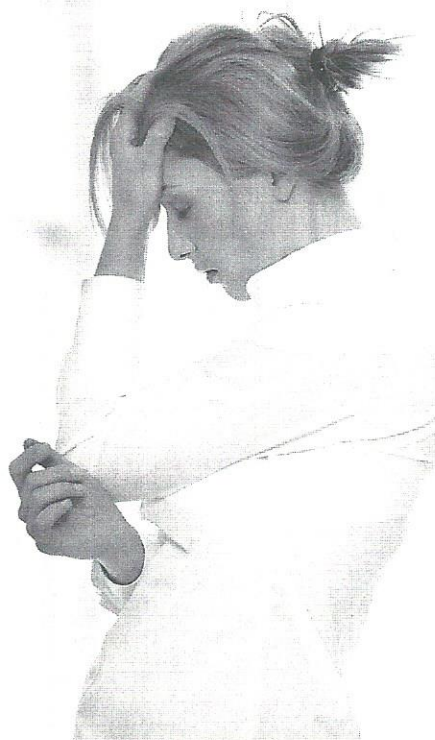
The most common characteristics of migraine include:

- Head and/or face throbbing and/or pulsating pain for 4 to 72 hours.
- Nausea and/or vomiting (present in 80 percent of migraineurs).
- Dizziness and/or vertigo (approximately one-third of all migraineurs report episodic vertigo).
- Aversion to light (photophobia).
- Aversion to sound (phonophobia).
- Tinnitus.
- Hyperacusis.
- Possible aura (warning signs such as tingling, flashing lights, or perceived zig-zag lines, strange smells, etc.).

These symptoms are present in some 20 percent of migraineurs, and a positive family history of migraine is present in some three-quarters of all migraineurs (Bernstein and McArdle, 2008). Shepard (2006) notes that most migraines involve unilateral headaches, and he reports the most common form of migraine *without pain* involves "visual hallucinations," which may be perceived as jagged lines, sparkles of gold or silver, lightning bolts, and more. Shepard reports other reversible neurological events (also called "auras") that accompany migraine may include paresthesia, numbness, muscle weakness, tinnitus, fluctuations in hearing, vertigo, light-headedness, and disorientation.

Hain (2012) reported that migraine occurs in approximately 13 percent of the U.S. population, and Hain (2012)

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found that migraine causes more vertigo than any other condition. Bernstein and McArdle (2008) reported that this comprises approximately 30 to 35 million people in the United States alone. Bernstein and McArdle (2008) report that migraine is a neurological illness that occurs as a result of abnormal brain chemistry, and migraine attacks typically peak from 30 to 40 years of age and occur in women three times more than men.

Ménière's Disease

Shepard (2006) reports that the 1995 American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) Committee on Hearing and Equilibrium defines four levels of Ménière's disease with the terms *certain* and

definite used for the purpose of clinical diagnosis, and the terms *probable* and *possible* used for group study purposes. Definite MD is diagnosed based on two or more episodes of vertigo with hearing loss, in tandem with either/both aural fullness or tinnitus (Syed and Aldren, 2012).

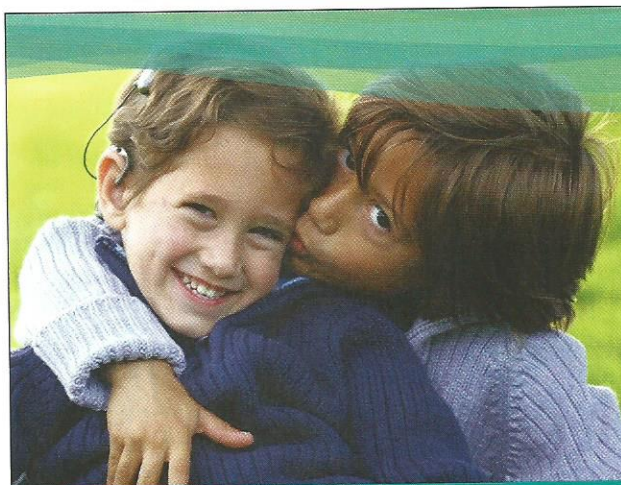
Ménière's disease is often diagnosed following recurrent attacks of severe rotational vertigo in tandem with a perception of aural fullness (which often precedes the vertigo), tinnitus, and perhaps a low-frequency fluctuating hearing loss. MD is generally thought to affect men and women equally and most often presents in middle age. Vertigo is generally noted to last between 20 minutes and 24 hours, most often lasting one to two hours. One hallmark finding during a MD attack is the presence of horizontal rotatory nystagmus. However, patients rarely present *during* an attack; generally they present *after* an attack.

Clemmens and Ruckenstein (2012) note that the diagnosis of MD is generally founded on the presence of vertigo, sensorineural hearing loss, tinnitus, and aural fullness. They report that the average age of onset for the typical bilateral Ménière's disease patient is 40 years of age (+/-14 years). Hain (2012) suggests MD occurs in 0.2 percent of the population.

Vestibular Migraine

Author's note: Migraine associated dizziness (MAD), vestibular Ménière's (VM) and migraine associated vertigo (MAV), benign recurrent vertigo, vertiginous migraine and migraine-related vestibulopathy are synonymous with and are essentially the same condition as vestibular migraine.

Hain (2012) reported one (small) study of patients with MD found migraine present in half the MD patients. Hain (2012) notes that migraine "occurs frequently with several other causes of dizziness," and he reported that half the people with BPPV onset prior to age 50 meet the clinical criteria for migraine. Likewise, Uneri (2004) evaluated 476 patients diagnosed with BPPV, all of whom demonstrated torsional positional nystagmus. The Epley maneuver was performed on all patients with suspected posterior semicircular canal BPPV, and successful treatment was noted for some 98 percent of their patients. Of note, motion sickness and migraine were three times more common in patients with BPPV than would typically be found, and a history of migraine (58 percent) and vertigo (45 percent) were reported in about half the subjects with BPPV. Clemmens and Ruckenstein (2012) note that 41 percent of their patients with bilateral MD have a history of migraine.



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Shepard (2006) addressed the “overlap” in Ménière's disease and migraine-associated dizziness (MAD) and reported “a significant body of literature exists demonstrating a relationship between migraine disorders and dizziness.” Shepard notes that MAD signs and symptoms include tinnitus, unilateral or bilateral fluctuating hearing loss, spontaneous vertigo (which might last from seconds to days), motion intolerance, and more. Shepard reported that more than half of all migraine patients report vestibular symptoms and more than half of all Ménière's disease patients report migraine. Shepard noted that Furman and colleagues (2003) reported results from videonystagmography (VNG); rotational chair (RC) and postural control assessment (to differentiate MD and MAD) were (essentially) ambiguous, as was the reduced vestibular response (RVR) obtained via bi-thermal caloric testing.

Shepard reports one finding that would not be expected in a classic MD patient would be “ocular motor abnormalities suggestive of more central vestibular system involvement, which is reported with varying prevalence in MAD patients related to impaired pursuit tracking or optokinetic testing.” The only clearly differentiating audiometric test reported was the hearing test. Typically, MD patients present with a progressive sensorineural hearing loss in later stages of the process, and of note, both groups (MD and MAD) may show temporary and reversible hearing fluctuations. Shepard summarized there appears to not be a “typical” pattern of (audiometric or vestibular) tests that differentiates the two (MAD and MD) in the early stages, and in the later stages only the audiogram consistently separates the two. Neuhauser and Lempert (2009) report that during symptom-free periods, vestibular testing adds little to the diagnosis as the results are “mostly minor and non-specific.”

Cha (2012) notes that migraine-associated vertigo (MAV) has a clinical history that includes recurrent vertigo attacks without peripheral otologic abnormalities in patients with a history of migraine headaches. Importantly, Cha notes there is no universal/international agreement as to which “spectrum of symptoms” are to be associated with MAV. Fotuhi et al (2009) report VM (aka MAV) is a common cause of dizziness in adults. Bisdorff (2011) reports VM is the “second most common cause of vertigo and the most common cause of spontaneous episodic vertigo.” Bisdorff agrees that attacks may last from seconds to days (most often minutes to hours), and most attacks of VM occur without headache (also see Neuhauser and Lempert, 2009).

Cohen et al (2011) reported a retrospective chart review of 147 patients and noted migraine onset preceded the

onset of vestibular symptoms (on average) by eight years. Sixty-two of their patients reported gradual onset of vestibular symptoms, and 48 patients reported sudden onset of vestibular symptoms. The most common symptoms (which led to the diagnosis of VM) were unsteadiness, balance disturbance, light-headedness, and vertigo. Of note, vestibular symptoms and headache did occur together in 48 percent of their patients. Cohen et al report 67 of their patients reported that their vestibular symptoms were chronic from the onset, and 29 reported episodic vestibular symptoms. Interestingly, 46 patients reported their vestibular symptoms went from episodic to chronic, over a typical span of approximately seven years.

Discussion

It appears likely that migraine, Ménière's disease, and vestibular migraine may well share a common pathogenesis. That is, these same three clinical entities may be components of a larger entity or process, and as the signs and symptoms manifest (vestibular issues, migraine headache, fluctuating hearing loss, and more) the diagnosis continues to emerge and evolve. Additionally, we suspect the diagnosis may very well be impacted by the specific profession and education the diagnostician is most familiar with. That is, perhaps neurologists and general practitioners recognize and diagnose migraine more often, while otolaryngologists and audiologists are more likely to assign the same signs and symptoms to Ménière's disease (or perhaps endolymphatic hydrops?), while the more advanced-stage patient is perhaps just as likely to receive a diagnosis of vestibular migraine from any health-care professional! Clearly these questions and issues need to be addressed (and resolved) as soon as possible, and in tandem with all other health-care professionals; we look forward to their resolution. 5

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Recommendations

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