Migraine is almost as common as high blood pressure in the Canadian population. It is more common than asthma or diabetes. An estimated 300,000 Canadians are suffering needlessly because they have either been misdiagnosed or not diagnosed with chronic migraine.

Note: Concussion also causes migraine-type dizziness – concussion sufferers can substitute the word “concussion” for “migraine” in the information below.

What causes migraine?
Migraine is a neurovascular headache, meaning it can be triggered by annoyance or disturbance to the nerves or the blood vessels in the brain.

The most common type is acute episodic migraine. These migraines start rapidly and leave with no after effects. Acute episodic migraines tend to be unilateral (one-sided) with a pulsating quality. Pain is moderate to severe and aggravated by physical activity. They can be accompanied by nausea or vomiting as well as light sensitivity (photophobia) or sound sensitivity (phonophobia). This is what many of us think of as migraine.

Migraine, however, can vary widely. Regardless of the symptoms, all migraines are caused by the same neurotransmitter dysregulation and respond to the same treatment processes.

Common symptoms of migraines with dizziness include:
- Visual aura;
- Localized eye pain;
- Light, sound and odour (hyperosmia) sensitivity – people with “migraine brain” may have these sensitivities on a day-to-day basis; they are exacerbated with migraine;
- Visual vestibular mismatch (the brain’s hypersensitivity to motion) is common in migraine-type brains both episodically and chronically. Sometimes it will occur without headache and you may feel really “off” for an hour or two;
- Vertigo – it may come on before the headache (prodromal) or may come on with the headache (concurrent). In a few rare individuals vertigo may be constant;
- Neck pain - 75% of people with migraine talk about having neck pain without any headache. If you have pain that starts in the neck and goes up into the back of your head, your problem is a form of migraine, not neck pain. And if this pain is accompanied by dizziness, the possibility of migraine-associated vertigo needs to be investigated.

The International Headache Society (IHS) is generally considered the gold standard of migraine treatment. The IHS divides headaches into more than 300 distinct diagnoses. Of these, two come with vertigo – migraine with brainstem aura (central migraine with dizziness) and vestibular migraine (peripheral migraine with dizziness).

Migraine with brainstem aura by definition needs to be fully reversible leaving no motor or sensory symptoms. It can cause the following symptoms:
- Significant speech disturbance (dysarthria) – this can mimic a stroke and should be investigated at the emergency department to be on the safe side;
- Vertigo;
Migraine with brainstem aura is typically investigated with a CT scan or MRI, however if it is stereotypical in presentation these tests may not be required. In migraine with brainstem aura, one or more of the symptoms occur over more than 5 minutes. The symptoms last for at least 5-60 minutes and at least one symptom is only on one side. The symptoms are followed by headache, often severe.

Vestibular migraine originates in the inner ear and therefore can be considered peripheral migraine. It is more common than migraine with brainstem aura, tending to be chronic and harder to treat. Vestibular migraine is sometimes referred to as migraine-associated vertigo, migraine-associated dizziness, migraine-related vestibulopathy and migranous vertigo.

Many people who have chronic vertigo may be suffering from migraine. Migraine may actually be the problem for those misdiagnosed with BPPV that does not get better or for those with strange overlapping symptoms. It is worth investigating if this might be the case. Trying migraine treatment will either make you better or leave you unchanged – there is nothing to lose.

Typical vestibular migraine is unilateral, accompanied by a pounding headache and light- or sound-sensitivity as well as nausea, with vestibular symptoms that last for from 5 minutes and up to 72 hours. In some rare cases, the vestibular symptoms last 4 weeks or more, or become a constant that waxes and wanes. So the fact that the headache does not persist does not rule out vestibular migraine.

Vestibular symptoms of these migraines can include:

- Spontaneous vertigo (you or your surroundings seem to be moving);
- Positional vertigo (starting when you tilt your head to the side) – it can mimic BPPV (benign paroxysmal positional vertigo) but it does not respond to typical treatments for BPPV;
- Head-motion induced vertigo or nausea.

10% of those with vestibular migraine may experience the symptoms for 10 seconds or less. This can be really disconcerting, particularly for those with any component of anxiety; they feel like the enemy can sneak up at any time of day.

**How are vestibular migraines diagnosed and treated?**

It is estimated that about 20% of vestibular migraines are not recognized or are misdiagnosed. People may be given vestibular rehabilitation exercises and, despite diligently performing them, the dizziness does not go away because the underlying problem has not been addressed. It is necessary to see a neuro-ophthalmologist, otolaryngologist (ENT) or headache neurologist for accurate diagnosis. To make an appointment, ask for a referral from your family doctor or another medical specialist.

After diagnosis, the course of action is to manage your triggers and comorbid (the simultaneous presence of two chronic diseases or conditions), take a complete medication history and come up with a treatment plan. Almost all chronic vestibular migraine patients – those who are in pain or are dizzy daily - have sleep or mood disorders. It is simply not human to be happy if you are dizzy every day. The migraine problem is unlikely to get better when you are not sleeping or are depressed - your brain only has so much horsepower. It is important to address sleep and mood issues. Family doctors can prescribe medications to adjust mood and improve sleep. Remember, depression is not causing the dizziness; the dizziness is causing the depression.

50 to 80% of people with migraine-associated vertigo overuse analgesics (painkillers). Headaches that accompany migraine-associated vertigo are exquisitely sensitive to anti-inflammatory medications such as Advil® (ibuprofen) or Tylenol® (acetaminophen). Frequent use of these medications – perhaps three times a week - can cause rebound headaches. These may happen daily or with greater frequency. Patients
with comorbid disease, such as a bad back or neck, may need to take painkillers to function; however, taking them may also play a role in triggering migraine or making it worse.

**Non-medicinal treatment of acute migraine**

Try to identify foods that trigger migraine. It is likely not a matter of simply giving up one food, such as chocolate. Usually there is more than one trigger or overlapping triggers. And sometimes a trigger cannot be found. It can be helpful to keep a headache diary for 6 weeks. Record: what time you go to bed and get up; your activities throughout the day; how your blood sugar feels; everything you eat and drink and the time of consumption.

Migraine thrives on routine. It is well recognized, for example, that people who usually go to bed at the same time and get up at the same time can give themselves a migraine by sleeping in or getting up early. Migraine does not like blood sugar to bounce around. Hydration is a big issue especially if you exercise vigorously. Adding electrolytes to your water bottle, doing a slow warm-up and not letting your heartbeat rise above a certain prescribed number of beats per minute (this will vary by individual) can help.

How your neck and back move plays a large role in vestibular migraine. If you have chronic neck and back pain, sitting can send a signal to your brain that sparks pain at the back - or in some cases, the front - of the head. If you are employed, ask for a workplace ergonomic assessment. Consider paying for an ergonomic assessment to be done at your home. Even a minor adjustment to a desk- or chair-height can make an enormous difference. Stretching every day and icing your neck can also be helpful.

If you have acute or episodic migraine, get into the dark, have a glass of water and lie down. Essential oils, such as lavender or peppermint, on your temples or under your nose may be helpful.

Supplementation with magnesium citrate (200mg three times a day) and vitamin B2, also known as riboflavin (400mg daily), will decrease migraine-associated vertigo in about 10% of people. Supplementation must be tried for 6 weeks before effectiveness can be evaluated.

**Medical treatment of acute migraine**

If the non-medical treatments above do not work, these medical treatments may help “rescue” you:

- NSAIDS (nonsteroidal anti-inflammatory drugs) such as Tylenol®, Advil®, and Gravol® – care must be taken with these medicines because the brain is so sensitive to them;
- IV Maxeran® (metoclopramide);
- Ergotamines; and
- Tryptans.

If your neurotransmitter regulation is off more than 10 days each month – that is, you have more than 10 days each month when your head does not feel 100% normal - a preventative strategy to stop the migraines and vertigo from starting is called for. The aim is to reduce migraine and vertigo by 50%. A number of medications designed for other disorders happen to work for migraine, including:

- Anticonvulsants - anti-seizure drugs such as Gabapentin, Valproate and Topiramate (TOPAMAX®) that happen to work for migraine;
- Antidepressants or sleep agents - Amitriptyline (also helps with sleep disorders), Fluoxetine, and Tizanidine;
- BOTOX® (onabotulinumtoxinA) – has no side effects and has worked well in clinical trials, it is a first choice for migraine treatment; and
- Propranolol - a beta-blocker that works on the vascular part of neuro-vascular headaches and can help stop your heart rate from increasing when exercising.

The above drugs can work really well, particularly for migraine with headache. But they may also work for those who have aura alone and daily vertigo. In the absence of any other effective treatment, they should at least be tried.

CGRP (calcitonin gene related peptide) MABs (monoclonal antibodies) are a new biologic therapy for chronic migraine. AIMOVIG® is the first in this new class
of drugs approved by Health Canada - AIMOVIG® is expected to be available in Canada by the end of 2018. CGRP MABs are the only drugs ever developed for chronic symptoms of migraine and outperformed both BOTOX® and TOPAMAX® in clinical trials. Read more about how CGRP MABs work: https://bit.ly/2OM8Q1H.

The role of vestibular testing and rehabilitation
Vestibular testing with goggles can be helpful in differentiating classic forms of peripheral positional vertigo (BPPV) and positional nystagmus that occurs in vestibular migraines. Once a trial with treatment of vestibular migraines is implemented, vestibular rehabilitation can help increase confidence in balance and reduce symptoms that may have become persistent. The professional leading the rehabilitation can also be a liaison between the patient and the physician, assisting in documenting progress and communicating it effectively to the physician.

Barriers to treatment
The number one barrier to treating vestibular migraine is failed diagnosis. Cost and access to treatment are challenges for some. Physician and patient bias can be problematical. Some physicians do not know how to recognize these weird, atypical forms of migraine. It is important for patients to be persistent and not settle for an offhand diagnosis of untreatable vertigo.

Though some physicians have a long way to go to serve adequately those suffering from vestibular migraine, awareness of this disorder is improving. Knowledge has increased in the last 5 to 10 years and the outlook for better options in the future is hopeful.

This is one in a series of BC Balance & Dizziness information sheets written and reviewed by vestibular and other specialists.

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