

Questions and Answers with Dr. Teixido about Vestibular Migraine:

This is an interview with Dr Teixido done for the Migraine World Summit to be shown in March 2019

- **How can migraine cause balance issues?**
 - **Can you describe the likely pathophysiology or what at least what we know today?** The symptoms of Vestibular Migraine are very variable suggesting many possible sites of dysfunction. It turns out these sites are at the cortex, in the brainstem, and in the inner ear itself.
 - **Why does vestibular migraine affect some people with migraine but not others?** Migraine is a disease with a very variable presentation. Even within the same family. This is because migraine is the consequence of a faulty interaction among many genes (polygenetic), but even with the exact same genes, it is possible for 2 individuals to have very different migraine symptoms. We hear from our vestibular migraine patients all the time that “the rest of my siblings have migraine headaches, but I didn’t get them.” Overall, dizziness is common in migraine; 25% of migraine patients will have vertigo or dizziness at some time. That means about 3 of 100 individuals will experience this problem. That is very common.
 - **What still don’t we know?** We do not yet know which genetic changes predispose some migraine patients to symptoms of dizziness. We do not have a specific diagnostic test to identify these individuals but they can be identified by the pattern of their disease.
- **What is vestibular migraine (VM)?** VM refers to any dizziness/vertigo caused by migraine mechanisms. The inner ear has 5 distinct vestibular organs. They sense turning movements and linear movements (up/down, right/left, front/back). These organs generate a constant vestibular tone and the inputs from the vestibular organs are paired with inputs from the opposite side so a stimulation from one side is always associated with a decrease in the paired organ on the other side. The organs are in alignment with one another like the front wheels of a car. When all is in balance between the inner ears and in the brain, in which the inner ear inputs are monitored and coordinated, we feel oriented in space. When our head moves we remain oriented in space. **Vestibular Migraine refers to symptoms of imbalance, of motion or disorientation in space that are caused by migraine mechanisms, and which can interfere with the delicate system of motion sensing and coordination in the brain and inner ears.** It is important to note that the symptoms can occur from interference in brain or even in the inner ear itself.
 - **What are the symptoms?** The symptoms are very variable but are typically consistent for each individual patient. Patients may feel a sensation of turning, of rocking, of lightheadness, of falling, or a sense of displacement in space.
 - **How is it diagnosed?** We do not have a specific diagnostic test to identify these individuals, although there are some symptoms and signs we hear in the patients’ history and see on testing that are strongly suggestive that migraine is a cause of symptoms in a patient.
 - **Typically these patients can be identified by the pattern of their disease. The most common pattern of disease is a new onset of symptoms of dizziness in a patient who also has an increase in headache activity. The headaches do not need to be strong, and the**

headache and the dizziness may not even occur at the same time.

Most of our patients, but not all, have a previous history of migraine headaches. We do not yet know which genetic changes predispose some migraine patients to symptoms of dizziness.

- **Is Vestibular Migraine the same thing as migraine associated vertigo (MAV)?** Vestibular Migraine(MV) is the new name for Migraine Associated Vertigo(MAV). For researchers they are different because they have slightly different definitions; the definition of VM is now used in an official classification of headache disorders used for study and is similar to but stricter than the definition of MAV. These definitions are very important for clinical studies and for drug efficacy studies, but not as important for treating individual patients. As you can imagine, if you are going to study the efficacy of a drug for VM, or any problem, a strict definition is necessary to be sure everyone would agree that all of the patients tested *have* the problem. In practice, we find only some of our patients meet the research criteria, but that does not mean they will not benefit from treatment. We unfortunately find patients who have been denied treatment because they do not have a black and white form of disease that meets the strict definition, and have been denied treatment. In this case the criteria are inappropriately used as exclusion rather than as inclusion criteria.
- **What can cause VM in the first place?** It is migraine itself which causes vestibular migraine. Migraine is a process that is spread out with effects in many part of the brain. If portions of the vestibular wiring are affected anywhere, vestibular symptoms can result.
 - **After it is present, what can trigger attacks?** Because VM is just a personal pattern of disease expression, the attacks may be spontaneous like any other migraine symptom, or provoked by specific migraine triggers.
 - **Are these the same as common migraine triggers?** Yes, but with some extras. Typical migraine triggers fall into 3 broad categories: physiologic triggers, environmental triggers and dietary triggers. Patients with VM may have increased symptoms from any of these classes of triggers just as a patient with migraine headache might. Patients with vestibular migraine, however, often have a unique sensitivity to motion of either the head or of the visual surroundings (like watching an action movie) that is above and beyond that of a typical migraine headache patient, and that can precipitate attacks. This is very significant because, in life, movement cannot be avoided.
 - **Could the neck play a role for some people with VM?** Possibly. Neck discomfort or pain from real neck problems can aggravate any migraine symptoms because neck sensations feed into the same brainstem centres associated with headache. Neck sensations also feed into the balance control system that in patients with VM is both malfunctioning and hypersensitive. This is an area of research that deserves further attention.
- **Karen would like to know if VM could be something as simple as fluid in the ear?** Vestibular Migraine is not usually associated with fluid in the ear behind the eardrum. Interestingly though, many of our patients complain of pressure in the ears and, in almost all cases, no fluid is found. The sensation of pressure these patients feel is more likely a mild headache-like, sinus pressure-like symptom that is felt in the ears rather than in the head, and is just a personal pattern of migraine. Some patients with VM and pressure in the ear also have hearing loss, especially in the low frequencies and have

signs of an inner ear problem called Meniere's Disease. In fact, many Meniere's patients have migraine and the two conditions may be related.

- **If so, how can this be treated?** If signs of Meniere's Disease are present it should also be treated along with migraine. Many Meniere's patients with concurrent migraine and MV improve with migraine treatment, so migraine treatments should be tried first before any of the common destructive inner ear treatments used for Meniere's disease (e.g. -gentamycin labyrinthectomy).
- **How many people are thought to suffer VM?** This is a very common problem. Thirteen percent of the U.S. population has migraine, and a quarter of them have dizziness. A recent census study reconfirmed the startlingly large number at 2.7%. These are mostly adults averaging 41 years of age, and 75% are female. Interestingly only 10% know their problem is migraine related. This highlights the state of under treatment of vestibular migraine.
- **Some people have said that the vertigo is more debilitating than the actual migraine? Is this common?** We frequently meet patients who have, unfortunately, submitted to living with chronic headaches and who find out they have chronic migraine only when they come to see us for dizziness. While headaches are characteristically debilitating for many migraine sufferers, for these patients it is their dizziness that is more limiting and causes them to experience disability related to migraine for the first time, or more regularly. They find their reliability is affected: they cannot do what they want to do, what they need to do, or what they said they would do.
- **What is VM commonly misdiagnosed with?** Symptoms of dizziness from VM are often confused with symptoms from other common inner ear conditions, and for good reason, as VM occurs commonly in association with other disorders. The most common causes of dizziness seen in vertigo clinics are VM, Benign Paroxysmal Positional Vertigo (BPPV), Meniere's disease and Vestibular Neuritis.
 - BPPV is a common cause of dizziness in which loose crystals in the inner ear find their way into the balance canals where they don't belong. When we tilt our head in certain positions the crystals fall through the canals and effect the sensitive balance triggers causing a brief but strong turning sensation that lasts until the crystals reach the lowest point. The strong symptoms typically occur with lying down, tipping the head to look up, and with turning over in bed. The diagnosis can be confirmed by a trained clinician who can see particular eye movements when the symptoms are provoked. Patients with this common problem can be confused with VM for more than one reason.
 - First, patients with both VM and BPPV will answer "yes" to the question "Are your symptom provoked by lying down or rolling over in bed?". BPPV patients will answer "yes" because crystals fall when they lie down or roll over. Vestibular Migraine patients will answer "yes" to the same question because they are very sensitive to head movements alone. The ability to confirm the diagnosis of BPPV by provoking symptoms and observing eye movements is therefore essential.
 - Second- the symptoms of BPPV are brief, usually lasting no more than 40 seconds. Many patients with VM also have very brief symptoms that are not characteristic of other common inner ear disorders, so confusion can occur. Once again, the ability to provoke and confirm the presence or absence of BPPV is of paramount importance.

- A final, and perhaps the most surprising reason for confusion of VM and BPPV is that 22% of VM patients also have BPPV! It seems probable that migraine mechanisms that do little lasting harm to the brain may actually injure the delicate inner ear in some patients and cause the shedding of crystals that are the cause of BPPV. We have found patients with recurrent BPPV whose recurrences are only stopped when their migraine is treated.
 - There is also confusion of patients with VM and Meniere's disease(MD). MD is an inner ear disorder of unknown cause that is associated with an accumulation of fluids in the tiny inner ear where the hearing and balance organs are. The symptoms of ear fullness, fluctuating hearing loss, tinnitus and episodes of vertigo are experienced by MD patients. This may be the way that any ear behaves when injured and cannot fully recover.
 - Confusion between MD and VM may arise because the symptom of ear fullness that is present in almost all Meniere's patients is also present in some patients with VM. Many patients seen in the clinic seem to fall somewhere between VM and MD, or to have both. This is not surprising since migraine is present 4 times more often in Meniere's patients than in the general population. This is not likely to be a coincidence: the question has been raised if Meniere's disease may be a complication of migraine in some susceptible patients, just as BPPV seems to be.
 - There is growing evidence that MD patients who have migraine respond as well to migraine treatment alone as to other treatments that are specific to the ear. Patients treated this way benefit from headache relief in addition to relief from their Meniere's symptoms. More and more otologists are now aware of this connection and will try migraine therapy prior to recommending any destructive procedures to control MD symptoms because patients with MV and MD who have an inner ear injury may not recover as well as patients without migraine.
 - The most common cause of dizziness seen in my clinic is VM.
In 501 new patients we found 47% had a diagnosis of VM and 42% had a diagnosis of BPPV. Only 5.5% had Meniere's disease, and only 4% had vestibular neuritis.
- **What is 'Mal de débarquement' syndrome?** Mal de Debarquement Syndrome is a rocking dizziness that starts when returning to land from a ship, plane, train or car. It is commonly experienced for an hour or two but for some susceptible individuals it can be an intractable problem, lasting for months or years, and that is severely limiting.
 - **Is it related to migraine in any way?** Are those with migraine more likely to experience MdDS? An unusually high number of patients with MdDS have migraine, and it may be that migraine and VM are susceptibilities for MdDS.
 - **What causes MdDS?** When on a ship we are in an environment that is rocking very gently. We cannot sense the rocking because everything we see is rocking with us, and we cannot feel the rocking because it is below the sensitivity of our balance canals to detect. More sensitive to tilting than the balance canals, however, are the tiny otolith organs in the inner ears, the same that have the crystals that, when dislodged, cause BPPV. In patients with migraine the otolith

organs are more sensitive than average, and in patients with VM, the otolith organs are extraordinarily sensitive. Some of these patients may adapt to the subtle rocking they detect with unknown changes in the central nervous system. For unknown reasons on return to land the brain will not let go of the adjustments it has made. These patients typically report no seasickness on the trip, and are surprised by the persistence of symptoms on return.

- **How are the symptoms different from VM?** Symptoms of MdDS are always a rocking sensation. Typically, the symptoms are absent when riding in a car which gives the only temporary relief. Some patients with VM have rocking as their only symptom and mimic MdDS patients in that their symptoms are very durable and hard to treat. Both groups of patients may share a common problem but in the rocking VM group the symptoms are spontaneous, without any history of prolonged travel at the onset of symptoms. Clearly there is an overlap, and some MdDS patients have prolonged symptoms that can be provoked by even a few minutes of exposure to a rocking environment. It may be that these patients could benefit from otolith specific vestibular suppressants to prevent recurrences.
 - This is a distinct contrast to typical patients with VM who may be hypersensitive to motion and who cannot tolerate riding in the car, sitting rear-facing on the train, or just moving their head.
- **How long can it take VM patients before they are accurately diagnosed?** Patients with VM will not receive a correct diagnosis until they see an otoneurologist or neurotologist who can recognize the problem and initiate effective treatment. In my practice the general ENTs are very aware of VM and find patients all the time so awareness varies from practice to practice. Some very obvious cases in which episodes of vertigo are always accompanied by headache may be recognized sooner, but even in these cases the vertigo tends to take center stage and the headache is taken as incidental.
 - **Why might it take such a long time?** Access to these subspecialists is limited compared to primary care physicians, general neurologists and ENT doctors who also treat dizzy patients. Patients may wait years for a correct diagnosis because they are following a treatment plan for BPPV, Meniere's disease, which they may indeed have, but which may be only a part of their problem.
- **What treatments are available for VM specifically?**
 - **Medicinal treatments?**
 - Most patients with vestibular migraine have symptoms that are frequent, others may have symptoms that are short lived. This limits the usefulness of drugs to be taken at the time of an episode. Symptoms may be gone by a medication can be effective, or so frequent that preventive, rather than abortive therapy is more appropriate. These preventive medications are the same classes of medications that are used for migraine headache prevention, with a couple of additions. The most effective medications for these patients are sodium channel blocking drugs, calcium channel blocking drugs, beta blockers, SNRI's and some anti-anxiety drugs. The role of these medications is to stabilize the brain, which elevates that patient's personal threshold for migraine triggering.
 - **Procedures?** There are no specific procedures that are useful in the care of these patients.

- **Behavioral or lifestyle treatments?** Migraine is a threshold disease. Patients have a personal migraine threshold that is determined by their genetics and any combination of partial triggers can drive the trigger load over the migraine threshold and result in symptoms. In many cases the patient has a new onset of symptoms at a time of peak stress or sustained fatigue. Reducing triggers in the diet, resting adequately, and dealing effectively with stress by reducing workload and with counselling support can be very helpful.
- **Are there any contraindications for those with VM?** It is not recommended that patients simply work through their symptoms by provoking them. This does not help them to go away and the result of insisting too much is taking a step backward.
- **Does Physical Therapy help for VM?** Physical Therapy(PT) can be used for VM- it is indeed helpful to get rid of concurrent BPPV, and some patients with VM are found to have weaknesses in a labyrinth which PT can be helpful for, but therapists must be aware that any patient with VM can tolerate only small doses of therapy, sometimes only minutes, without taking a step backwards. Such sensitive and supportive care can also be helpful in addressing the anxiety and distress of a patient coping with VM.
- **Do healthy habits that help migraine like consistent sleep, regular exercise, stress management, avoiding or managing triggers also help with VM?** Yes, yes, yes!
- **How do you approach a typical patient who is diagnosed with frequent and debilitating (chronic) VM?** I go to the basics. I enrol the patient in their treatment and in the idea that migraine is the underlying cause of their problem. This sometimes takes considerable work as they often have a preconceived idea of what a migraine is and is not. I send a link to some reading on my website. Then I use a combination of trigger reduction(diet, allergy, stress, fatigue etc) and threshold elevation using migraine preventive medications.
- **Sandra says she has tried topiramate, Botox injections, venlafaxine and the Gamma core device, vestibular physiotherapy, craniosacral, acupuncture... how would you approach someone who has tried and failed so many different treatments?**
 - I would again return to the basics. I would make sure we have tried all classes of preventive medications, as some patients are uniquely responsive to one class. Often a drug has been tried and not tolerated so it is unknown if a patient may respond to another medication in the same class. I would insist on dietary trigger reduction, and after a careful history may recommend other treatments or empiric therapies, investigating allergy , TMJ dysfunction, neck problems, intractable stress and fatigue, and even sleep quality which can be explored with a sleep study.
- **How can people develop better coping skills and handle the isolation and anxiety that can develop from chronic forms of VM where they are too dizzy to leave the house?** Counseling is very important for some patients. In particular Cognitive Behavioral Therapy(CBT) can help these patients to consciously regard how they interpret the presence of their symptoms in a way that can reduce stress from illness impact on their lives, which itself can drive symptoms.



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- **Where can we learn more about what you're doing or follow your work?** Patient Information at ENT & Allergy of Delaware, YouTube DRMTCI, and the website of the Association of Migraine Disorders
 - **Any resources you'd like to recommend or offer to our audience?** For patients with Anxiety: [When Panic Attacks](#) by David Burns and for patients with depression [The Feeling Good Handbook](#) by David Burns