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Striking the Right Balance: Dizziness Triage – A Necessary but Complicated Challenge

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In this edition of "Striking the Right Balance," Margot Beckerman, AuD, and Devin McCaslin, PhD, write about the complicated by necessary challenge that is triaging the dizzy patient.

Michael Vekasi, AuD, R.Aud, Aud(C), FAAA and Erica Zaia, MSc, RAUD are coordinating the "Striking the Right Balance," feature which will cover the latest information on 'all things vestibular.' If you would like to be more involved in all things vestibular, please check out and like our Facebook page by searching for "CAA National Vestibular Special Interest Group" within Facebook. You can also reach us by email at CAAvestibular@gmail.com.

Introduction

Symptoms of vertigo, dizziness, lightheadedness, and imbalance are extremely common. They are experienced by approximately 40% of the United States population over the course of a lifetime, according to the National Institute on Deafness and Other Communication Disorders. Research has shown that 7% of women and 3% of men will require a medical consultation for dizziness at some point (Neuhauser, 2007).

Patients typically use the general term "dizziness," but this can mean many things, from lightheadedness to spinning to floating. One of the challenges to getting a clear picture of a patient's symptoms–and thus determining the etiology–is that the English language does not have specific or precise words to accurately describe the symptoms or sensations that a patient is experiencing. This is even more problematic with pediatric patients. Although "dizziness" is somewhat of a catch-all term, for this article we will use the term "dizziness" to refer to all the various forms (See Table 1).

Definition of Symptoms

Dizziness	The global term for the sensation of impaired spatial orientation without a false sense of motion.
Unsteadiness/Disequilibrium	A feeling of instability while standing or walking. Usually there is no directional preference.
Vertiginous	The sensation of self-motion when the individual is not moving. Often accompanied by nausea and unsteadiness. Causes can be peripheral (e.g., vestibular neuritis) or central (e.g., posterior circulation stroke).
Syncope/presyncope event	An impending sense that the patient may lose consciousness or a transient loss of consciousness due to a brief episode of global cerebral hypoperfusion. This is most often associated with cardiovascular causes such as orthostatic hypotension.
Oscillopsia	A false sensation that the visual surround is oscillating, bouncing, or moving. Often observed in cases of bilateral peripheral vestibular weakness or midline cerebellar disorders.

Unfortunately, a significant number of adults suffer from symptoms of dizziness that goes untreated. It is estimated that 20% of the working population that self-reports dizziness and over 50% of older adults have symptoms of dizziness that go untreated (Yardley et al., 1998; Sloane, 1989). The lack of treatment may be due at least in part to the inherent challenge in determining the etiology. This diagnostic dilemma stems from symptoms of dizziness often being non-specific and cross-disciplinary depending on the condition's etiology. Because so many conditions may cause a person to experience dizziness, it can be difficult for practitioners to determine the cause and recommend treatment.

Taking a careful and precise case history, performing a thorough bedside exam, and having the right laboratory test results are key to successfully arriving at a diagnosis. The importance of a solid and accurate case history cannot be overstated for patients presenting with dizziness. The clinician needs to be a good listener but ask the right questions. A skillfully collected case history enables the clinician to identify the most likely source of the patient's complaint, arriving at a differential diagnosis. This differential diagnosis is then either supported or not validated by the results of the bedside examination and objective tests (e.g., neuroimaging, and vestibular laboratory testing).

When taking the case history, the evaluating clinician must query the patient and extract the most salient elements of the patient's dizziness story in the time allotted for this portion of the appointment. Appointment types can vary widely in duration depending on the medical specialty. For example, a new patient visit for neurology is often much longer than a new patient visit for an otolaryngologist. Practice patterns for some specialists' appointment times are inadequate to accumulate the necessary information to identify the source(s) of the patient's condition. Further, the symptoms described by the patient can be misleading or inaccurate. In their search for answers and treatment, well-meaning patients often complicate the history-taking process by recounting what they feel is important information when, in fact, it contributes little to the differential diagnosis. However, patients may feel ignored if they are not given sufficient time to provide the clinician with information.

There is compelling evidence that asking patients to describe their dizziness symptom quality may be problematic for clinicians trying to work the differential diagnosis. Research from Johns Hopkins demonstrated that when patients describe the quality of symptoms, they can be highly inconsistent, unclear, and unreliable (Newman-Toker, 2007). On the other hand, reports of time course and triggers were found to be clear, consistent, and reliable. Thus, the clinician needs to

know precisely what to ask and how to ask it.

To appropriately work the differential diagnosis of dizziness, the evaluating clinician ought to have fundamental knowledge in three areas. First, the clinician must thoroughly understand the anatomy and physiology of the peripheral and central vestibular system and the other body systems associated with balance. Second, the clinician needs to be able to perform a physical examination that can identify deficits in the balance system. This includes accurately interpreting various nystagmus patterns, distinguishing ocular motor deficits, and identifying gait abnormalities. Finally, integrating the physical findings with case history information is critical in ensuring an accurate diagnosis is reached. The challenge of arriving at the most effective diagnosis and treatment for dizziness and getting the best outcomes as quickly as possible is accomplished in many quaternary and tertiary centers using a pre-visit triage system. The approaches vary widely based on the structure of the particular healthcare system, types of dizziness that patients present with, and the specialists and subspecialists available.

The concept of sorting or triaging patients with dizziness to deliver more effective and timely treatment is not new. In 1972, Drachman and Hart published a report entitled “An Approach to the Dizzy Patient.” This classic article describes a triage system based on how patients responded to the question “What do you mean, dizzy?” The study included 125 patients and the authors found these patients’ symptoms could be sorted into 4 categories: disequilibrium, vertigo, lightheadedness, and syncope. There have been critiques of the methodology of this study in that the sample size was small.

Additionally, modern imaging techniques were not yet available and some diagnoses were not yet described when the study was undertaken (e.g., vestibular migraine or persistent postural perceptual dizziness). That said, this was important work. Since the Drachman and Hart report, there have been significant advancements in diagnostic testing for dizziness and imaging studies. There have also been several new diagnoses defined. Further, research has provided new insights into how interactions between functional, psychiatric, and structural vestibular conditions can generate complex patient presentations.

Although Drachman and Hart report did have some shortcomings, the authors’ concept of categorizing patients into diagnostic groups so that the differential diagnosis could be further worked was sound forward-thinking. In a recent review paper, Goh (2018) discussed the currently published triage approaches and suggested a refined triage model based on contemporary knowledge and the work of Newman-Toker and Edlow. This model focused on classification based on five factors: symptom triage, time course of symptoms, triggers, bedside tests, and laboratory and imaging findings. This classification consisted of four diagnostic groupings, as did the Drachman and Hart report but with several differences. The four groupings were: (1) Acute vestibular syndrome, (2) Triggered episodic vestibular syndrome, (3) Spontaneous episodic vestibular syndrome, and (4) Chronic vestibular syndrome. Along with these four syndrome types, Goh described a stepped approach for triage, including the time course of symptoms and triggers, and then presented the examinations that should accompany each type.

As mentioned above, the triage of patients with dizziness can vary widely between institutions based on the clinical personnel and types of patients being seen. Our triage approach at Michigan Medicine is similar to what Goh has set forth and is adapted from the triage used at Mayo Clinic in Rochester based on identifying clinical syndromes centered on the temporal profiles of the conditions as well as triggers, associated symptoms and symptom quality. Additionally, hearing

loss, tinnitus and other otologic symptoms are considered. As with the aforementioned Drachman & Hart and Goh reports, there are four categories that we organize our patients into as part of the triage process.

Acute Vestibular syndrome (AVS) – These patients are often first seen in the emergency room or urgent care center while in the midst of a sudden attack of vertigo and are highly symptomatic (i.e., nausea, vomiting, severe vertigo). Benign causes of AVS are frequently due to peripheral vestibular system dysfunction that stems from vestibular neuritis or labyrinthitis. However, these symptoms may also be a result of a more serious central condition such as a posterior circulation stroke. During the physical examination, key features differentiate central versus peripheral causes. Examples are direction-fixed nystagmus versus bidirectional or down-beating nystagmus, video head impulse testing findings, and skew deviation.

Episodic Vertigo – In cases of episodic vertigo, the events occur spontaneously and may last hours, days, or weeks. Common causes of spontaneous episodic vertigo are vestibular migraine, syncope, and Meniere's disease. In the initial stages of these disorders, there may often be no clear triggers. However, these may be identified later by the patient or the evaluating clinician. Examples of triggers may consist of high sodium intake (e.g., Meniere's disease) or red wine (e.g., vestibular migraine). As with AVS, there can be more serious disorders that can generate episodic vertigo, such as transient ischemic accidents or posterior circulation strokes.

Positional Vertigo (BPPV vs. Orthostasis) – Benign Paroxysmal Positional Vertigo (BPPV) is widely regarded as the most common vestibular disorder. It is relatively straightforward for an experienced clinician to diagnose and treat. Patients with BPPV generally present with predictable symptomatology, including vertigo of sudden onset that lasts seconds to a minute and is triggered by head movement. Formal vestibular testing is generally not of high diagnostic yield in patients with BPPV. The 2017 AAOHNS Clinical Practice Guideline on BPPV recommends against vestibular testing when BPPV is suspected. In contrast, a focused visit by a skilled clinician to identify and treat BPPV is relatively inexpensive and highly efficient.

Chronic Dizziness & Unsteadiness – Determining the underlying causes of chronic dizziness and unsteadiness can be challenging. Patients may present with persistent non-vertiginous dizziness, subjective imbalance, and/or hypersensitivity to motion stimuli and complex visual environments. Symptoms can be due to cardiovascular conditions (e.g., chronic atrial fibrillation), toxic substance use (e.g., alcohol), metabolic conditions (e.g., thyroid disorders), psychiatric conditions, progressive vestibular loss, or functional conditions (e.g., Persistent Postural Perceptual Dizziness). Additionally, symptoms may be multifactorial.

Triage in Practice

To more effectively triage, evaluate, and treat those patients with BPPV, we developed a "fast track" system for individuals who self-reported having symptoms with time course and triggers consistent with BPPV. Because BPPV is so common and often not associated with any other otologic disorder, directing the patient promptly to an audiologist or physical therapist for evaluation and treatment avoids the long wait times that can sometimes be associated with vestibular laboratory testing and seeing a neurotologist. Additionally, elderly patients with BPPV are at increased risk of falls, and thus timely treatment is essential. Our experience with the triage system and considering each patient's symptoms have been highly effective in pinpointing those with suspected BPPV before scheduling appointments. As a result, fewer patients undergo

unnecessary and costly vestibular testing only to result in a diagnosis of BPPV.

BPPV is one condition that can be accurately screened through self-report measures. We use a questionnaire before scheduling appointments to accurately identify individuals with suspected BPPV. Research has shown that using a subset of questions from the Dizziness Handicap Inventory (DHI) is sensitive and specific for identifying individuals with BPPV. Whitney et al. (2005) suggest using a subset of questions from the DHI as an effective screening tool for BPPV. Our triage questions specifically ask about motion-provoked symptoms using questions 1, 5, 13, and 25 from the DHI.

- Q1: Does looking up cause dizziness?
- Q5: Does getting in and out of bed bring on dizziness?
- Q13: Does turning over in bed increase or bring on dizziness?
- Q15: Does bending over cause dizziness?

Whenever a triage system is employed--whether at the primary care level, audiology, or physical therapy--it is important to carefully track the method's performance. Our data (2017) indicates that 63% of patients triaged to initially be evaluated specifically for BPPV either had active BPPV or suspected BPPV that had resolved by the time of their visit (and thus they were asymptomatic). Using this triage system and considering each patient's symptoms has effectively pinpointed those with suspected BPPV when scheduling appointments. As a result, fewer patients undergo unnecessary and costly vestibular testing only to result in a diagnosis of BPPV. This has allowed us to provide the right care in the right place at the right time and with the right type of provider.

Discussion

There is no question that pre-visit triage for patients being referred for dizziness results in less cost for patients and insurers and a better patient experience. For our patients who are found to have BPPV, we have demonstrated we can avoid performing unnecessary and expensive tests while resolving the patient's symptoms in a timely manner. We are working towards developing data-driven triage algorithms for other dizziness-related conditions. Current projects include the development of a novel questionnaire as well as utilizing machine learning techniques. Ultimately, our goal is to improve access to care and patient outcomes.

As stated earlier, every institution has no perfect triage system, yet there are common goals to strive towards. These include adapting referral and scheduling processes to include triage and BPPV screening questions to address this common and easily treated condition more efficiently. Working to establish and build trusted referral networks with local audiologists, vestibular-certified physical therapists, otologists, mental health professionals, and neurologists is paramount. The ability to track and monitor outcomes and patient experience is critical and informs clinicians and healthcare administrators alike in continuously improving any triage system.

Triage should be an important part of every multidisciplinary dizziness program and is an efficacious approach to challenging symptoms and disorders. Much is still to be learned regarding assessing and managing patients with dizziness. With new diagnostic techniques, artificial

intelligence, and small wearable sensors, there has never been a more exciting time to work in vestibular and balance disorders.

References

- Neuhauser HK. Epidemiology of vertigo. *Curr Opin Neurol.* 2007;20(1):40-46.
- Yardley L, Owen N, Nazareth I, Luxon L. Prevalence and presentation of dizziness in a general practice
- Sloane PD. Dizziness in primary care. Results from the National Ambulatory Medical Care Survey. *J Fam Pract.* 1989;29(1):33-38.
- Newman-Toker DE, Cannon LM, Stofferahn ME, et al. Imprecision in patient reports of dizziness symptom quality: a cross-sectional study conducted in an acute care settings Mayo Clin Proc. 2007;82(11):1329-40.
- Drachman DA, Hart CW. An approach to the dizzy patient. Neurology. 1972;22(4):323-
- Goh LG. Dizziness Update: a new approach and treatment based on triage, timing and triggers. Allied Academies 2018.
- Beckerman, M and Pitts C. Patient Symptom Triage to Maximize Efficiency in a Tertiary Care Center Vestibular Clinic. American Balance Society, 2018, Scottsdale AZ.