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Clinical
Review

A NEW DIAGNOSTIC APPROACH TO THE ADULT PATIENT WITH ACUTE DIZZINESS

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□ **Abstract—Background:** Dizziness, a common chief complaint, has an extensive differential diagnosis that includes both benign and serious conditions. Emergency physicians must distinguish the majority of patients with self-limiting conditions from those with serious illnesses that require acute treatment. **Objective of the Review:** This article presents a new approach to diagnosis of the acutely dizzy patient that emphasizes different aspects of the history to guide a focused physical examination with the goal of differentiating benign peripheral vestibular conditions from dangerous posterior circulation strokes in the emergency department. **Discussion:** Currently, misdiagnoses are frequent and diagnostic testing costs are high. This relates in part to use of an outdated, prevalent, diagnostic paradigm. The traditional approach, which relies on dizziness symptom quality or type (i.e., vertigo, presyncope, or disequilibrium) to guide inquiry, does not distinguish benign from dangerous causes, and is inconsistent with current best evidence. A new approach divides patients into three key categories using timing and triggers, guiding a differential diagnosis and targeted bedside examination protocol: 1) acute vestibular syndrome, where bedside physical examination differentiates vestibular neuritis from stroke; 2) spontaneous episodic vestibular syndrome, where associated symptoms help differentiate vestibular migraine from transient ischemic attack; and 3) triggered episodic vestibular syndrome, where the Dix-Hallpike and supine roll test help differentiate benign paroxysmal positional vertigo from posterior fossa structural lesions. **Conclusions:** The timing and triggers diagnostic approach for the acutely dizzy patient derives from current best evidence and offers the potential to reduce misdiagnosis while simultaneously decreases diagnostic test overuse, unnecessary hospitalization, and incorrect treatments. © 2017 Elsevier Inc. All rights reserved.

□ **Keywords**—dizziness; vertigo; diagnosis; misdiagnosis; BPPV; vestibular neuritis; nystagmus; posterior circulation stroke
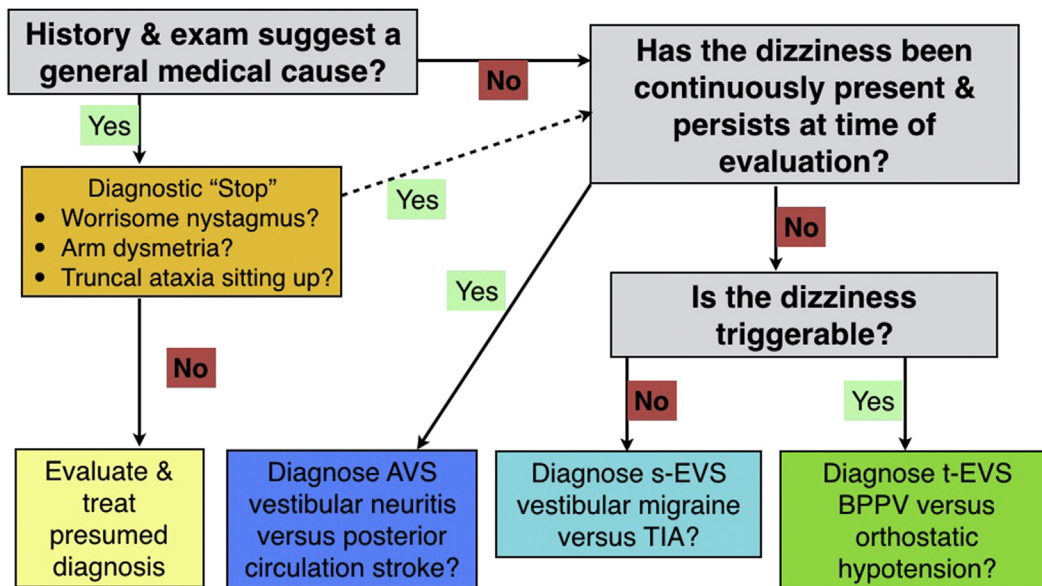
INTRODUCTION

Approximately 3.5% of emergency department (ED) visits are for dizziness (1,2). Using the fewest possible resources, physicians must distinguish between the large majority of dizzy patients with self-limiting or easily treatable conditions and the minority with life- or brain-threatening conditions. Compared to those without dizziness, dizzy patients undergo more testing, more imaging, have longer ED lengths of stay, and are more likely to be admitted (1). In 2013, total health care–related costs for patients with dizziness in the United States was estimated to exceed $10 billion (3,4). Additional "costs" included adverse events, such as patient anxiety, injuries from falls, and preventable major strokes following misdiagnosed minor cerebrovascular events (5).

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ATTEST: Diagnostic Approach to the Acutely Dizzy Patient

History & exam suggest a general medical cause?

Yes →

Diagnostic "Stop"
- Worrisome nystagmus?
- Arm dysmetria?
- Truncal ataxia sitting up?

No →

Has the dizziness been continuously present & persists at time of evaluation?

No →

Is the dizziness triggerable?

Yes (dashed) →

Evaluate & treat presumed diagnosis

Yes →

Diagnose AVS vestibular neuritis versus posterior circulation stroke?

No →

Diagnose s-EVS vestibular migraine versus TIA?

Yes →

Diagnose t-EVS BPPV versus orthostatic hypotension?

For each vestibular syndrome, only the most common benign and dangerous diagnosis is listed

Figure 1. Diagnostic approach to the acutely dizzy patient. ATTEST = A, associated symptoms; TT, timing and triggers; ES, examination signs; and T, additional testing as needed. The first step is to take a history focused on associated symptoms, timing and triggers of the dizziness, and the overall context. Many patients' histories will suggest a general medical cause (various toxic, metabolic, infectious, or cardiovascular causes). In this group of patients, we recommend a very brief diagnostic "stop" in order to reduce misdiagnosis. As part of this stop, first make sure there are no suspicious neurovestibular signs (nystagmus, limb ataxia, or gait/truncal ataxia). If a general medical cause still seems likely, evaluate and treat for the presumed diagnosis or diagnoses. For patients with a positive stop or whose history does not suggest a general medical cause, ask questions aimed at timing and triggers to place the patient into one of three categories. For patients in the acute vestibular syndrome (AVS) and triggered, episodic vestibular syndrome (t-EVS), physical examination (see text) will often allow a specific diagnosis to be made. For patients with the spontaneous episodic vestibular syndrome (s-EVS), use history to try to distinguish vestibular migraine from transient ischemic attack (TIA) or other causes (see text) since, by definition, these patients will no longer have symptoms and their dizziness cannot be triggered at the bedside. BPPV = benign paroxysmal positional vertigo.

The existing diagnostic paradigm for dizziness, based on symptom quality or type of dizziness (i.e., asking the question "what do you mean 'dizzy'?"), is taught across specialties; however, newer research has questioned its scientific basis (6). Taking a history from a dizzy patient should be no different than taking a history in other patients. The timing, triggers, and evolution over time; associated symptoms; and context (and not the descriptor used) best inform the differential diagnosis (7). Bedside examination can frequently establish a specific diagnosis (8). A confident diagnosis of a peripheral vestibular problem obviates the need for specialty consultation, expensive imaging, and hospitalization. When the evaluation suggests a central problem, especially stroke, steps can be taken to prevent harm by early initiation of secondary stroke prevention for milder presentations or thrombolysis or surgical interventions for more malignant presentations (9). We propose a new diagnostic algorithm to guide one's approach to the acutely dizzy patient (see Figure 1). In this article, we use the general term *dizziness* to encompass various words patients use to describe disturbed balance or spatial orientation, such as *lightheaded*, *spinning*, *rocking*, *vertigo*, *off balance*, and others.

DISCUSSION

Differential Diagnosis

Numerous conditions cause acute dizziness. A study from a national database (National Hospital Ambulatory Medical Care Survey), over a 13-year period, of 9472 patients with dizziness reported general medical (including non-stroke cardiovascular) diagnoses (~50%), otovestibular diagnoses (~33%), and neurologic (including stroke) diagnoses (~11%) (1). In this study, 22% of patients received a symptom-only dizziness (not otherwise specified) diagnosis. Although assigning a symptom-only diagnosis is common in emergency medicine practice, this was much more common in dizzy patients than in non-dizzy controls (22.1% vs. 8.4%; odds ratio 3.1) (1).