Chronic Dizziness In Older Persons

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DS, an 85-year-old woman, complains of intermittent dizziness, and three falls over 6 months. She lives with her son, who witnessed the falls, which occurred in the home. There has been no loss of consciousness or serious injury. She has hypertension, coronary artery disease, mild bilateral cataracts, chronic backache, diabetes mellitus, impaired hearing, and mild cognitive impairment. She has been using a cane for 7-8 months. Mrs. S says sometimes she feels woozy and light-headed, other times she feels the room is spinning. The episodes usually occur when she tries to stand from sitting or lying down. She denies nausea or vomiting. Medications include gilipizide xl 5 mg daily, metformin 500 mg twice daily, baby aspirin, metoprolol 12.5 mg. twice a day, nifedipine XL 60 mg. daily, ranitidine 150 mg. twice daily, acetaminophen prn, multivitamin tablet, and calcium plus vitamin D twice a day.

Dizziness is the subjective sensation of instability of posture or of illusory motion. A nonspecific term, it includes lightheadedness, vertigo, dysequilibrium, spinning, giddiness, faintness, and other sensations. Dizziness is often classified, as acute (present for less than one or two months), or chronic (present for more than one or two months). The causes of acute dizziness are usually similar for patients of all ages. Therefore, this discussion will be limited to chronic dizziness.

Dizziness is one of the most common presenting complaints in primary care practice for persons aged 65 years and older. The overall prevalence ranges from four to 30%, and it is more common in women. The complaint increases by 10% for every 5 years of increasing age. Chronic dizziness has been associated with increased risk for falls, increased fear of falling, orthostatic hypotension, syncope, stroke, and disability, and has been no loss of consciousness or serious injury. It is felt to result from the presence of combinations of diseases affecting multiple systems.

Causes of Dizziness

Dizziness results from either discrete or combined effects of impairments or disorders of the multiple systems responsible for maintaining balance. Discrete causes of chronic dizziness can be divided into vestibular disorders, central nervous system disorders (CNS), disorders causing orthostatic hypotension, psychogenic causes, systemic causes, medications and miscellaneous. Common vestibular diseases causing chronic dizziness in older persons include benign paroxysmal positional vertigo, recurrent vestibulopathy, and ototoxic medications. The CNS disorders include cerebrovascular disease and parkinsonism. Two important other entities are postural dizziness without orthostatic changes and postprandial hypotension. The most common psychogenic conditions in older persons are depressive and anxiety disorders. Benign Paroxysmal Positional Vertigo (BPPV) is characterized by brief bouts (seconds) of sudden vertigo provoked by changes in the head position (e.g., rolling over in bed into a lateral position, gazing upward or leaning forward). Rotational nystagmus and nausea and vomiting are common. Patients typically experience recurrent bouts
of positional vertigo over days to months, with quiescent periods between episodes.

The pathophysiologic mechanism of BPPV is believed to be free-floating particulate matter, most likely dislodged otocyst or endolymph in the endolymph of the posterior semicircular canal. The exact mechanism causing vertigo is unknown, but thought to result from movement of debris causing alterations in endolymphatic pressure. *Postural Dizziness without orthostasis* occurs in some older persons - dizziness on standing, but blood pressure changes do not meet criteria of postural hypotension. A postural drop in blood pressure is not always symptomatic, and, conversely, alldizziness with postural change is not due to blood pressure changes.

*Postprandial hypotension* is usually defined as an orthostatic change in blood pressure after rising within one to two hours of eating a meal; dizziness is common, as are falls and syncope.

*Medications:* Several classes of medications, such as narcotics, anxiolytics, antidepressants, antihypertensives, aminoglycoside antibiotics, chemotheraphy, and NSAIDs produce dizziness as a side effect. Medications may cause dizziness through various mechanisms; e.g., antihistamines and tricyclic antidepressants can cause dizziness through their anticholinergic side effects. Aminoglycosides, NSAIDs, quinine and loop diuretics can have ototoxic effects if used in high dosages or for long periods. Over-the-counter cold preparations can cause dizziness because of their anticholinergic effects.

In older persons, other contributors to dizziness include vision impairment, hearing loss, cervical arthritis and anemia. That dizziness can be a geriatric syndrome does not preclude the possibility that a single disease may sometimes be responsible. Rather, it acknowledges that many symptoms, such as dizziness, falls, delirium in older persons cannot be explained solely by a single disease.

**Evaluation**

The goal is to identify and eliminate the cause of dizziness. If not possible, the goal should then be to minimize dizziness and to avoid consequences, such as falls, injury, functional disability and increased depressive symptoms. A stepwise approach to the evaluation of chronic dizziness is recommended. Careful history, physical examination and routine laboratory evaluation often can identify possible diseases or contributing factors to dizziness. Rarely does a discrete cause require extensive further evaluation.

The history should seek a precise characterization of the sensation of dizziness, although sometimes difficult and frustrating. Is the dizziness episodic or continuous? In BPPV, Meniere's disease or CNS disorders, dizziness is episodic, while psychogenic or drug-induced dizziness is usually continuous. Psychological dizziness typically begin insidiously, but acoustic neuroma should be ruled out.

Duration and frequency of dizziness, and any associated symptoms (tinnitus, diplopia, hearing loss, ear fullness, dysarthria, syncope) are all important. Recurrent episodes of dizziness lasting less than one minute are common in BPPV, while recurrent episodes of dizziness associated with fluctuating hearing loss, tinnitus or ear fullness suggest Meniere's disease. Precipitating or provocative factors, such as standing, rolling over in bed or changing the position of the head or neck should be sought. Comorbid conditions (e.g., anemia, cardiac diseases, diabetes, renal disorders, anxiety, depression) can predispose to or exacerbate dizziness. A careful review of all medications, including over-the-counter drugs, is essential.

Physical examination should include orthostatic blood pressure measurement. Ear wax should be removed. Hearing, and near and distant vision should be tested.

Spontaneous nystagmus may be present. The nystagmus in central lesions is vertical and is not suppressed by visual fixation, while that in peripheral vestibular lesions is usually horizontal or rotatory, and is suppressed by visual fixation. The head thrust test also tests vestibular function. The patient fixates on the examiner's nose, and the head is moved rapidly by the examiner about 10 degrees to the left or right. In a normally functioning vestibular system, the eyes will remain fixed on the target. With vestibular disease, the eyes move with the head away from the target, followed by a corrective saccade back to the target.

Cranial nerves should be examined for diplopia, dysarthria, and facial weakness, along with cerebellar signs; e.g., gait ataxia, truncal ataxia, or dysmetria, which suggest etiologies such as a cerebellar stroke or cerebellopontine angle tumors. Gait and balance examinations should be done. A positive Romberg's sign suggests a vestibular or proprioceptive etiology.

One should also check for range of neck motion. A decrease in the range of motion, with or without symptoms of dizziness, may be due to a cervical process or, secondarily, to vestibular dysfunction. Apart from the history and physical examination, certain provocative tests can be done at bedside to evaluate the vestibular system.

In addition to head-thrust, **dynamic visual acuity testing** can be done. The patient reads a fixed eye chart while the examiner moves the head horizontally at a frequency of 1-2 Hz. A drop in acuity of two rows or more from baseline suggests abnormal vestibulo-ocular reflex. Dix-Hallpike test can confirm BPPV.

A small battery of laboratory tests should be performed on all patients with chronic dizziness - hematocrit, glucose, renal function, electrolytes, thyroid function, and vitamin B12 and RBC folate levels. EKG should be done, if a cardiovascular etiology is suspected; not every dizzy patient needs holter monitoring and tilt table test. Audiometry should be done if Meniere's disease or acoustic neuroma is suspected.

Specialized tests like vestibular function tests (electronystagmography, caloric test, rotational chair tests, computerized posturography) are indicated only if vestibular dysfunction is high on list. Neuroimaging (CT or MR) is only indicated if history and physical examination suggests stroke or cerebellopontine angle tumor.

**Treatment**

Treatment should be directed toward a specific cause, but if evaluation is uninformative, a therapeutic trial can be helpful. The most effective treatment approach is to ameliorate one or more potential etiological or contributor factors.
Vision and hearing should be corrected. Dizziness secondary to medication usually responds to dosage adjustment or to withdrawal of medication. Vestibular suppressants like antihistamines (e.g., meclizine) are commonly used for symptomatic relief, but effectiveness in chronic dizziness is not documented. Long-term use is not indicated because of CNS side effects and because they suppress central and vestibular adaptation and thus may worsen chronic dizziness.

Vestibular rehabilitation is an important and effective management strategy for patients with peripheral and central vestibular causes of dizziness. Combinations of exercises involving head and eye movements designed to provoke dizziness are used. Initially, the exercises may exacerbate dizziness, but over time (weeks to months) movement-related dizziness improves, likely because of central adaptation. The Epley’s Canalith repositioning procedure, and Brandt’s exercises are currently recommended treatments for benign positional vertigo. These bedside maneuvers, by the effects of gravity move free-floating debris from the posterior semicircular canal into the utricle of vestibule, where it will no longer alter endolymphatic pressure in the semicircular canals.

Surgical therapy is rarely needed, and is limited to excision of cerebellopontine angle tumors; ablative procedures (transmastoid labyrinthectomy and partial vestibular neurectomy for uncontrolled Meniere’s Disease or peripheral vestibulopathy); and non-ablative endolymphatic sac decompression.

Patient Education: Patients can modify activities; e.g., for postural dizziness, patients should rise slowly from sitting or supine positions. They should avoid looking up, reaching up, or bending down, but should be cautioned not to habitually avoid other movements, such as head turning so as not to compromise central adaptation, thereby worsening dizziness. Above all, patients should avoid over the counter drugs that may exacerbate dizziness.

REFERENCES

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