Dizziness in diabetes

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Humpty Dumpty was clear: ‘When I use a word... it means just what I choose it to mean – neither more nor less.’ Did his doctors know what he meant? I didn’t when my patient said she was mazy (dizzy or confused) and merligoes (vertigo) would have baffled me completely.

Dizziness is a common and vague symptom. Synonyms for dizzy include: giddy, unsteady, light-headed, faint, weak, weak at the knees, shaky, wobbly, off-balance, reeling, staggering, tottering, teetering, woozy, with legs like jelly, with rubbery legs, dazed, confused, muddled, befuddled, bewildered, disoriented, stupefied, groggy, woozy, muzzy, dopey, woolly, woolly-headed, not with it, discombobulated, a feeling of disequilibrium or vertigo. Dictionary definitions are:

• Dizzy: ‘Having a sensation of whirling or vertigo in the head with proneness to fall; giddy.’
• Vertigo: ‘A disordered condition in which the affected person has a sensation of whirling either of external objects or himself and tends to lose equilibrium and consciousness; swimming in the head; dizziness; giddiness.’

About 20% of people aged over 60 years have had dizziness severe enough to affect their daily activities. One classification is:

• Vertigo, which is an illusion of movement either of the person or the visual surround;
• Disequilibrium without vertigo;
• Presyncope (near-faint);
• Psychophysiologic dizziness.

Ask patients: ‘When you say “dizzy”, do you mean light-headed like you might pass out, a spinning sensation like after a carnival ride, mental fogginess like you can’t concentrate, or something else?’

‘My sugars have been very high for some time... For the last several months I have found that I am unable to climb a flight of stairs... The other thing that is affecting me is my balance... my drn confirmed my balance has been affected by nerve damage. It feels like I’m drunk when I’m stood up or walking... I am only 37 but honestly feel like a 90 year old.’

In people with diabetes there are many possible reasons for dizziness, and one patient may have several. A few are discussed below.

Low or high glucose

Dizziness was reported as a symptom of hypoglycaemia by 11–44% of people. It is thought to be due to neuroglycopenia rather than autonomic dysfunction. But the patient may have that too.

Hyperglycaemia also causes dizziness. In one UK study of hyperglycaemic symptoms in people with insulin-treated diabetes, 26.9% felt light-headed, and 22.4% described dizziness. The hypovolaemia of dehydration may partly explain this but glucose is toxic in other ways.

Postural hypotension

People with postural hypotension have an increased risk of falling. In the Hypertension Detection and Follow-up Program, postural hypotension was also linked with a higher five-year, age-adjusted mortality than in those without postural drop. This effect diminished on multivariate analysis except in people with both diabetes and postural hypotension in whom the odds ratio was 2.28 (1.27–4.11) compared with people without diabetes.

Among 204 people with diabetes, 28.4% had postural hypotension vs 22.5% of the 408 people without diabetes. Among people with diabetes with measurable postural hypotension only 32.8% reported postural dizziness.

‘Postural dizziness, hypertension, cerebrovascular disease, and plasma glycosylated hemoglobin levels were independently associated with postural hypotension in patients with diabetes.’

Autonomic neuropathy causes postural hypotension. An American study found a drop of 20mmHg after one minute of head-up tilt in 22.9% of patients with type 1 diabetes and in 16.2% of those with type 2 patients.

Nowadays, I suspect the most common cause of postural hypotension is target-driven over-treatment of hypertension. When monitoring antihypertensive treatment, ask about falls and about postural dizziness (but remember that two-thirds of those with postural hypotension may be asymptomatic). Measure blood pressure lying/sitting and after standing for one minute. A drop of ≥20mmHg is significant – review and, if necessary, reduce medication and measure blood pressure standing in future.

Vestibular dysfunction

In the US 2001–4 NHANES study, 35.4% of people ≥40 years old had vestibular dysfunction, the risk increasing with age. Diabetes also increased the risk – vestibular dysfunction was found in 53.6% of those with diabetes vs 33.2% of those without diabetes. In the 26.8% who had both symptomatic dizziness and vestibular dysfunction, the odds ratio for falling was 12.3 (7.9–16.7) compared with people with neither problem.

Thirty-two people with diabetes and dizziness, loss of balance or falls were referred to a specialist balance disorders service. All but one had neuropathy. On detailed testing, 27 had substandard equilibrium scores among whom 25 had abnormal vestibular function including three with somatosensory (proprioceptive) problems. Two had only proprioceptive abnormalities.

An electrophysiological study of vestibular function found abnormalities in over one-third of people with type 2 diabetes, linked to HbA1c. Studies of rats with diabetes found morphological abnormalities in their vestibular system.

Vestibular function was assessed in 95 young people with type 1 diabetes aged 6–28 years. ‘Within the diabetic group 6 patients complained about vertigo and balance disorders. Spontaneous nystagmus occurred in 10 cases... Impaired optokinesis occurred in 36 cases...’
and impaired eye tracking test in 33 cases. In caloric tests there was partial canal paresis in 4 cases and directional preponderance in 7 cases. There were few abnormalities among age-matched controls without diabetes. Among patients with a history of severe hypoglycaemia, 26.6% had spontaneous nystagmus compared with none of those without hypoglycaemic episodes.16

Benign paroxysmal positional vertigo

Benign paroxysmal positional vertigo (BPPV) was found in 8% of individuals with moderate or severe dizziness or vertigo in a German study which showed a lifetime prevalence of BPPV of 2.4%, a one-year prevalence of 1.6% and a one-year incidence of 0.6%.17

Some studies suggest that people with diabetes are more at risk of BPPV than those without diabetes. Among people with type 2, 84% had ‘abnormal test performance on assessment of at least one vestibular end organ’.18 Among patients aged ≥18 years with a vestibular diagnosis for symptoms of dizziness, BPPV was found in 46% of people with diabetes vs 37% in those without diabetes. However, logistic regression analysis showed that the presence of hypertension mediated the higher frequency of BPPV in diabetes.19

BPPV is treatable, so seek expert advice if you suspect this diagnosis.

Medication

Drugs designed to drop blood pressure can obviously cause dizziness (see above), as can those producing hypovolaemia such as diuretics and SGLT2 inhibitors. Diabetes medications may cause dizziness from hypoglycaemia.

Several antibiotics may produce dizziness including quinolones and fluoroquinolones (e.g. ciprofloxacin), macrolides (e.g. erythromycin), and especially aminoglycosides like gentamicin. Gentamicin can cause permanent ototoxicity with deafness and vertigo, especially in renal impairment – adjust the dose and monitor gentamicin levels according to manufacturers’ guidance. Antifungals including amphotericin B and fluconazole, non-steroidal anti-inflammatory drugs, statins, and neuropathic pain relievers (for example, amitriptyline, duloxetine, and pregabalin) can cause dizziness; and gabapentin causes vertigo.20,21

Maternally-inherited diabetes and deafness (MIDD)

This mitochondrial disorder inherited from affected mothers may affect some 1% of all people with diabetes. It is woefully under-diagnosed. In addition to diabetes and deafness, patients may suffer vestibular dysfunction with dizziness and unsteadiness. They are often thin with short stature, and may have myopathy, heart problems and renal disease.22

A man with a rare MIDD mutation had multiple tumours including acoustic neuroma. Such tumours are unusual but this is a reminder not to forget serious intracranial causes of dizziness such as vascular events or tumours.23

Driving

‘You must tell DVLA if you suffer from dizziness that is sudden, disabling or recurrent.’24

Summary

Dizziness and vertigo are common and their effect on patients varies from a minor nuisance to serious disability. Patients use many words to describe dizziness. Clarify exactly what is meant. Dizzy people are more at risk of falls. Elucidate the cause(s) of the dizziness, remembering that people with diabetes have many reasons for this symptom and that one individual may combine several reasons.

Potentially dangerous causes include hypoglycaemia and postural hypotension. Review medications – many drugs can cause dizziness. Remember BPPV in patients with vertigo – treatment is usually effective.

Tell patients with sudden, disabling or recurrent dizziness or vertigo not to drive.

Dizziness may be a vague symptom, but its impact for the patient is not. Find the cause and treat it.

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References