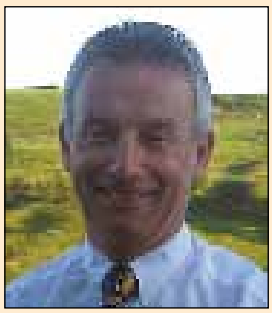
Desperate DAN: A tale of diabetic autonomic neuropathy



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We all know that poor long-term control of diabetes leads to both microvascular and macrovascular complications of diabetes (Holman et al, 2008; The Diabetes Control and Complications Trial Research Group, 1993). We spend a lot of time and effort screening for retinopathy and peripheral neuropathy but maybe we are not as diligent when it comes to diabetic autonomic neuropathy (DAN), the consequences of which can be just as devastating. And it is not at all rare, with one in five adults with diabetes having one form or another (Boulton et al, 2005).

One type of DAN, cardiac autonomic neuropathy (CAN) has been termed a "silent killer". At its mildest, CAN may impair exercise tolerance by impeding the reflex tachycardia associated with exercise or may cause orthostatic (postural) hypotension resulting in dizziness on standing. This may be a significant factor in the increased risk of falls in older people with type 2 diabetes compared with those without diabetes (Schwartz et al, 2008). More seriously, CAN is the reason that people with diabetes have silent myocardial infarctions because of cardiac denervation, and this a particular problem during exercise where DAN can also cause decreased sweating leading to a dangerous rise in body temperature. A diagnosis of CAN may be based on a a raised resting heart rate.

There are other forms of DAN that primary care teams are more familiar with. We're all getting pretty good at asking about erectile dysfunction and this has been covered before (Karet, 2007), but we shouldn't forget the increasingly recognised problem of sexual dysfunction in women with diabetes, which can cause problems with loss of libido, inadequate vaginal lubrication and decreased sexual arousal. DAN can also cause bladder dysfunction in men and women, and should be suspected when individuals report recurrent urinary tract infection.

Foot and leg examinations are, thankfully, now routine in diabetes clinics. Finding a dry warm foot should not be a reassurance that all is well with the circulatory system, but a red flag for neuropathy. Increased osteoclast (cells that break down bone) activity can lead to bone destruction and an increased risk of a devastating Charcot joint, particularly common at the ankle where a fallen arch and a warm, relatively painless joint should trigger immediate action.

It also seems likely that DAN is a significant contributory factor in hypoglycaemic unawareness (Vinik et al, 2003), when the normal counter-regulatory system, where glucagon and adrenaline are secreted in response to hypoglycaemia, is significantly impaired. This makes driving potentially hazardous, but people with DAN may also have a problem driving at night because of a reduced or absent papillary response to light, which can easily be tested for in the surgery. There is another neat little device that may help identify people with DAN: a Neuropad is a small commercially available pad using colour change over 10 minutes to assess skin sympathetic cholinergic innervation (sweat response) to indicate the possibility or otherwise of neuropathy (Quattrini et al, 2008).

I have probably left the most common form of DAN until last: the effect of neuropathy on the gastrointestinal (GI) system. Although GI problems are not uncommon in people with diabetes, persistent problems of delayed gastric emptying causing heartburn, loss of appetite and vomiting, sometimes in combination with diarrhoea, should alert suspicion of gastroparesis. This is a particular worry given the increased use of incretin mimetics and dipeptidyl peptidase-4 inhibitors, which also delay gastric emptying and can exacerbate the problem. The following article by Philip Weston gives a great overview of this distressing and sometimes overlooked complication of diabetes. We should remember that tight metabolic control can minimise the risks of developing such complications. Suspicion of any aspect of DAN should trigger a prompt referral for expert advice, before things get desperate. ■

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