

## Peripheral neuropathy – clinical implication of the link with cardiovascular mortality

**D**iabetes imparts an approximately two-fold increase in the risk of cardiovascular disease (CVD) and reduces life expectancy by approximately 6–7 years compared with people without the condition (Emerging Risk Factors Collaboration, 2011). Undoubtedly, better systematic approaches to CV risk factor modification have resulted in significant reductions in CVD mortality and morbidity over the last 10 years (Ali et al, 2013). However, identification of individuals with diabetes who are at high risk of CVD remains challenging. Currently, the UKPDS (UK Prospective Diabetes Study) risk engine is the only prognostic risk calculation tool routinely available for individuals with diabetes, incorporating individual risk factors in addition to diabetes-related specific variables, the duration of diabetes and glycaemic parameters. However, the UKPDS data were collected prior to the widespread use of lipid-lowering therapy and renin–angiotensin system blockers, which may significantly affect CV risk. Thus, the UKPDS risk engine has demonstrated, at best, moderate discrimination of CV risk in external validation. Furthermore, in some geographical areas, the measurement of some of the biochemical parameters required for CVD risk assessment may be limited, particularly owing to the expense and availability of assays.

An article summarised in this edition of *Diabetes Digest* by Brownrigg et al (page 208) suggests that, after controlling for standard CV risk factors, peripheral neuropathy was a significant independent predictor of CVD among people with diabetes who were free of CVD at baseline. Such data would be consistent with other analyses demonstrating that the presence of peripheral neuropathy increases the risk of mortality, such as the EURODIAB study (Tefsaye et al, 2004). However, the explanation for the link between peripheral neuropathy and the increase in mortality remains debatable. It may simply reflect a deterioration in glycaemic control in those with peripheral neuropathy or the development of the most severe complications

(e.g. sepsis) as a result of the neuropathy. However, there may be common pathophysiology between the development of peripheral neuropathy and arteriosclerotic coronary artery disease, or indeed microvascular myocardial disease, in people with diabetes. Peripheral neuropathy may simply be a marker of individuals who are further along their diabetes course and, thus, it may simply identify a greater prevalence of risk factors such as hypertension and hyperlipidaemia.

Nonetheless, clinically, assessment of peripheral neuropathy is a quick and routine examination performed by all healthcare professionals involved in diabetes care. Thus, the combination of clinical factors such as peripheral neuropathy and, indeed, the presence of retinopathy will assist clinicians in identifying patients at higher risk of CVD, and may now need to be incorporated into risk factor assessment when identifying patients who may require systematic multifactorial risk factor intervention. ■

Ali MK, Bullard KM, Saaddine JB et al (2013) Achievement of goals in U.S. diabetes care, 1999–2010. *N Engl J Med* **368**: 1613–24

Emerging Risk Factors Collaboration (2011) Diabetes mellitus, fasting glucose, and risk of cause-specific death. *N Engl J Med* **364**: 829–41

Tefsaye S, Chaturvedi N, Eaton SE et al (2005) Vascular risk factors and diabetic neuropathy. *N Engl J Med* **352**: 341–50



**Jiten Vora**  
*CardioDigest Editor*

**Affiliation**  
Professor of Diabetes,  
Royal Liverpool University  
Hospitals, Liverpool