The importance of improving cardiovascular risk

Successfully addressing cardiovascular risk factors is central to maintaining a healthy heart in our patients with diabetes. To prevent coronary artery disease and modify cardiovascular risk factors, lifestyle changes, such as smoking and physical inactivity need to be addressed at each consultation. People with diabetes have a range of risk factors, many of which can be modified by pharmaceutical agents.

Increased cardiovascular morbidity and mortality in people with type 2 diabetes is well recognised, with diabetes being associated with twice the risk of coronary heart disease (CHD) compared with people without diabetes (Manuel and Schultz, 2004). More than 65% of deaths in people with diabetes are from cardiovascular causes (American Diabetes Association, 2007). Understanding this level of risk has led healthcare professionals to shift the management of diabetes from just addressing raised glucose levels, to an aggressive multifactorial strategy to identify and target patients' cardiovascular risk factors. In this issue of the journal we examine the optimal management of cardiovascular risk factors in diabetes (dyslipidaemia on page 84, and hypertension on page 92), including how this may differ in British minority ethnic groups such as south Asian people (on page 74).

Trends in coronary heart disease in people with diabetes

An important study examined trends in all-cause mortality over the past 40 years (Gregg et al, 2007), concluding that there had been a decrease in cardiovascular mortality in the population as a whole during that time. The all-cause mortality rate decreased both in men with and without diabetes, but the rate decreased more quickly in men without diabetes. However, among women with diabetes, cardiovascular disease mortality did not decline over this time. The all-cause mortality rate difference between women with diabetes compared with those without diabetes

more than doubled. A number of reasons for this sex difference have been postulated, such as the pathophysiology of CHD in women with diabetes and more complex presentations of the disease, as well as less accurate diagnosis in females. It is important for primary care teams not to assume that women with diabetes have lower coronary artery disease risk than men with diabetes (Emerging Risk Factors Collaboration et al, 2011).

Guidance

Both NICE (2009) and SIGN (2010) diabetes guidance emphasises that people with type 2 diabetes are at increased cardiovascular risk, which should be addressed through modifiable risk factors. In turn, the Quality and Outcomes Framework (QOF) has encouraged cardiovascular risk modification, with the treatment of hypertension being particularly incentivised. The 2011/12 QOF guidance reduced the blood pressure indicator to ≤140/80 mmHg in a subset of the practice diabetes population, as well as modifying HbA_{1c} indicators, and encouraging cholesterol lowering (British Medical Association [BMA] and NHS Employers, 2011). This tighter blood pressure indicator may have been influenced by the observation by Yudkin et al (2010) that it is a particularly important risk factor; for every 1000 people treated in major diabetes trials for 5 years whose blood pressure was reduced by 10/5 mmHg, 29 would avoid a cardiovascular event, compared with eight where a 9.8 mmol/mol (0.9 percentage point) reduction in HbA_{1c} was achieved, and 23 in every 1000 where cholesterol was reduced by 1 mmol/L.

Understanding coronary artery disease

The model of understanding of the pathophysiology of coronary artery disease has undergone change and atherosclerosis is beginning to be considered as an inflammatory disorder that damages the intimal lining of arteries. Libby and Theroux (2005) suggested that coronary atherosclerosis in people

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with diabetes was a segmental or localised disease. Michael Kirby and John Betteridge make the case for lipid reduction, with the use of statin therapy as the most evidence-based intervention. It would appear that the impact on CHD of a reduction in low-density lipoprotein cholesterol is linear and therefore the debate is more what degree of cholesterol lowering is achievable and cost-effective with available agents in our primary care population.

Heart failure

Having diabetes for a long duration is an independent risk factor for heart failure. It is thought that sustained hyperglycaemia has a direct detrimental effect on the myocardium, leading to a form of diabetic cardiomyopathy. A large study showed that each 10.9 mmol/mol (1 percentage point) increase in HbA$_{1c}$ level was associated with an 8% increased risk of heart failure (Iribarren et al, 2001). Unfortunately, intensive glycaemic control does not seem to reduce the risk of heart failure. Part of the controversy around heart failure has been the impact of the thiazolidinediones, and, to a lesser extent, insulin, on this risk, which remains controversial (Castagno et al, 2011).

Cardiac arrhythmias

Diabetes mellitus is associated with an increased risk of atrial fibrillation although the mechanisms that may underpin this relationship are not clear (Huxley et al, 2012). There is a linear association between HbA$_{1c}$ and the risk of atrial fibrillation (AF) in those with and without diabetes. AF features in QOF, in which it is recognised as an important modifiable risk factor (BMA and NHS Employers, 2011). Healthcare professionals should actively seek arrhythmias in people with diabetes, especially if diabetes has been present for some time. Risk assessment tools such as CHADS$_2$ already take diabetes into account and help decision-making on which antithrombolytic therapy to use. (Odum et al, 2012)

Aspirin

The role for aspirin therapy in the prevention of coronary artery disease in people with diabetes remains controversial. We know from studies that aspirin did not significantly reduce the risk of cardiovascular events in people who do not have pre-existing cardiovascular disease (De Berardis et al, 2009). Two ongoing studies

(ASCEND [A Study of Cardiovascular Events in Diabetes] and ACCEPT-D [Aspirin and Simvastatin Combination for Cardiovascular Events Prevention Trial in Diabetes]) may further elucidate this.

Conclusion

Having diabetes has a detrimental effect on the heart. Both males and females need to have their cardiovascular risk actively assessed and risk reduction pursued aggressively. Healthcare professionals helping people with diabetes of some years' duration should be aware of the increased risks from both heart failure and AF. Fortunately for our patients, we know from the Steno 2 study that multiple risk factor intervention can be very impactful on improving cardiovascular outcomes (Gaede et al, 2008). ■

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