Cardio DIGEST
The easy way to stay up to date with developments in cardiovascular care

Editorial

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Cardiovascular disease in people with type 1 diabetes

Epidemiological data (Diabetes Control and Complications Trial [DCCT] Research Group, 1993) have clearly demonstrated a strong association between hyperglycaemia and the occurrence of retinopathy, nephropathy and neuropathy in people with type 1 diabetes. The DCCT/Epidemiology of Diabetes Interventions and Complications (EDIC) study has established a causal relationship between hyperglycaemia and development and progression of microvascular complications (Nathan et al, 2005). In relation to cardiovascular disease, this condition is certainly more prevalent in people with type 1 diabetes or type 2 diabetes than in people without diabetes. It has been reported that people with type 1 diabetes have a ten-fold increase in cardiovascular disease risk, compared with age-matched people without diabetes (Lehto et al, 1999; Orchard et al, 2003).

In the past, associations between hyperglycaemia and cardiovascular disease in people with type 1 diabetes have been suggested by some (e.g. Laing et al, 2003), but not all, studies. Additionally, controlled prospective clinical trials in people with type 1 diabetes (DCCT Research Group, 1993) or type 2 diabetes (UK Prospective Diabetes Study Group, 1998) have not demonstrated a reduction in the incidence of cardiovascular events with long-term intensive glycaemic therapy.

Nevertheless, during the DCCT fewer cardiovascular events were noted in the intensively treated group than in the conventionally treated group, but the number of events was small in the group of young people evaluated. Consequently, longer-term follow-up data were assessed in the DCCT/EDIC cohort to evaluate whether intensive glycaemic therapy reduces the risk of cardiovascular events in people with type 1 diabetes (Nathan et al, 2005).

The study revealed 47 cardiovascular disease events in 31 people in the intensively treated group, compared with 98 events in 52 people who received conventional treatment. The authors suggested that intensive treatment reduces the risk of any cardiovascular disease event by 42 %, and the risk of non-fatal myocardial infarction, stroke or death from cardiovascular disease by 57 %. The authors further suggested that the positive effects on the risk of cardiovascular events were directly related to the reduction in HbA_{1c} levels. The consistency of the effect of improved glycaemic control was further strengthened by the finding of an increasing cardiovascular risk with microalbuminuria and albuminuria.

The study demonstrated that 6.5 years of intensive therapy produced long-term reduction in cardiovascular events in type 1 diabetes. The level of reduction of risk related to the improvement in glycaemic control is greater than that expected with improved blood pressure or cholesterol alone. However, the combination of three therapies, with the aim of reducing HbA_{1c}, 'elevated' blood pressure (especially in the presence of microalbuminuria) and cholesterol levels, should result in major improvements in cardiovascular disease in type 1 diabetes. Such evidence should also stimulate discussion about when cholesterol-lowering therapy should be initiated in people with type 1 diabetes.

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