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Cardiovascular disease and diabetic control in type 1 diabetes

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TITLE Intensive Diabetes Treatment and Cardiovascular Disease in Patients with Type 1 Diabetes

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LIST OF ABBREVIATIONS Diabetes Control and Complications Trial (DCCT), diabetes mellitus type 1 (DM 1), Epidemiology of Diabetes Interventions and Complications Study (EDIC)

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SUMMARY

In the landmark DCCT published in 1993, 1,441 patients with DM 1 were assigned to either conventional or intensive diabetes treatment over a mean period of 6·5 years. In this study, a causal role of hyperglycaemia was established in the development and progression of microvascular complications (retinopathy, neuropathy and nephropathy). Such a benefit was, however, not documented with statistical significance for macrovascular disease, probably due to the small number of events reported. An impressive 97% of the DCCT patients have been subsequently followed up in the EDIC study, and the findings, with regard to cardiovascular events, recently appeared in the present paper. In this study, in the cohort given intensive therapy, the risk of any cardiovascular event was reduced by 42%, and that of non-fatal myocardial infarction, stroke or cardiovascular death, by 57% (in both cases p=0·02). The observed benefit was observed despite a deterioration of the improved HbA1c levels achieved in the intensive group during the DCCT phase. Microalbuminuria and albuminuria were linked significantly with cardiovascular disease and were higher following the DCCT phase in the conventional treatment group. However, the between-group cardiovascular differences persisted after adjusting for their effect.

OPINION

The Diabetes Control and Complications Trial and its subsequent extension EDIC constitute the most important investigation into complications of DM 1 yet published. The combined study provides invaluable data from two large cohorts of diabetic patients who, at baseline, were well-matched for microvascular changes, hypertension and dyslipidaemia with no evidence of initial overt cardiovascular disease. The careful study design makes it unlikely that any bias would explain the observed advantages of inclusion in the intensive treatment group. Any cardiovascular protection from the documented increased use of Beta-blocker therapy in the conventional treatment group would tend to *reduce* the benefit observed.

The Diabetes Control and Complications Trial and the Epidemiology of Diabetes Interventions and Complications Study thus provide strong evidence for a macrovascular disease benefit conferred by an initial 6·5 years of improved blood glucose control. This benefit is in addition to the microvascular protection previously reported from the same DCCT/EDIC study group. Although the molecular mechanism is at present uncertain, it does suggest strongly that perfect control in newly diagnosed DM 1, and, furthermore, a lifetime of immaculate control, must remain our presently unobtainable objective in type 1 diabetes.