Age and diabetes duration linked to risk of death and macrovascular complications

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New research published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) shows that age (or age at diagnosis) and duration of diabetes disease are linked to the risk of death and marcovascular complications (those in larger blood vessels), whereas only diabetes duration is linked to the risk of microvascular complications (in smaller blood vessels such as those in the eyes).

This means younger people with diabetes are more at risk of microvascular complications since they are more likely to have diabetes for longer over their lifetimes than those diagnosed at an older age, and should be targeted for more intensive interventions to help control their blood sugar. The research is by Associate Professor Sophia Zoungas, The George Institute for Global Health, University of Sydney, NSW, Australia, and Professor Simon Heller, University of Sheffield, UK, and colleagues.

Data are inconsistent regarding the associations between age, age at diagnosis of diabetes, diabetes duration and subsequent vascular complications. To investigate this, the authors conducted a study involving participants of Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Re-lease Controlled Evaluation (ADVANCE) trial (published in *The Lancet* in 2007 and the *New England Journal of Medicine* in 2008), with its cohort described by the authors as being generally representative of people with diabetes in developed countries such as Australia, New Zealand, China and nations of Europe, and also including China, a developing country. The

associations between age (or age at diagnosis), diabetes duration and major macrovascular events, all-cause death and major microvascular events were examined in 11,140 patients with type 2 diabetes randomly allocated to intensive or standard glucose control in this study.

The researchers found that the mean age of participants was 66 years, age at diagnosis was 59 years and diabetes duration was 8 years. For each 5 year increase in age (or age at diagnosis), the multiple adjusted risks of macrovascular events and all-cause death were increased by 33% and 56%, respectively. For each 5 year increase in duration of diabetes, the risks of macrovascular events and all-cause death were increased by 13% and 15%, respectively, when accounting for age, or increased by 49% and 78%, respectively, when accounting for age at diagnosis. The authors explain that this difference is due to the fact that age has a much greater effect than age at diagnosis on the risk of cardiovascular events and death. "Thus the impact of duration of diabetes on these risks is less if we account for age as compared to age at diagnosis of diabetes," they say.

With regard to microvascular complications, the authors say that "a refocus towards intensive management of hyperglycaemia at diagnosis, particularly in younger people, may be warranted if the long-term risk of microvascular complications is to be minimised. With the increasing number of non-pharmacological and pharmacological approaches to improve glycaemic control this objective should be achievable."

They add: "With respect to macrovascular complications, our findings from patients with type 2 diabetes indicate that effective prevention requires vigilance at all stages of the disease and across all age groups. However, as the absolute event rates were highest in the older age groups, surveillance for macrovascular complications should be intensified with increasing age."

They conclude: "In patients with type 2 diabetes, age or age at diagnosis of diabetes and diabetes duration are independently associated with the risk of macrovascular complications and death. By contrast, only diabetes duration is independently associated with the risk of microvascular complications, and the effects of diabetes duration are greatest at younger rather than older ages. Intensive glycaemic control of young people diagnosed with type 2 diabetes is warranted early to minimise the risk of microvascular complications."

Provided by Diabetologia