

CLAHRCBITE

Brokering innovation through evidence

Hypoglycaemia and cardiac arrhythmia risk in individuals with diabetes



Results

Hypoglycaemia is associated with significant QTc interval prolongation compared to euglycaemia ($p=0.001$).

Hypoglycaemia triggers a reduction in heart rate variability.

Who needs to know?

Physicians prescribing anti-hyperglycaemic agents should consider hypoglycaemia risk, particularly amongst those with heightened cardiovascular risk.

What did we do:

We conducted a systematic review of studies contained within the electronic databases Medline, Embase, Scopus, Web of Science and Cochrane which explored ECG changes in individuals with type 1 (T1DM) and 2 diabetes (T2DM) and compared them between periods of hypoglycaemia and euglycaemia. Random effects meta-analysis was undertaken on 15 studies which compared QTc interval length between the aforementioned glycaemic periods.

What we found and what does this mean:

Hypoglycaemia triggers acute ECG alterations in individuals with diabetes which may increase an individual's vulnerability to arrhythmic events, leading to subsequent cardiovascular morbidity and mortality. These findings may explain detrimental cardiac outcomes in intensively controlled patients who are at greater risk of hypoglycaemia.

What next:

Considerably less research has been conducted in T2DM. As T2DM is strongly associated with ischaemic heart disease, particularly among individuals of advancing age and disease duration, more research within this cohort is warranted. Additional studies that explore the impact of confounders e.g. exercise, ethnicity, rate of blood glucose descent leading to hypoglycaemia, and the impact of medications known to affect heart rate and rhythm would further benefit our understanding.

Evidence:

Fitzpatrick C, Chatterjee S, Seidu S, Bodicoat DH, Ng GA, Davies MJ, et al. Association of hypoglycaemia and risk of cardiac arrhythmia in patients with diabetes mellitus: A systematic review and meta-analysis. *Diabetes Obes Metab.* 2018. <http://dx.doi.org/10.1111/dom.13348>

What is NIHR CLAHRC EM?

NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) are collaborations between the NHS, universities and local organisations. Our goals are to conduct applied health research across the East Midlands and translate our research findings into improved outcomes for the public.

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