Keeping abreast of the latest diabetes research: Glycaemic control, hypoglycaemia, combination therapy and inpatient care

Too busy to keep up to date with the latest research? In this series, Erwin Castro, a Diabetes Specialist Nurse in Hastings, selects the latest papers of interest to diabetes nurses.

ACCORD follow-up: Retinopathy results

ACCORDION Eye Study Group (2016) *Diabetes Care* **39**: 1089–100

The ACCORD (Action to Control Cardiovascular Risk in Diabetes) study randomised people with type 2 diabetes to intensive or standard treatment for glycaemia, systolic blood pressure and dyslipidaemia, demonstrating that intensive glycaemic control and fenofibrate treatment both reduced retinopathy progression. In this follow-up study, participants who had undergone eye examinations and fundus photography (n=1310) were re-examined 4 years after the end of ACCORD.

Previous intensive glycaemic control continued to reduce diabetic retinopathy progression (adjusted odds ratio, 0.42, 95% confidence interval, 0.28–0.63; P<0.001). The previously observed benefit of fenofibrate, however, did not persist over the long term, and intensive blood pressure control had no effect.

Sulfonylureas and hypoglycaemia risk in relation to renal function

Van Dalem J et al (2016) *BMJ* **354**: i3625

This was a population-based cohort study using data from general practices in England. In total, 120 803 people with at least one new prescription for a non-insulin antidiabetes agent were included. Participants were followed from the first prescription until a record of hypoglycaemia, a blood glucose level of less than 3.0 mmol/L or the end of data collection. The associations between renal impairment, different sulfonylureas and risk of hypoglycaemia were determined using Cox proportional hazard models.

Hypoglycaemia risk was significantly increased in sulfonylurea users compared with metformin users (adjusted hazard ratio [HR], 3.30; 95% confidence interval [CI], 2.94–3.69), and this risk was particularly pronounced in those with severe renal impairment (HR, 4.96; 95% CI, 3.76–6.55). An increased risk of hypoglycaemic events was observed with use of all sulfonylurea types. Limitations of this study include the inability to distinguish severe from mild hypoglycaemia and the inability to identify people with minor hypoglycaemic episodes that were corrected at home.

The study did not support advice from current guidelines suggesting that gliclazide is superior to other sulfonylureas in reducing hypoglycaemia risk.

Combination SGLT2 inhibitor and GLP-1 analogue treatment

Hayden J et al (2016) *Diabetes & Primary Care* **18**: 135–8

Sodium–glucose cotransporter 2 (SGLT2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists both improve glycaemic control and can lead to weight loss, so it would seem logical to use them in combination. These authors evaluated their clinical experience with this regimen.

In total, 85 people were prescribed a GLP-1 analogue (liraglutide or exenatide) and, subsequently, the SGLT2 inhibitor dapagliflozin. Dapagliflozin was used for between 3 and 18 months, and five people (8.5%) discontinued it during the study period.

The median HbA_{1c} fell from 77 mmol/mol (9.2%) at dapagliflozin initiation to 64 mmol/mol (8.0%) at 12 months. There were also non-significant reductions in blood pressure and weight. No significant changes in cholesterol, liver enzymes or kidney function were observed post-treatment. Adverse events included genital mycosis in nine people and volume depletion in four.

In conclusion, dapagliflozin in combination with liraglutide or exenatide led to significant reductions in HbA_{1c} in people with type 2 diabetes. This appears to be a promising therapy combination.

Fluid and electrolyte management in variable-rate insulin infusions

Rickard LJ et al (2016) *Practical Diabetes* **33**: 159–62

In this study, the authors sought to evaluate fluid and electrolyte management strategies, and to quantify serum electrolyte changes, in inpatients receiving variable-rate intravenous insulin infusions (VRIIIs). A total of 174 VRIIIs prescribed over a 10-week period were analysed retrospectively.

The results showed that 5% dextrose (46% of participants) and 0.9% sodium chloride (34%) were the most commonly prescribed fluids; 64% of fluids did not include potassium supplementation as recommended. VRIII administration resulted in a significant drop in serum potassium levels unless participants received supplemental potassium. Eleven subjects (6.4%) developed new-onset hypokalaemia (≤3.5 mmol/L) after implementation of a VRIII.

These findings suggest that VRIIIs cause hypokalaemia and that this can be averted by supplementing potassium. Implementation of the Joint British Diabetes Societies VRIII guidelines, increasing availability of recommended fluids and quality improvement projects may improve inpatient outcomes. ■