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SGLT2 INHIBITORS AND TYPE 1 DIABETES: A LOST CHANCE?

EMBARGOED UNTIL 12:01am Monday 25 July 2022

SODIUM–glucose cotransporter 2 (SGLT2) inhibitors, such as empagliflozin, dapagliflozin, canagliflozin and ertugliflozin, have been game changers in the treatment of type 2 diabetes, but their potential for closing the mortality gap in type 1 diabetes has been a regulatory minefield, according to the authors of a Perspective published today by the *Medical Journal of Australia*.

Dr Jennifer Snaith and Professor Jerry Greenfield, both from the Garvan Institute of Medical Research and St Vincent's Hospital Sydney, wrote that the metabolic benefits of SGLT2 inhibition in type 1 diabetes were demonstrated across three clinical trial programs, resulting in weight loss and improved glycated haemoglobin levels, without increased hypoglycaemia risk.

"Recognising these benefits, the European Medicines Agency (EMA) approved dapagliflozin 5 mg in March 2019 as an adjunct in the treatment of individuals with type 1 diabetes with overweight," they wrote.

However, the Food and Drug Administration in the US did not follow suit, citing concerns about increased risk of diabetic ketoacidosis (DKA), a "serious diabetic emergency necessitating hospital management", even though clinical trials showed "DKA risk was dose-dependent and not evident in participants treated with very low doses of SGLT2 inhibitors".

"In light of the initial enthusiasm and safety of low dose SGLT2 inhibitors in type 1 diabetes, we and others were concerned to learn that the EMA's approval was abruptly reversed in October 2021," wrote Snaith and Greenfield.

"The diabetes community was reassured that this decision did not relate to safety in type 1 diabetes, but rather to manage confusion on product information interpretation of DKA risk in type 1 diabetes versus other populations, reflecting instead a possible commercial decision."

Problems inherent in type 1 diabetes research, including lower disease prevalence relative to type 2 diabetes, the need for large sample sizes across long time periods, the requirement to enrol participants with high cardiovascular risk or established cardiovascular disease, mean conducting large trials about medications that address cardiovascular risk is challenging.

"In light of the compelling and robust evidence for cardiorenal protection in type 2 diabetes, the absence of very large randomised controlled trials is an insufficient reason to exclude the use of SGLT2 inhibitors for metabolic benefit in type 1 diabetes," wrote Snaith and Greenfield.

"In our experience, off-label prescription of SGLT2 inhibitors is prevalent in Australia and is likely to continue.

"We envisage that a personalised approach based on assessment of cardiovascular risk is the future of type 1 diabetes management.

"Without backing from both industry and regulators and a creative approach to research development and resource consumption, this ground-breaking drug class will remain a lost opportunity to close the mortality gap in type 1 diabetes.

"We feel that solving this predicament is a very worthy investment," Snaith and Greenfield concluded.

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