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Sodium glucose co-transporter-2 inhibitor: Patient safety and clinical importance

Sir,

The article by Raut and Maheshwari^[1] is indeed interesting. However, the suggestion made by the authors on the usefulness of empagliflozin in diabetic perioperative patients needs contemplation from the point of patient safety and risk factors, as it causes euglycaemic diabetic ketoacidosis. Moreover, in May 2015, the Food and Drug Administration issued a warning of ketoacidosis with the use of sodium glucose co-transporter 2 (SGLT-2) inhibitors.^[2] In addition, the mechanisms involved in the development of ketoacidosis and the risk factors for its occurrence among the susceptible cases on SGLT-2 inhibitors are described.

Anaesthesia and surgery cause stereotypical metabolic stress which provokes the release of the catabolic hormones such as epinephrine, norepinephrine, cortisol, glucagon and growth hormone. Catecholamines enhance gluconeogenesis and glycogenolysis, but inhibit glucose utilisation and insulin secretion.^[3] In this perioperative scenario, the use of SGLT-2 inhibitors lowers blood glucose by increasing urinary excretion of glucose. Thus, a fall in blood glucose further decreases insulin secretion. This in turn leads to an increase in glucagon-to-insulin ratio. The net result is the stimulation of ketogenesis pathway and an increase in serum ketones, which predispose the body to ketoacidosis at least in some subset of the population on SGLT-2 inhibitors.^[4]

Although not all patients on SGLT-2 inhibitors develop ketonaemia, one has to recall several risk factors that contribute to the development of ketoacidosis such as decrease in insulin secretory capacity, relative insulin deficiency, hypoxaemia, starvation, dehydration, hypovolaemia, acute illness, pregnancy, alcohol

intake, acute renal impairment, surgery or decrease in carbohydrate intake, which is further worsened by decrease in the renal clearance of ketone bodies.^[5]

From the point of patient safety, the clinicians should be aware of this side effect of the newer drug class for diabetics and search for risk factors before prescribing the molecule as well as consider ketoacidosis in those on SGLT-2 inhibitors.

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Conflicts of interest

There are no conflicts of interest.

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