THE ROLE OF SGLT-2 INHIBITORS IN THE DEVELOPMENT OF KETOACIDOSIS

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Background. Sodium-glucose cotransporter 2 (SGLT-2) inhibitors have become an integral part of type 2 diabetes management due to their proven efficacy in improving glycemic control, reducing body weight, and demonstrating cardiovascular and renal protective benefits. Despite these advantages, accumulating clinical data suggest an increased risk of diabetic ketoacidosis (DKA), including the atypical euglycemic form, which poses diagnostic and therapeutic challenges.

Aim. To analyze the pathophysiological mechanisms, clinical characteristics, and risk factors of SGLT-2 inhibitor–associated ketoacidosis, and to evaluate its significance in modern diabetes therapy.

Methods. A comprehensive literature review was conducted using PubMed, Scopus, and Web of Science databases (2015–2025). Randomized controlled trials, systematic reviews, meta-analyses, and clinical case reports addressing the incidence, mechanisms, and outcomes of DKA in patients treated with SGLT-2 inhibitors were analyzed.

Results. Evidence indicates that SGLT-2 inhibitor–associated DKA is rare, with an incidence of approximately 0.1–0.3 cases per 1000 patient-years. The principal mechanism involves increased ketogenesis driven by relative insulin deficiency, enhanced glucagon secretion, and accelerated lipolysis. A hallmark feature is the absence of severe hyperglycemia, with blood glucose levels typically ranging between 8 and 14 mmol/L, often delaying diagnosis. Identified risk factors include low-carbohydrate diets, prolonged fasting, infections, surgical stress, and insulin dose reduction. Despite its low frequency, the condition carries a high risk of morbidity and mortality if unrecognized.

Conclusion. SGLT-2 inhibitors play a dual role in diabetes care: while they significantly improve prognosis through metabolic, cardiovascular, and renal benefits, they are also associated with the development of euglycemic ketoacidosis. Clinical vigilance, routine monitoring of ketone bodies, and patient education regarding early symptoms are crucial for safe use. Early recognition and preventive strategies are essential to maximize therapeutic benefits while minimizing risks.