

Critical Care Management of Diabetic Ketoacidosis Caused by Sodium-Glucose Co-Transporter 2 Inhibitor: A Case Report

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The sodium-glucose co-transporter 2 (SGLT2) is selectively expressed in the kidney and responsible for the reabsorption of glucose from proximal renal tubules.^[1] The inhibition of this mechanism leads to increased glycosuria and decreased plasma glucose levels while the patient remains relatively euglycemic.^[2] SGLT2 inhibitors were approved in 2013 by the Food and Drug Administration for the treatment of Type 2 Diabetes Mellitus (T2DM). However, the drug safety warning has been published about the risk of euglycemic Diabetic Ketoacidosis related to this group of drugs in 2015.^[3] We reported our first case of euglycemic diabetic ketoacidosis complicated by an acute abdomen in the setting of SGLT2 inhibitor use.

A 53-year-old male patient admitted to the Emergency Department with complaints of severe abdominal pain, nausea and vomiting. Medical history included T2DM managed with oral antidiabetics (Sitagliptin Metformin HCL and Glipizide) combined with subcutaneous insulin therapy. A SGLT2 inhibitor (Empagliflozin) was prescribed because of the refusal of the insulin injections about two weeks ago. There was rebound tenderness with decreasing the bowel sounds so; he was scheduled for emergency explorative laparotomy. Blood biochemistry showed the following: glucose, 200 mg/dL; creatinine, 1.33 mg/dL; leucocyte count, 23.000/mm³. Urinalysis showed the ketonuria and glucosuria. An arterial blood gas analysis showed the metabolic acidosis with pH: 7.01, pCO₂: 24 mmHg, pO₂: 57 mmHg, BE: -23.1 mmol/L, HCO₃: 7.8 mmol/L, Lactate: 4.2 mmol/dL, SatO₂: 77.9%. Sodium bicarbonate infusion was commenced throughout surgery but metabolic acidosis worsened. The patient was transferred to the intensive care unit (ICU) and mechanical ventilation was conducted. Diabetic ketoacidosis protocol was initiated and crystalloid therapy was administered to treat dehydration. His blood glucose levels remained between 200–250 mg/dL and renal function remained normal. Continuous venovenous renal replacement therapy was initiated to manage the metabolic acidosis for up to 55 hours. By the improvement of acidosis and respiratory parameters, sedation was discontinued to wean the patient. However, a sudden supraventricular tachycardia (200 beats/min) developed and treated with diltiazem. He was extubated on the 76hrs of his ICU admission. Electrolyte imbalance was corrected and he was discharged to the General Surgery Department on the 7th day.

The widespread use of SGLT 2 inhibitors is a clinical concern due to the contribution of this group of drugs with concomitant medications particularly other antihyperglycemic drugs, statins, and diuretics. Many clinicians are unaware of the guidelines limiting the use of SGLT2 inhibitors so; the initiation of these drugs may potentiate the adverse effects.^[4] The risks may accelerate especially in the elderly population.^[5] If the multidrug treatment in diabetic patients is concerned, the prescription of these new medications necessitates the long-term follow up. In case of unexpected adverse reactions, interdisciplinary approach is essential for the management of these patients.

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Conflict of Interest

None declared.

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