

## Letters to the Editor

### Role of empagliflozin in chronic lithium toxicity

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Regarding the Medicinal Mishap 'Chronic lithium toxicity', I wonder if the role that empagliflozin played in the patient's cascade of symptoms was considered.<sup>1</sup> Acidosis can occur in the setting of reduced oral intake or hypovolaemia. Interestingly, a case report<sup>2</sup> suggests that lithium concentrations may be reduced in patients taking empagliflozin, although there is no mention of this in the product information for empagliflozin.

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#### REFERENCE

1. Reimann F, Whyte I. Chronic lithium toxicity. *Aust Prescr* 2022;45:93-4. <https://doi.org/10.18773/austprescr.2022.024>
2. Armstrong GP. Empagliflozin-mediated lithium excretion: a case study and clinical applications. *Am J Case Rep* 2020;21:e923311. <https://doi.org/10.12659/ajcr.923311>

*Ian Whyte and Frank Reimann, the authors of the article, comment:*

 Thank you for your question about the role empagliflozin may have played in our patient's cascade of symptoms.

While the patient's diarrhoea and neurological findings could not be related to empagliflozin, the biochemical abnormalities were consistent with euglycaemic ketoacidosis.<sup>1</sup> Empagliflozin can produce this complication in the presence of

physiological stress.<sup>2</sup> However, the patient's blood ketone concentrations were only mildly raised, and the large anion gap was better explained by renal failure. Further, the abnormalities had normalised by 48 hours without administration of insulin or glucose solutions.

The case report highlights a potential role of empagliflozin in facilitating lithium excretion.<sup>3</sup> Although sodium-glucose co-transporter 2 (SGLT2) inhibitors can acutely increase lithium renal clearance by decreasing proximal sodium reabsorption, the effect is transient and, within a month, compensated for by a rise in plasma renin activity and aldosterone.<sup>4</sup> This makes it unlikely that the patient's long-term empagliflozin was affecting his lithium clearance. Additionally, for SGLT2 inhibitors to exert an effect on the renal tubule, sufficient kidney function would have been required.

In the context of acute illness and severe kidney injury, most of the patient's regular medicines could have caused mishaps and required sick-day plans.

#### REFERENCES

1. Reimann F, Whyte I. Chronic lithium toxicity. *Aust Prescr* 2022;45:33-4. <https://doi.org/10.18773/austprescr.2022.024>
2. Kerridge R, Whyte I, Prior F, Luu J, Story DA. The good, the bad, and the ugly: sodium-glucose cotransporter-2 inhibitors (gliflozins) and perioperative diabetes. *Anaesth Intensive Care* 2018;46:155-8. <https://doi.org/10.1177/0310057x1804600202>
3. Armstrong GP. Empagliflozin-mediated lithium excretion: a case study and clinical applications. *Am J Case Rep* 2020;21:e923311. <https://doi.org/10.12659/ajcr.923311>
4. Zanchi A, Burnier M, Muller ME, Ghajarzadeh-Wurzner A, Maillard M, Loncle N, et al. Acute and chronic effects of SGLT2 inhibitor empagliflozin on renal oxygenation and blood pressure control in nondiabetic normotensive subjects: a randomized, placebo-controlled trial. *J Am Heart Assoc* 2020;9:e016173. <https://doi.org/10.1161/jaha.119.016173>



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