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## Severe hypernatraemic dehydration in a care-dependent inpatient receiving SGLT2 inhibitor therapy with empagliflozin: A case report

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**Background:** Inhibitors of sodium-glucose cotransporter 2 (SGLT2) have become an important treatment option for effective management of type 2 diabetes mellitus. Common side-effects of SGLT2 inhibitors include glucosuria-associated genital and urinary tract infections. Glucosuria induced osmotic diuresis, however, may contribute to critical dehydration, particularly in patients who are unable to autonomously regulate their fluid intake. Yet, patient populations susceptible to volume depletion upon exposure to SGLT2 inhibitor therapy are poorly characterised by recent literature. We present a case of severe hypernatraemic dehydration following sustained iatrogenic glucosuria in a 66-year-old care-dependent inpatient with stroke receiving add-on antihyperglycaemic therapy with empagliflozin.

**Case presentation:** At admission the patient was unconscious, febrile (38.5°C) and appeared severely dehydrated. Initial studies showed a blood sodium level of 164mmol/l, acute kidney failure and a urine glucose level of 3335mg/dl. Diagnostic work-up finally revealed that treatment with empagliflozin (10mg q.d.) had been recently initiated to improve glycaemic control. Upon cessation of empagliflozin exposure and administration of hypotonic fluids blood sodium levels slowly decreased over following days, fever resolved, renal function recovered, and the patient regained full consciousness. He was able to begin rehabilitative therapy and was discharged forty days after admission. In this care-dependent inpatient with poorly controlled glycaemia, who lost the ability to replace water losses autonomously because of stroke, continuous administration of empagliflozin caused persistent glucosuria and contributed to sustained volume depletion. Excessive dehydration resulted from ignorance of both at-risk populations susceptible to dehydration under SGLT2 inhibitor therapy and the drug's mechanisms of action, and the consequent failure to continuously monitor the patient's volume status.

**Conclusions:** This report aims to raise awareness for glucosuria-associated dehydration as potentially serious complication of SGLT2 inhibitor therapy in susceptible patients who are unable to regulate water losses autonomously. This may include bedridden and care-dependent patients who depend on others support in daily tasks including fluid intake, patients with an impaired sense of thirst or those who lost the ability to adequately communicate thirst. Sufficient hydration and careful monitoring of clinical volume status are of particular importance in those patients

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