Management of Metformin-Associated Lactic Acidosis with SLED

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Introduction

Metformin is widely considered a first-line medication for the management of Type 2 Diabetes Mellitus (T2DM) [1]. Metformin associated lactic acidosis (MALA) remains rare, but potentially fatal condition. Metformin toxicity is driven by suppression of hepatic gluconeogenesis, and interference with oxidative phosphorylation, resulting in the formation of lactate from pyruvate [2]. Metformin toxicity is typically noted at serum levels >5 mcg/mL (therapeutic range 1-2 mcg/mL). Recent evidence recommends prolonged hemodialysis or CVHDF to remove metformin serum levels in patients with hemodynamic instability [3-5]. The following case series describes the management of MALA with Sustained Low Efficiency Dialysis (SLED) [6,7].

Clinical Image

A 72 year old female with a history of RCC s/p nephrectomy, CKD, and T2DM sought treatment after five days of anorexia, vomiting, and diarrhea. Patient continued taking metformin and lisinopril. Physical exam was notable for somnolence and hypotension (90/60 mmHg). Labs notable for the following: Na 130, K 6.8, HCO₃ 10.5, Cr 9.2 (baseline 1.2), lactate 10.3, and pH 7.07. There was no objective data to support sepsis, ischemic bowel, or other acute process. Patient was admitted to the ICU and 8 hour SLED treatment was completed due to marginal blood pressures. Her metabolic acidosis, somnolence, and hypotension rapidly corrected.

A 67 year old male with a history of CAD and T2DM sought treatment after 3 days of vomiting, malaise, anorexia, and oliguria. Patient continued metformin, lisinopril, hydrochlorothiazide, and furosemide. Blood pressure was 180/77 with otherwise unremarkable exam. Labs at presentation: Na 123, K 6.2, HCO₃ 15, Cr 9.8 (baseline of 0.8), lactate 6.6, and pH 7.244. The patient was admitted to the ICU and SLED was initiated with rapid correction in lactic acidosis. SLED was used due to significant hyponatremia [6]. Metformin level dropped 8 mcg/mL to 3 mcg/mL following SLED treatment [7].

Discussion

SLED is becoming a commonly utilized dialysis modality for critically ill patients, given its perceived safety; efficacy and convenience in patients. To date, there are very few case reports utilizing SLED in the treatment of MALA. These cases highlight an evolving role of SLED in the management of MALA in critically ill patients.

References