Bactrim, Spironolactone and Lisinopril. Stay Away! A dangerous Cocktail for Hyperkalemia.

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Introduction

Hyperkalemia is a potentially life-threatening complication of several medications, particularly in clinical situations of polypharmacy. Trimethoprim/sulfamethoxazole (TMP-SMX) is a first line antibiotic for initial empiric therapy of uncomplicated urinary tract infections and for outpatient treatment of MRSA for skin and soft tissue infections, however trimethoprim (TMP) can enhance the hyperkalemic effects of spironolactone and Angiotensin receptor inhibitors (ACEI). We present a case of a 53-year-old female who presented to the Hospital with severe muscle weakness and ECG changes after coadministration spironolactone and TMP-SMX and lisinopril.

Case Presentation

A 53-year-old female with history of HTN, CKD stage 3B, CHF, hypercholesterolemia and DM II, chronic left foot ulcer presented to our local hospital with generalized malaise, severe lower extremity weakness and heaviness of 2 days duration. She normally uses a walker but over the last 2 days had noticed increasing difficulty standing from a seated position. Her medications included: spironolactone, carvedilol, lisinopril, amlodipine, aspirin, atorvastatin, and insulin and had been started on TMP-SMX for the management of a chronic ulcer with suspected right lower extremity cellulitis. On admission, her vital signs showed a blood pressure of 182/87 mm Hg, with normal pulse and body temperature, and a BMI of 52 kg/m^2. Physical exam revealed a morbidly obese female who appeared lethargic with dry oral mucous membranes. She had RRR, with 2+ pulses in all extremities. Her lungs were clear to auscultation bilaterally with non-labored breath sounds. Her musculoskeletal examination revealed normal ROM in all extremities with no deformities. On neurological examination, she was AOx3 with no focal neurological deficits observed. The laboratory results revealed hemoglobin of 9.7 g/dL and a hematocrit of 32.2%; significantly elevated potassium levels at 8.6 mmol/L; GFR of 31, creatinine: 1.79 mg/dL; cardiac studies showed normal troponin with elevated proBNP of 1502 pg/ml. EKG revealed tall, peaked T-waves with widened QRS complexes in the precordial leads and a right BBB. Due to concern for medication induced hyperkalemia, TMP-SMX, spironolactone and lisinopril were discontinued. The patient was started on a continuous infusion of normal saline, calcium gluconate, insulin, albuterol and given kayexalate for management of hyperkalemia. On consultation with the nephrologist, dialysis was not advised. The patient improved rapidly over the next 3 days without complications with resolution of the ECG changes, improved muscle strength and a resolved potassium level by the time of discharge.

Conclusion

More than 20 million prescriptions of TMP-SMX are written annually and the likelihood of concomitant prescription is high, clinicians and pharmacists should be aware of the enhanced hyperkalemic effects of TMP-SMX, spironolactone and lisinopril and should avoid this combination. In one study patients taking spironolactone and TMP-SMX increased the odds of sudden death and should be of special concern for patients with other risks factors for hyperkalemia including advanced age, chronic renal disease and use of other drugs which can also cause hyperkalemia a was the case for our patient.

Reference

1. Antoniou T, Hollands S, Macdonald EM, Gomes T, Mamdani MM, Juurlink DN; Canadian Drug Safety and Effectiveness Research Network. Trimethoprim-sulfamethoxazole and risk of sudden death among patients taking spironolactone. CMAJ. 2015 Mar 3;187(4): E138-E143. doi: 10.1503/cmaj.140816. Epub 2015 Feb 2. PMID: 25646289; PMCID: PMC4347789.