Introduction

Aripiprazole (Abilify) is an antipsychotic known to cause neuroleptic malignant syndrome (NMS). NMS has also been associated with hyperosmolar hyperglycemic nonketotic syndrome (HHNS). The triad of NMS, HHNS, and the use of Aripiprazole has not been previously reported. We present the use of Dantrium for the management of a patient who presented with HHNS and NMS while using Aripiprazole.

Case Discussion

- 14 year old male with ADHD and Autism on long-term Aripiprazole (Abilify) and Vyvanase (lisdexamfetamine dimesylate).
- Presented with polyuria, abdominal pain, and vomiting
- Initially discharged after rehydration and stabilization
- Decompensated at home and admitted that evening with a BG > 1000 mg/dl, hypernatremia (150 mEq/l), and altered mental status
- Admitted with HHNS and started on insulin and fluid management
- Overnight, developed unresponsive hyperpyrexia to 40.6 C
- Intubated for altered mental status
- Initial creatine kinase (CK) at 4,454 IU/L, quickly rose to 19,000 IU/L
- NMS secondary to Aripiprazole and HHNS was diagnosed based on continued hyperthermia, rhabdomyolysis and respiratory and metabolic acidosis (ABG pH 7.06, pCO2 50, pO2 136, HCO3 16)
- Treated with 2.5 mg/kg bolus of Dantrolene (600 mL) followed by 1mg/kg every 6 hours for 24 hours
- Temperatures and ABG's improved, while CK continued to rise
- On day 7, repeat hyperpyrexia with a CK peak of 339,000 IU/L
- Renal function deteriorated with BUN/Cr of 66/3.1
- 24 hours of dantrolene treatment was resumed, CK trended down
- Started on Continuous Renal Replacement Therapy (CRRT) with slow recovery of his renal function
- Extubated after 18 days and recovered to baseline mental status

Dantrolene Sodium

- Used for management of MH, NMS, spasticity, and Serotonin Syndrome
- Dantrolene is a hydantoin derivative that directly interferes with muscle contraction by inhibiting calcium ion release from the sarcoplasmic reticulum, possibly by binding to the RyR1 receptor
- Initial recommended dose is 2.5 mg/kg, repeated every 5 minutes until reversal of the reaction occurs or a total dose of 10 mg/kg
- 20 mg vial should be reconstituted in 60 ml of sterile water
- One vial of lyophilized powder contains sodium hydroxide (pH 9-10) and mannitol with half life of 6-10 hours
- Interactions with calcium channel blockers, benzodiazepines, neuromuscular blockers, and oral contraceptives

Discussion

This patient likely had NMS secondary to Aripiprazole, as well as the stress of HHNS. Both episodes of hyperpyrexia responded to treatment of Dantrolene with improvement of hypermetabolism as evidenced by improvement in arterial and venous CO2, although elevation in CK led to the need for dialysis. It may have been prudent to continue the initial Dantrolene treatment as he had a second episode of hyperpyrexia and continued elevation of his CK. A newer formulation of dantrolene (Ryanodex) may have simplified treatment in this patient with renal failure since large volumes are required for Dantrolene administration.

References


Use of Dantrium (dantrolene sodium) in the Treatment of Neuroleptic Malignant Syndrome Associated with Aripiprazole (Abilify) in a Patient Presenting with Hyperosmolar Hyperglycemic Nonketotic Syndrome

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