INTRODUCTION

Creatine kinase (CK) is an enzyme that exists predominantly in skeletal muscle, and is increased after surgery due to muscle damage by physical or biochemical injury. An increase in CK could also be due to the administration of succinylcholine to relax a patient during surgery (1).

CASE

Our patient is a 12-year-old, 70 kg male, African American male with no significant past medical history presenting for tonsillectomy and adenoidectomy due to mild OSA.

Anesthesia was induced with sevoflurane and supplemented with 100 mcg propofol, 50 mcg fentanyl, and 80 mg succinylcholine. Through the course of the anesthetic, the patient also received ampicillin, dexamethasone, morphine, and dexametomidine.

He presented to the emergency department on POD 2 complaining of generalized muscle pain and weakness. He also complained of leg pain and numbness after surgery that was improving. He was unable to lift his arms above his head and stated that he felt as if he was “hit with a baseball bat everywhere.”

UA was within normal levels.

DISCUSSION

Creatine Kinase exists predominantly in skeletal muscle (CK-MM), but different isoforms also exist in the neurological system (CK-BB) and cardiovascular system (CK-MB). It is useful in detecting damage to muscle tissue. The function of CK is to catalyze the reaction which converts creatine to phosphocreatine and adenosine diphosphate while utilizing adenosine triphosphate.

Succinylcholine is a depolarizing muscle relaxant that is associated with muscle fasciculations, soreness, elevated CK levels, rhabdomyolysis, and malignant hyperthermia. Administration of succinylcholine to facilitate endotracheal intubation is very common due to its rapid onset and short duration of action. After administration there is a transient stimulation of muscle fibers that leads to contractions and release of CK from these fibers. Typically the increase is transient and typically normalizes, but it has been known to peak around day 1 with a return to baseline within five days (2). Studies have shown that pretreatment with rocuronium is effective in reducing the rise of serum CK and myoglobin if succinylcholine is to be administered for muscle relaxation (3).

An initial rise in CK greater than expected should encourage a clinician to think of an underlying neuromuscular disease and to pursue a full neuromuscular workup and muscle biopsy before any future anesthetics. Unfortunately, our patient did not desire further workup of any possible underlying muscle disorder.

REFERENCES