[GA2-63] Suspected case of Malignant Hyperthermia during resection of a sacrococcygeal teratoma.

Banoub R, Sebastian R
Nationwide Children's Hospital , Columbus , OH, USA

Malignant hyperthermia (MH) is an inherited disorder of skeletal muscle characterized by a hypermetabolic crisis when a susceptible individual receives a halogenated inhalational anesthetic agent or a depolarizing muscle relaxant. In MH susceptible individuals, exposure to these agents leads to accumulation of excessive intracellular calcium and this leads a hypermetabolic state in the skeletal muscles. MH is inherited as an autosomal dominant disease with variable penetrance or may also arise de novo.

Case Report: We report a 37 weeks newborn female with prenatal diagnosis of large sacrococcygeal teratoma measuring 14x15 cm scheduled for surgical tumor excision. She was delivered by cesarean section, and follow up MRI demonstrated intraspinal extension of the teratoma up to T4, and posterior fossa arachnoid cyst. The surgery was scheduled on day of life 5. Patient arrived intubated to the operating room, full monitoring was established and anesthesia was induced with inhaled sevoflurane and bolus of fentanyl and maintained with sevoflurane and intermittent boluses of fentanyl. The first 4 hours of the procedure was uneventful with stable hemodynamic parameters. During drain placement and defect closure, her heart rate gradually increased reaching 235 bpm with stable blood pressure, followed by hypercapnea with end-tidal CO2 of 80 mmHg and elevated temperature of 38.6° C. Patient was treated with adenosine for diagnosis and treatment of tachycardia with no change in heart rate. Malignant hyperthermia (MH) was suspected, MH protocol was initiated, sevoflurane was discontinued, patient exposed, cooled with ice packs, hyperventilation was started and 2 doses of dantrolene 2.5mg/kg was administered. Within 20 minutes of treatment, both the heart rate and temperature decreased to base line values. Initial arterial blood gases revealed profound metabolic acidosis, which subsequently resolved on repeat testing. MH helpline was contacted and multiple blood samples sent for Creatine Phosphokinase (CPK). Follow up on CPK levels were 165u/l,109u/l,113 u/land 112u/l at 0, 6, 12 and 24 hours respectively.

Discussion: There have been several case reports of malignant hyperthermia in infants, however in majority of these cases the patients either did not undergo in vitro contracture testing (IVCT) or the test was proven to be negative. Also, IVCT performed in children less than 10 years often proved to be inconsistent due to immature muscle cells. Pyrexia, supraventricular tachycardia and sudden onset hypercapnia led to a clinical evidence of MH in this case. Although a true incidence of MH in neonates has not been reported, survival from a malignant hyperthermia (MH) crisis is highly dependent on early recognition and prompt action and hence, treatment with dantrolene which is the cornerstone of successful MH treatment was instituted early. Although there has been no known association between sacrococcygeal teratoma and MH, the release of tumor necrosis factor or other mediators which have a thermogenic potential could explain the sudden onset of the symptoms seen. It is important that once a case of MH is suspected which resolved on stopping the trigger agents, the patient and their relatives should be further investigated whenever possible.
