[2006 CR22]

Case Report: Anesthetic Management of a 5-year old boy with thyrotoxicosis, egg allergy and a history of malignant hyperthermia

Author(s): Katz S, Klumpp S
Affiliation(s): University of Miami

Case Report: A five year-old boy (29.5 kg) with a medical history significant for hyperthyroidism and a documented allergy to eggs is scheduled to undergo a right thyroid lobectomy for a hypersecretory nodule. There was a history of postoperative respiratory difficulties and pyrexia, involving a stay in the ICU, following a procedure he had under GA in another hospital. No more details were available. He was scheduled to undergo a right thyroid lobectomy for hyperthyroidism having not completely responded to medical therapy. Propanolol had also been used to control tachycardia and hypertension.
He was premedicated with oral midazolam 15mg. The first set of vital signs revealed a blood pressure of 145/100 with a heart rate of 110. As he had not received his morning dose of propanolol so he was given labetalol 10mg IV prior to induction, with a good response. Anesthesia was induced with thiopental (5mg/kg) and sufentanil (1mcg/kg) and midazolam 2mg.Muscle relaxation was achieved with rocuronium (0.6mg/kg). Once his airway was secured, a ketamine infusion was started at 30mcg/kg/min with nitrous oxide (70%) and oxygen. A vapor free anesthesia machine was used. Upon completion of surgery, the ketamine infusion was discontinued and muscle relaxation was reversed with neostigmine (50 mcg/kg) and glycopyrrolate 10mcg/kg . Spontaneous ventilation returned and the patient was extubated uneventfully. He was then taken to the recovery room with oxygen in stable condition. He remained hemodynamically stable throughout the procedure.

Discussion: Although details were sketchy in the patient's history there was a suspicion of malignant hyperthermia (MH) susceptibility. We felt obliged to instigate a non-triggering anesthetic regime. This is compounded by the egg allergy preventing the use of a propofol based total intravenous (TIVA) anesthetic technique. Propofol contains soybean oil and also purified egg phosphatide extracted from the yolk. Patients with an egg allergy are usually allergic to egg albumin found in egg white[(1)] while reactions to propofol are mainly caused by the presence of a diisopropyl side chain or phenol group in the active ingredient[(2,3)]. However egg allergy remains a contraindication to the administration of Propofol supported by a case report of Propofol hypersensitivity in a patient with egg allergy[(4)].
We decided to use ketamine as the primary anesthetic because of its reliable anesthetic and analgesic properties. Ketamine is perhaps not the first choice for anesthesia in hyperthyroid patients as it can stimulate the sympathetic nervous system(SNS) and exacerbate hypertension and tachycardia. This may be an issue in a hyperthyroid patient with a propensity for SNS over activity. However as the boy now seemed adequately ß-blocked the anesthetic, analgesic properties of ketamine presented as a useful alternative to propofol for total intravenous anesthesia..

References:

1. Hofer K.N., et al., Ann Pharmacother, 2003
2. Laxenaire MC, Gueant JL, Bermejo E, Mouton C, Navez MT. Anaphylactic shock due to Propofol (letter). Lancet 1988;2:739-40.
3. De Leon-Casasola OA, Weiss A, Lema MJ. Anaphylaxis due to propfol. Anesthesiology 1992;77:384-6.
4. Bassett CW, Talusan-Canlas E, Holtzin L, Kumar S, Chiaramonte LT. Case report: and adverse reaction to Propofol in a patient with egg hypersensitivity (abstract). J Allergy Clin Immunology 1994; 93: 242