Accidental five fold overdose of propofol for induction in a 38-days-old infant undergoing emergency bilateral inguinal hernia repair

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ABSTRACT
The induction dose of propofol is higher in younger children (2.9 mg/kg for infants younger than 2 years) than in older children (2.2 mg/kg for children 6–12 years of age). A modest reduction in systolic blood pressure often accompanies bolus administration. The major concern with propofol is the potential for propofol infusion syndrome (lactic acidosis, rhabdomyolysis, cardiac and renal failure), which is generally associated with high-dose infusion for an extended period. We report a 38-days-old male infant underwent emergency bilateral inguinal hernia repair who accidentally received a five-fold dose of propofol for induction of general anesthesia.

Key words: Infant, overdose, propofol

INTRODUCTION
Propofol is the most frequently used intravenous anesthetic today. Children younger than 3 years show weight-proportional pharmacokinetic parameters, but with larger central compartment and systemic clearance values than in adults or older children. The induction dose of Propofol is higher in younger children (2.9 mg/kg for infants younger than two years) than in older children (2.2 mg/kg of children 6–12 years of age).[1]

CASE REPORT
A 38-days old male, weighing 3800 g, presented for bilateral inguinal hernia repair. After intravenous injection of 0.5 mg midazolam, awake caudal block was performed with 3.5 ml bupivacaine 0.25%. But the block was not complete after 20 min, so general anesthesia was induced with lidocaine 6 mg and an accidental high dose of propofol 60 mg. Laryngeal mask airway No1 was inserted. In the operation room, routine monitoring of non-invasive blood pressure, electrocardiography and pulseoximetry were initiated. Anesthesia was maintained with 50% O₂, 50% N₂O and isoflurane 1.5%–2%. Just after propofol injection, the overdose was recognized and after endotracheal intubation, the patient underwent mechanical ventilation.

Two minutes after propofol injection, blood pressure fell to 60/20, spO₂ to 80% and heart rate to 120 beat/min. The patient received intravenous infusion of 2.5% dextrose in Ringer 20 mL/kg/h.

The spontaneous ventilation returned after 20 min and blood pressure recurred after 15 min without any specific treatment. After blood pressure and heart rate were normalized, surgery resumed.

After operation the infant was transferred to the recovery room and supervised by anesthetist. Blood pressure and heart rate were in normal range in recovery room. Blood sugar, serum electrolytes and arterial blood gas analyses were normal. The patient was monitored in the recovery room for up to 4 h, then in the awake and stable condition, transferred to ward. The patient was discharged from hospital on the second postoperative day.

Propofol is approved for induction of anesthesia in pediatric patients 3 years and older. However, propofol has been used in pediatric patients younger than 3 years
for induction of anesthesia. In one study, infants 1–6 months received 3 mg/kg of propofol for induction of anesthesia.[2]

The major concern with propofol is the potential for propofol infusion syndrome (lactic acidosis, rhabdomyolysis, cardiac and renal failure), which is generally associated with high dose infusion for an extended period (usually days) in an intensive care unit environment. However, no such cases have been reported in healthy children during routine anesthesia care. There is one case report of a child with a genetic defect in lipid metabolism who had received approximately 150 μg/kg/min (~9 mg/kg/h) for 6.5 h during scoliosis repair.[1] Propofol usually causes central apnea when administered as a bolus for induction of general anesthesia. Propofol may cause cardiovascular depression in hypovolemic children or those with a preexisting cardiomyopathy.[3] The most common adverse event associated with propofol use is hypotension, which occurs in approximately 26% of patients and is more common with bolus dose.[4]

In the literature there was no serious side effect with single induction dose of propofol, all cases related to continuous infusion.

In this case the mild reduction in blood pressure, heart rate and oxygen saturation was managed with mechanical ventilation and intravenous fluid infusion without any other adverse effect.

This report highlights one of the principal anesthesia dangers (ie, drug error), this error was done by the anesthesiologist that was inexperienced in pediatric anesthesia. This error can be prevented by explaining drug dosage to all new coming residents and even inexperienced anesthesiologists the to pediatric anesthesia department.

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