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# *Letter to the editor*

## Propofol anesthesia during rhabdomyolysis

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*To the editor*: Intravenous anesthetic propofol does not seem to trigger malignant hyperthermia (MH) in susceptible patients or experimental animals [1]. As far as we know, however, there has been no report of propofol being safely used during rhabdomyolysis, which is one of the clinical presentations of MH myopathy. We report a case of propofol anesthesia during rhabdomyolysis triggered by an α-streptococcal subdural abscess.

A 14-year-old, 66-kg boy was admitted to our hospital with a 1-week history of general fatigue and appetite loss. At admission, he was tachypneic (40 breaths·min$^{-1}$) and had a high fever (40.2°C). He also had systemic myalgia, especially of the cervico-occipital muscles. Serum creatine phosphokinase (CPK), glutamic oxalacetic transaminase (GOT), and lactic dehydrogenase (LDH) were high 2 days before surgery (Table 1). Two days later, gait disturbance and hematuria appeared, and a right frontal subdural abscess was confirmed on plane CT. A diagnosis of rhabdomyolysis with infection was made on the basis of domination of the MM isozyme in CPK and high serum myoglobin (3000 ng·ml$^{-1}$). There was no renal failure or metabolic acidosis. Craniectomy and open drainage for subdural abscess were performed immediately. Without preanesthetic medication, anesthesia was induced with 100 mg propofol and 0.1 mg fentanyl, and 8 mg vecuronium was used to facilitate tracheal intubation. Anesthesia was maintained with 4 l·min$^{-1}$ of air, 1 l·min$^{-1}$ of oxygen, 300–500 mg·h$^{-1}$ of propofol, and 0.1 mg·h$^{-1}$ of fentanyl under controlled ventilation. Oxygen saturation measured by pulse oxymetry and end-tidal carbon dioxide partial pressure was ≧99% and 34–40 mmHg, respectively. The body temperature measured in the rectum was reduced from 38.5° to 37.2°C during surgery by a cold-air blanket. The total blood loss was 100 g, and no excessive hemodynamic changes occurred. After operation, neuromuscular block was reversed with neostigmine and atropine. The duration of anesthesia was 150 min, and the total amount of propofol used was 810 mg. Culture from samples of the abscess showed α-streptococcus. After surgery, CPK, GOT, and LDH decreased gradually (Table 1).

There is general agreement that skeletal muscle $Ca^{2+}$ regulation is altered in the pharmacogenetic disease MH [2]. Although the precise mechanisms by which certain anesthetics act to trigger an MH episode are not clear, it has been thought that the interaction of anesthetics with ryanodine receptor (RYR) in the sarcoplasmic reticulum (SR) may be a primary mechanism [3,4].

In 1988 Denborough and Hopkinson suggested that propofol may be safe for individuals susceptible to MH [1]. Since that time, many clinical reports and animal studies have supported this belief. Moreover, it was recently reported that propofol had no effect on RYR $Ca^{2+}$ channels in the SR membrane [5]. The high serum myoglobin measured in our patient indicates myolysis or increase of SR membrane permeability. Although the possibility that propofol might have any effects on RYR $Ca^{2+}$ channels in the SR membrane in such a condition cannot be denied completely, propofol did not aggravate rhabdomyolysis in our patient.

We used propofol because the proposed duration of surgery was 90 min. Recently, it was reported from a few critical care units that prolonged high-dose propofol sedation in

**Table 1.** Perioperative Values of CPK, GOT and LDH

| Days from surgery | −2 | −1 | −0 | 0 | 1 | 2 | 3 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| CPK (24–196 IU·l$^{-1}$) | 23980 | 18210 | 13000 | 13690 | 9413 | 916 | 352 | 178 | 144 |
| GOT (8–40 IU·l$^{-1}$) | 521 | 605 | 595 | 568 | 458 | 155 | 87 | 54 | 50 |
| LDH (220–460 IU·l$^{-1}$) | 1735 | 2192 | 2432 | 2640 | 2566 | 1449 | 1338 | 1060 | 964 |

Surgery was performed between "−0 and 0 day." Normal ranges are shown in parentheses

children may be associated with MH and rhabdomyolysis [6,7]. Although it is not yet known whether the muscle destruction was unequivocally due to propofol, caution may have to be employed in its prolonged high-dose use in children.

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