

Isoflurane

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Acute malignant hyperthermia: case report

A 22-year-old man developed acute malignant hyperthermia (MH) while receiving isoflurane.

The man was evaluated for a voluntary donor nephrectomy. In the operating room, he was anaesthetised with propofol and fentanyl, and neuromuscular blockade was achieved with vecuronium bromide. He underwent tracheal intubation, and anaesthesia was maintained with oxygen, air, isoflurane [*dosage and route not stated*] and intermittent boluses of fentanyl and vecuronium bromide. The laparoscopic procedure was started using carbon dioxide pneumoperitoneum. After 2.5 hours post-induction and just prior to clamping of renal vessels, his end tidal carbon dioxide (ETCO₂) gradually increased from 35 mm Hg to 50 mm Hg. His minute ventilation was increased from 6 L/minute to 8 L/minute. Despite this, his ETCO₂ continued to increase to 70 mm Hg over 20 minutes. The pneumoperitoneum was released, and the surgery was temporarily stopped. Tests showed a profound respiratory acidosis. Subsequently, he had a progressive increase of nasopharyngeal temperature at 0.5°C/5 minutes associated with tachycardia at 120/min. Significant muscle rigidity involving the whole body was observed. Acute MH was diagnosed.

The man underwent prompt resuscitative measures, including withdrawal of isoflurane, starting of propofol, hyperventilation of lungs with 100% oxygen and use of a new anaesthesia machine without vapourisers. He underwent cooling measures, including surface cooling with ice packs, and gastric and bladder lavage with ice-cold sodium chloride. Cold IV fluids were infused. He developed severe hypotension, bradycardia, nodal rhythm and ventricular ectopics. He started dopamine and norepinephrine [noradrenaline]. Subsequent tests showed hyperkalaemia, which was treated with sodium bicarbonate and glucose with insulin. After 2 hours of resuscitation, his ETCO₂ and body temperature began to decrease, and his muscle rigidity and haemodynamics improved. The surgical procedure was terminated, and he was transferred to an ICU. He started dantrolene, and later stopped due to elevation of liver enzymes. He remained sedated with propofol for 40 hours, then was weaned and extubated. He was discharged 10 days after onset of MH. A subsequent genetic test revealed an EMHG-registered disease associated mutation (p.Gly341Arg).

Author comment: "MH is a rare life threatening complication during general anaesthesia using volatile anaesthetic agents."

Murugesan C, et al. A fulminant malignant hyperthermia episode during laparoscopic donor nephrectomy - Case report. Indian Journal of Transplantation 7: 94-96, No. 3, Jul-Sep 2013. Available from: URL: <http://dx.doi.org/10.1016/j.ijtr.2013.05.007> - India

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