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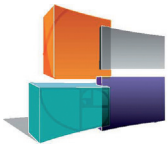

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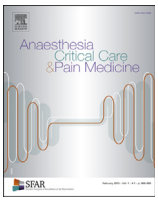

Letter to the Editor

Per-anaesthesia malignant hyperthermia: Not so rare, not so usual

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We read with interest the article of Dr Marsollier and colleagues describing the current management of malignant hyperthermia (MH) in France, especially the difficulties to get a post-crisis genetic diagnosis [1]. Since we recently encountered two consecutive cases of confirmed per-anaesthesia MH, we agree that crisis management and post-crisis diagnosis remain major concerns for anaesthesiologists.

The first patient was a 52-year-old male, who already had two uncomplicated general anaesthesia, admitted in the operating room for a maxillary pre-implant surgery. A general anaesthesia was induced with propofol, sufentanil, and atracurium and was maintained with desflurane and sufentanil. After four hours of anaesthesia without any relevant adverse event, end tidal CO2 suddenly rose to 55 mmHg, then continuously increased up to 110 mmHg despite mechanical ventilation adjustment. Ten minutes later, core temperature rapidly increased up to 40.1 °C, which led to MH suspicion. No muscle rigidity was found. Desflurane administration was immediately stopped and replaced by intravenous continuous propofol infusion. Active cooling was performed with air-pulsed devices and fresh crystalloids, and intravenous dantrolene was administered. A total dose of 10 mg/kg was needed to make the symptoms decreased. The patient was transferred to intensive care unit, where a mild rhabdomyolysis was found (CPK = 709 IU/L).

Two days later, a 45-year-old male obese diabetic patient was given general anaesthesia in the same operating room, for femoral osteosynthesis after a road traffic accident. He already underwent an uncomplicated general anaesthesia for adenoidectomy during childhood. A rapid sequence induction was performed with succinylcholine and propofol, then general anaesthesia was maintained with desflurane and sufentanil. MH first signs occurred two hours after desflurane and succinylcholine first exposition, and consist in uncontrolled hypercapnia (120 mmHg) and hyperthermia (40 °C) associated with tachycardia (170 bpm) and deep metabolic acidosis (pH 7.0). MH was immediately suspected, and, due to the first case two days before, the same treatments were instantly started. Symptoms decreased after the first dantrolene bolus administration (2.5 mg/kg). After transfer to intensive care unit, a moderate rhabdomyolysis was found (CPK = 5820 IU/L). Evolution was favourable in two days after hyperhydratation.

As these two rare events took place in the same operating room with the same gas evaporator, a biomedical assessment was performed and did not find any equipment implication. Three months after discharge, both patients had MH confirmed diagnosis after muscle biopsy and in vitro caffeine-halothane contracture test in a specialised centre.

MH crisis is considered as a rare complication of general anaesthesia, whose incidence ranges from $1{:}10^4$ to $1{:}2.5 \times 10^5$ anaesthesia [2]. Based on the independence of the two cases, the probability these two consecutive events occurred was supposed to range between $1{:}10^8$ and $1{:}6.25 \times 10^{10}$, which is much lower than the probability of winning the lottery! This exceptional situation may have induced some cognitive bias for the management of the second patient: the anaesthesia team had a fast and efficient reaction, but may have underestimated a possible differential diagnosis.

The real MH risk might actually be underestimated, since MH susceptibility is associated with many exome variants that could concern 1:2000 to 1:3000 of the French population [2,3]. Modern halogenated anaesthetic agents can induce unusual MH presentations, with incomplete or delayed manifestations, as in both cases we report [4]. However, early diagnosis and rapid dantrolene administration remain key points to decrease MH morbidity and mortality [5]. Diagnosis confirmation is then essential to enable the patient and his family to be informed and receive appropriate anaesthesia care in case of subsequent intervention.

Finally, MH may not be so rare, may occur with unusual aspects, but always require early recognition and treatment, then subsequent diagnosis confirmation. As suggested by Dr Marsollier and colleagues, we think that further studies and a comprehensive database of MH cases would be of special interest.

Disclosure of interest

The authors declare that they have no competing interest.

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Pierre-Yves Cordier[a,*], Matthieu Laurent[b], Eliott Gaudray[a], Éric Peytel[a], Julien Bordes[b]
[a]*Intensive Care Unit, Laveran Military Teaching Hospital, 34, boulevard Laveran, 13384 Marseille, France*
[b]*Department of Anesthesiology and Intensive Care, Sainte Anne Military Teaching Hospital, 2, boulevard Sainte-Anne, BP600, 83800 Toulon, France*

*Corresponding author
E-mail address: py.cordier@icloud.com (P.-Y. Cordier).

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