

Succinylcholine administration in difficult airway leads to difficult-airway event



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DEAR SIR,

Succinylcholine (Succinylcholine) is usually given for intubation in cases of potentially difficult airway due to its fast onset and short duration of action. We report a case of masseter muscle rigidity (MMR) after the administration of succinylcholine to a patient for cholecystectomy with a difficult airway. A 40-year-old female weighing 85 kg was scheduled for laparoscopic cholecystectomy. Upon examination, we obtained Mallampati grade III, mouth opening of 4.5 cm, upper lip bite test class I, thyromental distance 6.5 cm, and neck circumference of 55 cm. She had no medical illness, no previous exposure to anesthetic agents or family history of myopathy. All other investigations were unremarkable.

In the operating room, difficult intubation cart was kept ready. Pre-medication was done with glycopyrrolate 0.2 mg, midazolam 1 mg, and fentanyl 100 µg. After pre-oxygenation with 100% O₂, the patient was induced with propofol 120 mg. On confirming the adequacy of the bag and mask ventilation, succinylcholine 120 mg was given intravenously. Laryngoscopy was attempted once succinylcholine-induced fasciculations were over. However, her teeth were tightly clenched, and it was impossible to open the mouth to allow advancement of the laryngoscope. Again, after a few moments, our second attempt to open the mouth failed. Keeping MMR in mind, mask ventilation was continued with 100 % oxygen, and no further anesthetics were administered. There was no disproportionate increase in end-tidal CO₂ or body temperature during this period. After five minutes, her jaw started relaxing, and the patient resumed spontaneous respiration. She was sent to the ICU for observation without surgery being performed.

In ICU, blood tests revealed normal blood gas analysis, slightly raised serum potassium (5.8 mEq/L) and creatinine phosphokinase (CPK) levels (188 IU/L). The patient remained afebrile throughout with clear urine. She was discharged from ICU the next day with a special note regarding not to use succinylcholine and counseling for the risk of malignant hyperthermia (MH) in future anesthesia. Muscle biopsy for halothane caffeine test was advised. The case was done at a later date under total intravenous anesthesia uneventfully.

In our institute, succinylcholine is routinely used in suspected difficult airway cases as newer

short-acting nondepolarizing muscle relaxants (NDMR) is not available. A rare adverse effect of succinylcholine is MMR, which can occur in isolation or can be an early indicator of MH.¹ Recent findings state that increased tone in the masseter muscle after giving succinylcholine may be a normal pharmacological response of masseter muscle to succinylcholine.² MMR causes difficult or impossible laryngoscopy leading to difficult or failed intubation. Alternative techniques like retrograde endotracheal intubation, fiberoptic nasotracheal intubation, trachlight™, laryngeal mask airway, and surgical cricothyroidotomy³ may be required to secure airway. In our patient, though succinylcholine triggered MMR leading to difficult intubation, we were able to ventilate the patient with a bag and mask.

Surgery was abandoned, and the patient monitored as there is a possibility of development of MH even after a lag of 20 -30 min (4). The patient did not develop any signs and symptoms of MH during ICU stay. Mild elevation in CPK and K levels could suggest rhabdomyolysis secondary to MMR.

To summarize, this case highlights that succinylcholine may produce isolated MMR leading to difficult laryngoscopy and intubation. In such patients, trigger factors of MH should be avoided during maintenance of anesthesia and availability of dantrolene in the operating theater must be ensured. We also suggest that the use of succinylcholine is fraught with too much potential for a disastrous outcome and should not be relied upon in cases where difficult intubation is suspected.

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