

Anaphylaxis to vecuronium: A rare event

Sir,

Neuromuscular blocking agents (NMBA) induce about 50–60% of anaphylactic reactions during anaesthesia.^[1]

The incidence is estimated to be of the order of 1:980 to 1:20,000 by the Boston Collaborative Drug Surveillance Survey.^[2]

Here, we are reporting anaphylaxis to vecuronium bromide, which is a very rare event but can be life-threatening.

Vecuronium is an intermediate-acting, non-depolarizing muscle relaxant. Vecuronium's structure is derived from the same aminosteroid structure as pancuronium, but the methyl group is missing on the piperidine nitrogen that is attached to the "A" ring, making it mono-quaternary, like D-tubocurarine.

A 48-year-old, obese and hypertensive lady having body mass index of 36 was posted for elective laparoscopic cholecystectomy. Pre-anaesthetic check-up was normal except the fact that she had difficult airway with short neck and limited neck extension. Monitoring was done in the OT as per ASA standards. A radial arterial cannula was inserted for continuous blood pressure monitoring because the patient was too obese and the non-invasive blood pressure was showing erroneous readings. Anticipating difficult airway, we kept the difficult intubation kit handy. The patient was given intravenous ranitidine hydrochloride 50 mg and fentanyl 1 µg/kg 15 min before induction. Induction was done with propofol 1 mg/kg, and the patient was

intubated after giving succinylcholine 1.5 mg/kg. After intubation, the blood pressure was 128/72 mmHg, heart rate was 76/min and saturation was 99%. The patient was put on anaesthesia ventilator and was given 4 mg of vecuronium bromide intravenously. Within 1 min of giving vecuronium bromide, the blood pressure fell to 74/32 mmHg, with heart rate of 52/min and saturation of 89%. Rashes appeared on the chest and the upper arms. Immediately, injection atropine 0.6 mg and adrenaline 1 mg was given intravenously. The patient was ventilated with 100% oxygen. Hydrocortisone 100 mg and dexamethasone 8 mg were given intravenously and dopamine infusion was started. During the course, ECG was normal, ABG showed metabolic acidosis with pH 7.19 and base deficit was -12. Metabolic acidosis was corrected with intravenous sodium bicarbonate. After 10 min, the patient was stabilized with blood pressure of 110/56 mmHg and heart rate of 92/min. Laparoscopic cholecystectomy was done. Depth of anaesthesia was maintained with isoflurane and analgesia was provided with fentanyl. No further dose of muscle relaxant was required. Total surgical time was 32 min and the patient was shifted to the intensive care unit with dopamine infusion at the rate of 5 µg/kg/min and kept on ventilator. Once the patient was haemodynamically stable and conscious, dopamine was stopped and extubation was performed after 8 h. Rest of the course was uneventful.

Our patient did not have any history of allergy or prior operation. We revised the drugs used in the OT and, as the event occurred after the administration of vecuronium bromide, we suspected it to be anaphylaxis to vecuronium bromide. After 2 h of the event, we sent the blood for mast cell tryptase (MCT) testing, which showed the beta subunit of 4 ng/L and ratio of total to beta subunit 7, confirming the event of anaphylaxis. After 6 weeks, we performed intradermal testing, which identified vecuronium bromide to be the offending agent.

All the NMBAs are allergenic because of quaternary ammonium (QA) ion,^[3] and act as true allergens due to the presence of two or more haptenic determinants in their structure.

MCT is an enzyme that is released from activated mast cells, and its level in the serum is detectable 1–6 h after anaphylaxis, peaking around the second hour after the event. The level of the beta subunit of MCT more than 3 µg/L and ratio of total MCT to beta subunit less than

10 is a very sensitive indicator of an anaphylactic event during anaesthesia.^[4] However, the most valuable test to determine the identity of the responsible agent is intradermal testing.^[5]

Anaphylaxis can occur with any drug we use in our day to day anaesthesia practice. Therefore, proper documentation in anaesthesia notes and preserving records for further reference is necessary. Educating the patients and their relatives about allergy or anaphylaxis to a drug is very important for the prevention of any untoward event in the future.

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