

Anesthetic management of a patient with multiple drug allergies for total proctocolectomy and ileoanal pouch anastomosis under general anesthesia

Pulak Tosh¹, Sunil Rajan², Lakshmi Kumar²

From ¹Assistant Professor, ²Professor, Department of Anaesthesiology, Amrita Institute of Medical Sciences, Amrita Viswa Vidyapeetham, Kochi, India

Correspondence to: Dr. Sunil Rajan, Department of Anaesthesiology, Amrita Institute of Medical Sciences, Kochi - 682041, Kerala, India. E-mail: sunilrajan@aims.amrita.edu

Received - 07 September 2019

Initial Review - 25 September 2019

Accepted - 03 October 2019

ABSTRACT

Hypersensitivity reactions are major causes of concern in the perioperative setting and their incidence is highly reported nowadays. We report a case of 30-year-old female with proven allergy to multiple anesthetic drugs on intradermal drug allergy testing who underwent total proctocolectomy and ileoanal pouch anastomosis under general anesthesia. This case concluded that anesthesia for patients with multiple drug allergy undergoing laparotomy can be safely conducted under general anesthesia with supplemental epidural analgesia. It may be safer to avoid muscle relaxants and careful monitoring with prompt management of any adverse events perioperatively, is prudent for a favorable outcome in these patients.

Keywords: *General anaesthesia, Multiple drug allergy.*

Hypersensitivity reactions are major causes of concern in the perioperative setting and their incidence nowadays is reportedly higher with skeletal muscle relaxants followed by latex and antibiotics being the commonly incriminated drugs [1]. The prevalence of perioperative anaphylaxis varies widely across the globe with an incidence of 1 in 1250–20,000 anesthetics [2]. Anaphylaxis presents clinically with profound hypotension due to vasodilation and increased capillary permeability. Bronchospasm manifesting as raised peak airway pressures, urticarial lesions, and cutaneous flushing along with angioedema are the commonly associated signs. In more severe cases, it progresses to laryngeal edema, cardiovascular collapse and laryngospasm [3]. Unless detected early and managed promptly the condition can prove to be fatal. Here we present a case of 30-year-old female who had a history of adenomatous polyposis.

CASE

A 30-year-old female patient who was a known case of familial adenomatous polyposis was admitted for total proctocolectomy and ileoanal pouch anastomosis. During the pre-anesthesia assessment, history of allergy to multiple drugs was elicited but the details of which were unavailable.

The patient underwent allergy testing for the commonly used anaesthetic drugs with normal saline as control while monitoring heart rate, blood pressure and oxygen saturation by pulse oximetry. The patient complained light headedness and dimming of vision while the last intradermal injection was being administered. At that time an irregular pulse (rate of 120/m) and atrial ectopics were noticed. She complained of air hunger and

was visibly hyperventilating but was not desaturating. Intravenous pheniramine 22.75mg and dexamethasone 8mg were given. As the patient complained of disturbed vision, despite feeling better, 0.5 ml of subcutaneous adrenaline 1:1000 was administered which made the patient symptomatically better. No wheal was noticed 90 minutes after the intradermal testing. All test dose margins were erythematous but without any skin ulceration. Intradermal test showed the patient to be allergic to midazolam, fentanyl, ketamine, suxamethonium, atracurium, bupivacaine, vecuronium and cefuroxime.

One month later she was posted for surgery and was started on intravenous hydrocortisone 100 mg 6 hourly one day prior to surgery. Inside the operation theatre two good gauge cannulas were secured and midazolam 1 mg and pheniramine 45.5mg were given intravenously. An epidural catheter was placed at T11 -T12 level and subarachnoid block was given at L3-L4 level using 2.5 ml of 0.5% bupivacaine heavy spinal solution along with 25mcg fentanyl. Patient was induced with sevoflurane 8% in oxygen along with titrated doses of 30mg propofol till there was loss of response to verbal commands. She was intubated with a 7.5 size ETT tube, without using relaxants. Proper tube placement was confirmed by auscultation and capnography and the patient was mechanically ventilated with FiO₂ - 0.5 and PEEP-5. Propofol infusion was started at 20 ml/hour. Right internal jugular vein and left radial artery were cannulated. Ropivacaine 0.2 % was started via epidural catheter at 5 ml/hour. There was no incidence of bronchospasm or increased airway pressures intraoperatively.

After 90 min she developed hypotension which was initially managed with repeated intravenous adrenaline boluses of 20mcg but later required adrenaline and noradrenaline infusion which

Table 1: Perioperative arterial blood gas values

Time	pH	Po2	Pco2	K +	Na+	Cl-	Glu	Lac	Base Def.	Hco3
9:01 am Baseline	7.428	107	29.5	3.8	136	113	121	1.2	-4.5	19.1
10:58 am post intubation	7.259	256	33.2	3.6	134	110	231	5.8	-11.3	14.4
11:59 am	7.298	263	31.3	3.1	137	110	235	6.7	-10.3	14.9
2:09 pm	7.346	252	30.2	3.5	133	108	202	4.8	-8.5	17.9
4:03 pm	7.393	223	30.3	3.7	134	109	175	3.0	-5.9	18.1
6:25 pm in ICU	7.349	290	33.2	3.7	133	107	180	3.9	-6.7	17.8
7:00 am POD 1	7.419	127	29.6	3.4	122	104	141	1.3	-4.9	18.8

was maintained throughout the surgical procedure. The surgery, total proctocolectomy and ileoanal pouch, lasted for 8 hrs. Initially ringer lactate (RL) was used intraoperatively which was changed to Kabilite solution. Total amount of RL used was 3000mL and Kabilite 4000mL. Sevoflurane consumption was 107 mL and total propofol requirement was 1650 mg during the entire surgery. At end of surgery, the patient was extubated on table but on adrenaline 0.2 µg/kg/min and noradrenaline 0.05 µg/kg/min infusions. Postoperative analgesia was provided with epidural infusion of ropivacaine 0.1% with 80mcg of fentanyl, the rate of infusion being titrated according to Visual analogue score (VAS). Whenever patient had VAS score of > 4 ropivacaine 0.1% 10ml was given as a bolus. If pain relief was inadequate, intravenous paracetamol 1gm was given. Patient required hemodynamic supports for 12 hours and was gradually tapered and stopped on the first post operative day (POD). Table 1 depicts intraoperative and postoperative arterial blood gas results.

Intravenous hydrocortisone 100 mg was continued 8 hourly on the day of surgery, tapered next day to twice daily and stopped on the third day. She was shifted out of ICU two days later, had an unremarkable recovery and was discharged from hospital on 6th POD and did not report about any allergic reactions during her subsequent visits so far.

DISCUSSION

The most common anesthetic agents implicated in the occurrence of intraoperative anaphylaxis are neuromuscular blocking agents (70%). Among which higher chance of anaphylaxis is for succinylcholine, vecuronium (anaphylaxis), followed by atracurium (anaphylactoid). There is a high incidence of cross reactivity among the muscle relaxants as cause for allergy is mainly due to the quaternary ammonium compound seen in these drugs [4]. There have been reports of allergy to benzodiazepines and opioids (morphine and meperidine); however, reaction to synthetic opioids like fentanyl is rarely reported. Anaphylaxis to volatile agents has not been reported so far. It had been shown that inhalation induction with sevoflurane provides good intubating conditions without use of muscle relaxants [5-7]. Reports of managing patients with multiple drug allergy mainly by anesthetic gas based regimens has been described [8]. But the cases described do not include abdominal surgeries for which

muscle relaxation is mandatory. In our patient we provided muscle relaxation with epidural rather than by administering relaxants which are known to precipitate anaphylaxis in patients with multiple drug allergies.

It has been postulated that there is no role to contraindicate propofol in egg-allergic, soy-allergic or peanut-allergic patients. Though IgE-mediated hypersensitivity is reported with seafood and iodinated drugs, no cross-reactivity between them have not been observed. Though definite allergenic determinants have been identified for fish, shellfish and povidone iodine, that for contrast agents remains unknown [9].

Early diagnosis of anaphylaxis is vital and management involves stopping the implicated agent immediately followed by administering 100% oxygen, intravenous epinephrine 5–10 mcg boluses, or intramuscular 0.5–1 mg (1:1000 solution). Supportive measures include adequate intravenous crystalloids upto 2–4 L for adults, antihistamines (chlorpheniramine 10–20 mg), corticosteroids (hydrocortisone 100–500 mg), and bronchodilators (salbutamol, albuterol). Many times infusion of epinephrine will be needed to be continued in the postoperative period as well and in cases of refractory hypotension vasopressin should be considered [3].

CONCLUSION

Anesthesia for patients undergoing laparotomy with multiple drug allergies can be safely conducted under general anesthesia with supplemental epidural analgesia. It may be safer to avoid muscle relaxants and careful monitoring with prompt management of any adverse events perioperatively is prudent for a favorable outcome in these patients.

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Funding: None; Conflict of Interest: None Stated.

How to cite this article: Tosh P, Rajan S, Kumar L. Anesthetic management of a patient with multiple drug allergies for total proctocolectomy and ileoanal pouch anastomosis under general anesthesia. *Indian J Case Reports.* 2019;5(5):480-483.

Doi: 10.32677/IJCR.2019.v05.i05.026