Perioperative Management Of Morbid Obese Patient

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Citation

J Punj, J Mitra. *Perioperative Management Of Morbid Obese Patient*. The Internet Journal of Anesthesiology. 2006 Volume 12 Number 1.

Abstract

INTRODUCTION

Anesthetising a morbid obese patient is always a challenge because of their physiology. Especially, if other endocrine problems co-exist, it becomes all the more challenging. We present a successful outcome of a morbidly obese patient along with hypothyroidism. The use of titrated amounts of opiods and other anesthetic drugs ensured an awake and pain free patient at the end of the surgery.

DESCRIPTION

A 55-year-old, 120 kg weight, 155 cm tall female patient was taken up for mesh repair for paraumbillical hernia. The patient had no significant past medical history except hypothyroidism and had undergone caesarean section under regional anaesthesia and laparoscopic cholecystectomy under general anaesthesia in non-obese state a few years ago with uneventful recovery. The patient gradually put on weight over two years. It was dietary in origin and other endocrine causes like Cushings syndrome, hypogonadism, hypothalamic dysfunctions were ruled out. The ideal body weight of the patient was 53 kgs and BMI was 50kg/m^2. The patient had normal mouth opening and neck movements, neck circumference was 50 cm and mallampatti grade was II; Cardiovascular and respiratory systems were normal on clinical examination. The spine was examined and L4-5 space was palpated. The routine haematological investigations, biochemistry, liver function tests, thyroid function tests and lipid profile were normal. ECG and X-ray chest were normal. ABG, PFT, oxygen consumption were done to assess the extent of cardiopulmonary derangement. 2D Echo and ABG were within normal limits and PFT showed moderate restrictive pulmonary function. She was taking tab eltroxin 150 µg once a day.

The patient was morally prepared and informed valid consent was taken. She was given 10 mg metochlorpropamide and 150 mg ranitidine 8 hours before surgery. The operation theatre was prepared to combat the technical difficulties like size of the table, BP cuff, intravenous line access and position of the patient. Anaesthesia trolley was prepared in view of regional, general anaesthesia, difficult intubation and resuscitation. Drug doses were calculated and loaded; laryngeal mask airway, smaller endotracheal tubes, stylet, bougie and large blade laryngoscope were kept ready.

The patient received an epidural block with no.16 gauge, 12 cm disposable epidural needle in sitting position at L4-5 space. The epidural space was at 7.5cm and catheter was fixed at 11 cm at skin. Vital parameters were monitored clinically. Blood pressure was monitored using a large sized cuff. Pulse oximeter and ECG were attached. The patient was positioned with sheets under her shoulder and head so that her external auditory meatus and sternum were in one line. Sheets were also placed under her arms so that they would not hang.

The patient was given fentanyl 40 µg and epidural drug 0.25% sensorcaine 10ml with morphine 3 mg was give before the start of the surgery. The patient was induced with titrated dose of Propofol 110 mg. After checking if she was being ventilated, atracurium 40mg was given and after 3 minutes, # 5 LMA was placed. However she desaturated to 88%. So she was intubated with endotracheal tube of 7.5cm. Anaesthesia was maintained with 0.2% end tidal isoflurane and air and oxygen, 50:50 and atracurium boluses. SBP was between 110 -130mm of Hg and pulse 65 to 56/min, keeping end tidal CO2 of 35mmHg. Surgery was done in supine position, which lasted 2 hrs. Patient was given 1000ml of Ringer Lactate with 150 ml blood loss. Before the end of the surgery, 10 ml of 0.125% of bupivacaine was given

epidurally. She was reversed with neostigmine 40ug/kg and glycopyrrolate 0.01mg/kg. She was extubated and she was wide-awake with no pain.

Postoperatively vital parameters were stable and patient was given epidural top ups with 3mg of morphine in 10 ml saline for 2 days postoperatively. Early mobilization was achieved from the evening of 2nd day of surgery.

DISCUSSION

The various pathophysiological changes in morbid obesity should be taken into consideration for planning anaesthesia. The respiratory changes in these patients are decreased functional residual capacity (FRC), increased closing capacity (CC) to FRC, increased ventilation perfusion mismatch and later pulmonary hypertension. Therefore, hypoxia and hypercarbia should be avoided[1]. The other challenge in these patients is of maintaining airway, intubation difficulties, associated endocrinal problems and acid aspiration[2]. We had put LMA size 5 in our patient but she desaturated, probably because of decreased FRC. This was easily treated by putting and endotracheal tube. The morbid obese patient often has sleep apnea. If the BMI is more than 50kg/m^2, they are prone to postoperative respiratory obstruction; even without any history of sleep apnoea.[3] .The cardiovascular responses to various stimuli are of extremes. Thus, they should be fully investigated and monitored. In our patient, pulmonary artery pressure was not done, as arterial blood gases, 2D echo and PFT did not indicate its need.

In our patient, to prevent acid aspiration we used metoclopramide and ranitidine. Obesity increases both fat and lean masses; however, the percentage of fat tissue increases more than does the lean mass, affecting the apparent volume of distribution of anesthetic drugs according to their lipid solubility. Drug dosing is generally based on the volume of distribution for the loading dose and on the clearance for maintenance. In the obese patient, the volume of distribution is increased if the drug is distributed both in lean and fat tissues whereas the anesthetic drug clearance is usually normal or increased[4]. Benzodiazepine loading doses should be adjusted on actual weight, and maintenance doses should be adjusted on ideal body weight. Thiopental sodium and propofol dosages are calculated on total body weight (TBW). The loading dose of lipophilic opioids is based on TBW, whereas maintenance dosages should be cautiously reduced because of the higher sensitivity of the obese patient to their depressant effects. Pharmacokinetic parameters of muscle relaxants are minimally affected by obesity, and their dosage is based on ideal rather than TBW. For complete neuromuscular paralysis and predictable laryngoscopy conditions, succinylcholine 1 mg/kg total body weight is recommended[5]. Because our patient was a diagnosed hypothyroid, we had to be very careful about anesthetic drugs. Titration of drugs had to be accurate, with a balance between high dosages required in obesity and relatively lower doses required in hypothyroidism. Awake or spontaneous intubation may be required and the patient should not be paralysed when difficulty is anticipated. Because our patient could be ventilated, we decided to relax our patient. We decided to use atracurium, as its drug dosages can be used either according to ideal body weight or total body weight.

Regional analgesia like epidural analgesia with light general anaesthesia may have several advantages like cardiovascular stability adequate oxygenation, reduced doses of narcotics or inhalation agents[6]. We adopted the same principle in our patient. Technical difficulties may be faced during regional analgesia. Postoperatively, humidification of the oxygen, chest physiotherapy, incentive spirometry, good analgesia with epidural top ups and early ambulation ensured a good postoperative outcome [7].

References

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