

Anaesthetic management of a patient with ischaemic heart disease posted for hernia repair

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Abstract

Patients with ischemic heart disease constitute a significant percentage of the population undergoing anaesthesia and surgery. We present here a report of anaesthetic management of a geriatric patient with IHD posted for hernia repair.

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Introduction

Geriatric patients have the highest mortality rate in the adult surgical population[1]. Myocardial ischaemia may occur in patients with a known history of ischaemic heart disease (IHD) during both cardiac and non-cardiac surgery. Specific intraoperative and postoperative anaesthesia management in terms of maintenance of haemodynamic stabilization and normothermia, effective postoperative pain control, and prevention of hypoxaemia, will minimize postoperative adverse events in patients with IHD and these form the goals of anaesthetic management in these patients.

Case report

An eighty year old male patient was posted for an elective right sided inguinal hernia repair. His pre anesthetic evaluation revealed that he was a known hypertensive for 8 years, the patient also had a history of IHD, underwent stenting to RCA 18 months ago. He gives history of dyspnoea on exertion(NYHA II). Patient did not have any other co-morbid conditions.

He was on tab. betaloc 25 mg OD, tab. aspirin 75 mg OD. On physical examination, he was moderately built, weighing 62 kg. Pulse-70/min, regular, BP-140/90 mm hg. CVS and RS examination was within normal limits. There was no carotid bruit. Airway and spine examination were normal.

Investigations revealed a haemoglobin of 10.5 g%, other CBC parameters and renal function tests were normal. ECG showed old inferior wall MI changes. An echocardiogram was done, EF-40%, Type I diastolic dysfunction, normal pulmonary artery pressure and dilated left ventricle. Chest x-ray showed cardiomegaly. Coagulation tests were within normal limits.

The case was accepted under ASA III. Patient was asked to continue all medications on the day of the surgery. After shifting the patient into the operating theatre, pulse oximeter, NIBP, and ECG monitors were attached. Basal heart rate(HR) was 76/min and blood pressure(BP) was 136/90 mm hg. A wide bore iv canula was secured and patient was preloaded with 300 ml of ringer's lactate(5 ml per kg body weight).

Our plan of anaesthetic management was unilateral spinal anaesthesia. 5 mg of bupivacaine (1 cc of 0.5% bupivacaine(heavy))+25 microgm of fentanyl was used. Spinal anaesthesia was given in the right lateral position at L2-L3 interspace with a 27 G whitacre needle. The patient was kept in right lateral position for 15 mins and then made supine. The block was adequate. (the level achieved on the operative side was upto T6). The surgery was completed within 80 mins. Motor blockade of Bromage II was achieved. Regression of sensory blockade was seen after 100 mins and motor blockade after 150 mins.

Intra operatively, an additional 300 ml of ringer's lactate was given. HR was maintained in between 70-80 beats per minute. The lowest blood pressure recorded was 106/70 mm hg. Both heart rate and blood pressure were within 20% of the pre-operative values. No vasopressors were required for maintenance of BP. Intra operative ECG was within normal limits. Post operatively, patient was given supplemental oxygen by an oxygen mask and was kept warm. We observed the patient in PACU for 4 hours, and the post operative period was uneventful.

Discussion

Precipitous arterial hypotension due to high sympathetic block remains a common problem associated with conventional spinal anaesthesia, specially in high risk patients[2]. The haemodynamic effects of spinal anaesthesia are mainly a result of both the resistance and capacitance vascular changes induced by the block of pre-ganglionic sympathetic fibres[3]. Ward et al[4], reported a decrease in mean arterial blood pressure of 21.3% of the base line following spinal anaesthesia. He also reported that a level of spinal anaesthesia to T5 resulted in an increase in heart rate by 3.7%. The cardio accelerator fibres originate from T1-T4 so the level of spinal anaesthesia affecting these dermatomes may cause bradycardia. The unilateral spinal anaesthesia has been claimed by many as an alternative technique, to

restrict the undesired sympathetic block.

Compared to conventional spinal anaesthesia, unilateral spinal anaesthesia is associated with fewer cardiovascular perturbations. Also, unilateral spinal block affects neither the respiratory rate nor the arterial oxygen saturation. A low dose of anesthetic solution, pencil-point needle, low speed of intrathecal injection, and a lateral position have been reported to facilitate the production of unilateral distribution of spinal anaesthesia[5].

It was decided to combine bupivacaine with intrathecal fentanyl to provide adequate depth of anaesthesia with lesser doses of bupivacaine. Fentanyl is a lipophilic opioid and is preferred for prolonging the duration of sensory blockade, having a rapid onset and short duration of action with lesser incidence of respiratory depressions. Varassi et al[6], showed that addition of sub arachnoid 25 microgram of fentanyl in spinal anaesthesia in elderly male patients did not alter respiratory rate, minute ventilation, end tidal CO₂ and ventilator response to CO₂. Studies have also shown decreased post operative pain after addition of fentanyl for sub arachnoid block. Maintaining intraoperative and postoperative haemodynamic stability is crucial to ensuring a balance between myocardial oxygen delivery and oxygen demand in the elderly. It is prudent to maintain

perioperative heart rate and arterial pressure within 20% of the normal awake value and the haematocrit should be maintained above 30%.

Other anaesthetic management options for this case include epidural anaesthesia, hernia field block and transverse abdominis plane block (TAP) block. The success rate of spinal anaesthesia remains significantly higher compared to the other modalities.

The expected small haemodynamic changes in unilateral block may be more relevant in elderly and chronically ill patients and further controlled studies should be performed to evaluate the usefulness of unilateral spinal anaesthesia in high risk patients.

Conclusion

Unilateral spinal anaesthesia can be considered as a relatively safe option in high risk IHD patients owing to the minimal haemodynamic variations it causes and the high success rates of spinal anaesthesia

procedure over other anaesthetic options.

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