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ANAESTHETIC TECHNIQUE OF LOW DOSE SADDLE SPINAL ANAESTHESIA IN AN ELDERLY MALE WITH LOW EJECTION FRACTION SCHEDULDED FOR TURP --- A CASE REPORT.

Anaesthesiology

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ABSTRACT

Ischaemic heart disease patient with low cardiac reserve(ef—30%) undergoing non-cardiac surgery poses a challenge for the anesthesiologist to manage it efficiently.usually such patients are at increased risk of congestive cardiac failure (CCF) , life threatening arrhythmias and acute ischemic events. The anesthesiologist must have complete understanding of its haemodynamics, diagnostic evaluations, treatment modalities and more so regarding fluid shifts and various drug interactions during anesthesia. We report successful management of a patient having ishemic heart disease with low ejection fraction of around 30% who underwent trans-urethral resection of prostate under saddle spinal anaesthesia with fentanyl as an adjuvant.

KEYWORDS

Low ef, Trans-urethral resection of prostate, saddle, spinal anaesthesia

INTRODUCTION

Nowadays,spinal anaesthesia uses have been increased in multiple fields of surgery. Cardiac compromised patients and patients with multiple comorbidities in whom general anaesthesia can be risky, saddle spinal anesthesia can be performed safely for infraumbilical surgical procedures. Spinal anaesthesia technique is easy to perform, economical and produces rapid onsetof anaesthesia. Various adjuvants have been added to hyperbaric bupivacaine to shorten the onset of block and prolong the duration of block.(1) transurethral resection of the prostate (turp) is the most commonly performed surgery for patients with benign prostatic hyperplasia. Spinal anesthesia is the technique of choice in turp. Saddle spinal anaesthesia provides better hemodynamic stability , reducing the chance of circulatory overload and allows early detection of complications like turp syndrome, bladder perforation. Other advantages are it provides post-operative analgesia, reducing deep vein thrombosis and avoids complications associated with general anaesthesia.(2,3)

According to the existing theory patients with ischemic heart disease and poor systolic function (defined as ejection fraction less than or equal to 30%) can be challenging because of reduced systemic vascular resistance. As it will reduce the resistance to outflow to increase the ejection fraction, but this should not be done at the expense of arterial perfusion pressure. In such situations, careful modification of spinal anaesthesia technique and a reduction in total volume of local anaesthetic is recommended.(2)

We reported an interesting case of an elderly male with history of ischemic heart disease with ejection fraction of around 30 % posted for trans-urethral resection of prostate due to benign prostatic hyperplasia under low dose saddle spinal anaesthesia.

Case Description

A 61 year old male came with history of retention of urine and difficulty in micturition since four months.his complaints were increased for last 15 days. He was diagnosed with benign prostatic hyperplasia and hence planned for trans urethral resection of prostate(turp) under saddle spinal anaesthesia. He is a known case of hypertension with ishemic heart disease, type 2 diabetes mellitus and hypothyroidism.he is on regular treatment with oral anti hypertensives, oral hypoglycemic agents, antiplatelet agents and tab. Thyronorm.he had a history of myocardial infarction 3 yrs ago treated with thrombolysis.patient on examination, his general condition was adequate. Patient was alert, cooperative and well oriented. His airway assessment showed adequate mouth opening(intact teeth) , mallampati class ii with normal neck movements. Investigations revealed haemoglobin, platelet count, blood urea, serum creatinine, electrolytes, blood sugar level, ecg and thyroid profile were within normal limits. X-ray chest showed prominent bronchovascular markings. 2d-echo showed ejection fraction of around 30%, septal apical and apical left ventricular akinesia and grade one diastolic dysfunction with impaired lv compliance.his ultrasound of pelvis showed mild changes of cystitis with enlaged prostate size of approximately 75 ml. The risks of spinal anaesthetic technique which include higher level of sympathetic block , hypotension, hemodynamic instability, intraoperative or/and post-operative ischemic events and postoperative intensive care were explained to patient and his care takers. This patient was accepted for anaesthesia under asa grade iii physical status with written and informed high risk consent. Patient was shifted to operation theatre and intravenous access was obtained with two 18 g iv canula and pulse-oximeter, invasive blood pressure and ecg monitors were connected. All necessary resuscitation equipments and emergency medicine cart was kept ready. Intervertebral space was identified by palpating the spine from upwards. Under all aseptic precautions spinal anaesthesia was given with 25 g quincke spinal needle via standard median approach in l4-l5 intervertebral space in sitting position. Injection 2.0 ml of 0.5% hyperbaric bupivacaine plus 25 mcg of fentanyl(single attempt)is given intrathecally after cheking free flow of csf. Then he was kept in sitting position for 8 minutes and then made supine. Sensory block was achieved up to T10 & then surgery was started. Her vital parameters like heart rate ,invasive blood pressure ,ecg & oxygen saturation were monitored and maintained within normal limits.surgery lasted for 60 - 65 minutes.he remained hemodynamically stable throughout the procedure and there were no any signs of turp syndrome as well.he was shifted to intensive care unit for further management. Postoperative pain relief was given by injection paracetamol 1 gm at 8 hours interval and injection tramadol 100 mg iv on sos basis. Sensory block lasted till 2.5 hours. Patient was kept in icu for monitoring. Patient was discharged after 3 days from hospital.

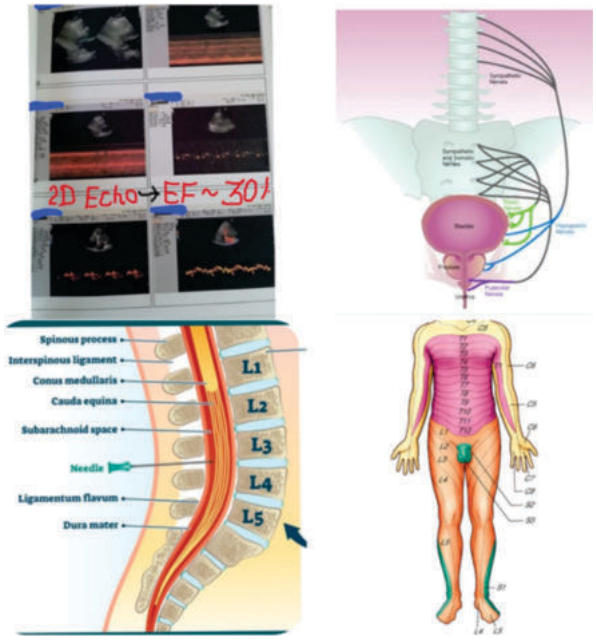

Image 1.1 Spinal Anaesthesia Anatomy,nerve Supply Of Prostate And Dermatomal Distribution With Low Ef-30%

DISCUSSION

Turp in patients with ischemic heart disease is a challenge to the anaesthesiologist due to acute fluid overload, myocardial depression

due to irrigation fluids, drug interaction and electrolyte imbalances. The choice of anaesthetic technique for turp surgery should provide adequate anaesthesia , minimal physiological disturbances with early recognition of over-hydration, perforation and haemolysis.(2)

In this case, the patient had history of ischemic heart disease with an ejection fraction of around 30% who underwent turp surgery. He also had type 2 dm and hypothyroidism. Therefore anaesthesia goals for this case with cardiac and other comorbidities are to maintain the hemodynamics in stable condition and prevent mi by optimizing myocardial oxygen supply / demand ratio,prevention and treatment of ischemia if it develops, maintenance of normovolemia ,normothermia, and avoiding significant blood loss. This is a challenge for the anesthesiologist.(1,2) the choice of anaesthesia technique must be based on the patient's condition and the surgical technique to be performed.general anaesthesia has been associated with hypotension due to intravenous induction agents and inhalational agents. additionally, direct laryngoscopy and endotracheal intubation causes tachycardia, and hypertension which can lead to increase in cardiac morbidity.

We have opted for neuraxial anaesthesia in our patient.to maintain the arterial perfusion pressure and coronary perfusion pressure careful titration of central neuraxial anaesthesia and a reduction in local anaesthetics total volume is recommended.(2,3,4)we have used spinal anaesthesia with low dose bupivacaine (10 mg) with fentanyl as an alternative to general anaesthesia for this patient who undergo turp. Because it can reduce preload and afterload, maintain myocardial oxygen supply and demand ratio as well as avoids the harmful effects of general anesthesia.it also provides postoperative analgesia as well.dobson et al compared spinal and general anesthesia in turp patients and found that general anesthesia produce more hemodynamic instability after induction.(5) bowmen found less post-operative pain in turp patient after giving spinal than general anesthesia.(6) blake demonstrated less blood loss during regional than general anesthesia.(7)

Gurajala et al performed saddle spinal block with 5 mg of hyperbaric bupivacaine added with 50 mcg fentanyl in patient with aortic and mitral valve replacement for turp with completely stable cardiovascular parameters.(8) ozmen et al (9) compared epidural , spinal (15 mg hyperbaric bupivacaine + 50 mcg fentanyl) and low dose saddle spinal (10 mg hyperbaric bupivacaine + 50 mcg fentanyl) anesthesia during turp. They found that intraoperative systolic arterial pressure , pulse rate and spo2 were more stable and adequate surgical anesthesia was achieved quickly without statistically significant motor block ($p < 0.001$) in the saddle spinal anaesthesia group.

Pain signal from bladder distension carried away with T11 to L2 sympathetic fibers. The stretch sensation of bladder is provided by parasympathetic fibers of S2 to S4. Pain fibers from the prostate, prostatic urethra and bladder mucosa carried away by S2 to S4 sacral nerves.usually conventional spinal anaesthesia is widely used for turp surgeries but the major problem of this technique is risk of hypotension and hemodynamic instability with higher level of block.because the chemical sympathectomy due to spinal anesthesia extends for 2-6 dermatomes above the sensory level with conventional larger doses of hyperbaric bupivacaine. This will lead to hemodynamic instability mainly in patients of ischemic heart disease with compromised cardiopulmonary function. According to nerve innervation and compromised cardiac status , a level of regional block up to t10 is more than sufficient for turp surgery. Because with lower level of block (t10), there will be sufficient anaesthesia for surgery with less hemodynamic derangement and fluid requirement is also less. So there is a less chance of circulatory overload.(2,3,4,10,11)

We have performed saddle spinal anaesthesia in our patient with 10 mg of hyperbaric bupivacaine with 25 mcg of fentanyl intrathecally.we have achieved sensory blockade upto t10 with better maintenance of hemodynamics intraopeartively as well as postoperatively. addditionally, there was better analgesia postoperatively and no any incidence of turp syndrome.our patient tolerated this form of anaesthesia very well. Studies have demonstrated that opioids and local anaesthetics administered together intrathecally have potent synergistic analgesic effect, increasing the sensory blockade without altering the degree of sympathetic blockade and providing better hemodynamic stability (2). More area of research is warranted for administration of anaesthesia in such patients with low cardiac reserve.

CONCLUSION

In our experience saddle spinal anaesthesia provided stable hemodynamics & no adverse complications with better patient outcome. The technique of saddle spinal anaesthesia provides a better alternative for patients with cardiac comorbidities with surgeries below T10 level not lasting for more than 60-70 minutes . Economically also spinal anaesthesia is very cheap.

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