



ANESTHESIA MANAGEMENT OF A PATIENT WITH PERMANENT PACEMAKER POSTED FOR SURGICAL RESECTION OF PITUITARY MACROADENOMA.

Anaesthesiology

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ABSTRACT

Background and Aim: Cardiac patients with pacemaker in situ posted for noncardiac surgery is a challenge to the anesthesiologists. Continuous monitoring required for cardiac rhythm, arterial blood pressure and oxygen saturation. Intraoperative care of pacemaker as well as understanding its anesthetic implications is important in these patients. We hereby present a case of 55-year-old female posted for pituitary macroadenoma surgery who had permanent cardiac pacemaker in situ.

KEYWORDS

Invasive cardiac monitoring, Pacemaker, Non cardiac surgery

INTRODUCTION

With the advent of cardiac pacemakers, the treatment of patients with cardiac arrhythmia has been dramatically improved. Pacemakers are being used with greater frequency for both conduction disorders & arrhythmias. Intra operative care of pacemaker as well as understanding its anesthetic implications is an important in management of these patients.

Pituitary macroadenoma are most common suprasellar mass in adults. pituitary macroadenoma e is defined of size more than 10 mm, its twice as common as pituitary microadenoma. Most commonly performed surgery is transphenoidal pituitary surgery.

Endocrine during neoplasms pose unique challenges anesthetic managements. The advent of new anesthetic drugs, adjuvants cardiac agents cerebro-protective agents etc. has made the pre operative, peri-operative & postoperative management of these surgeries relatively easy.

Case Report

A 55 year old female presented with complaints of severe head ache, vomiting and giddiness she is known case of Diabetes mellitus, Hypertension, Hypothyroidism with permanent pacemaker in situ, regular treatment & on medication. Vitals are within normal limits, Systemic examination are normal, routine blood investigations are within normal limits. Hormonal analysis are also within normal limits.

ECG show pacemaker spikes, chest x-ray with in normal limits 2D ECHO-S/P PPI, LVSF-60%, trivial TR, no Regional Wall Motion Abnormality (RWMA), good Left Ventricular Systolic Function (LVSF), type I Diastolic Dysfunction (DD). MRI Brain showed features of Invasive pituitary macroadenoma 4.09 X 4.71 X 4.17 cm in Sellar areas. Suprasellar region with multiple necrotic area multi disciplinary specialities opinion like Cardiology, endocrinology, neurosurgery, ENT has been taken. Pre-operative work up has been done & patient posted for elective transnasal transphenoidal excision of tumor under American society of Anesthesiologist (ASA) physical status 3 (III). Informed consent taken, plan of anesthesia was general anesthesia.

Intracathno 18 has secured prior to induction, Invasive BP Monitoring has been done and CVP line has been inserted. On the day of surgery, the pacemaker mode changed to asynchronous fixed mode.

Patient was pre oxygenated with 100 % oxygen for 3 Minutes and was induced with inj. midazolam 0.05 mg/kg, inj. fentanyl 2 mcg/kg, inj. etomidate 0.3 mg/kg. Induction was done with appropriate sized

cuffed portex tube was achieved after inj. Vecuronium 0.1 mg/kg. Anesthesia was maintained with intermittent positive pressure ventilation using O₂ + AIR + sevoflurane and divided doses of Vecuronium Bromide.

Intraoperative period care was taken to maintain normal temperature. Analgesia was administered by using inj. Paracetamol 1gm IV, inj. fentanyl 0.5 mcg/kg, IV.

After completion of surgery neuromuscular block was reversed with Inj. Glycopyllorate 0.5 mg. inj. neostigmine 2.5 mg. Patient was extubated when patient was awake with adequate muscle tone and power. After extubation patient has been shifted to ICU and pacemaker mode changed to synchronous mode and heart rate set at 75 beats/minute patient has been kept in ICU for 3 days. Later shifted to ward and has been discharged on 7th day.

DISCUSSION

Anesthetic management of patients with permanent pacemaker requires a thorough knowledge of the indication for pacemaker placement, present mode of pacemaker and extent of dependency of the patient on pacemaker. In patient pacemakers who are undergoing neurosurgery, with the additional consideration, include the proximity of operative site to the pacemaker, prolonged duration of surgery, potential for major amount of blood loss cardiac insults caused by neurological causes.

The perioperative period of patients with pacemakers poses unique challenges. There are many types of pacemakers such as unipolar or bipolar or multipolar. They are connected to heart chambers through vena cava or on the surface of heart epicardially. The most common problem intraoperatively is electromagnetic interference due to cautery device. These devices provide high energetic electromagnetic field at a frequency that passes through the filters of pacemaker leading to oversensing. Hence pacemakers dependent patients should be programmed into asynchronous pacing mode.

The patient with pacemaker to be evaluated and optimised for co-existing disease. Multi disciplinary specialities opinion like cardiology, endocrinology, neurosurgery, ENT has been taken. Pacemaker should be checked for smooth functioning with battery life, battery impedance, performance of the leads and appropriateness of current setting from the programmer. In our patient pacemaker was reset from DDD to VOO mode and heart rate has been set from 80 / minutes before induction of anesthesia.

General anesthetic agents like narcotic and inhalational agents, do not affect the current and voltage settings and thresholds of pacemaker¹. Its

better to avoid using etomidate and ketamine as these can cause myoclonic movements²Inappropriately triggering of pacemaker by inhibition or stimulation should be avoided³. Pacemaker monitoring places important role before and after starting mechanical ventilation to know the dislodgement of pacemaker leads by positive pressure ventilation⁴. Shivering and fasciculation should be avoided if the pacemaker is rate responsive, and ventilation should be controlled and kept constant in case of "minute ventilation" rate responsive; hypothermia or hyperthermia must be avoid in temperature rate response pacemaker⁵.

ECG monitoring was an important role to detect pacing discharge intraoperatively. Backup pacing and defibrillation facilities should be available. Postoperative shivering should be avoided, to prevent dislodgement of pacing leads. Postoperatively pacemaker settings should be reprogrammed to their original setting.

CONCLUSION

Cardiac patient with permanent pacemaker in situ with severe comorbid condition, posted for non-cardiac neurosurgery, general anesthesia with Invasive cardiac monitoring is better choice. Transcutaneous pacing and transvenous pacing facility should be available Intraoperatively.

Peanesthetic evaluation, intraoperative careful monitoring, acceptable pain relief and post operative care is required for management of these patients.

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