



CHALLENGES IN ANAESTHESIA FOR PATIENT OF PACEMAKER FOR THROMBOEMBOLECTOMY

Anaesthesiology

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ABSTRACT

Anaesthetic management of patients with cardiac pacemakers provides special challenges. Here is description of case having implanted permanent pacemaker posted for thromboembolctomy of infarct of middle cerebral artery possibly due to embolism leading to acute ischemic stroke. It's important to know indication of pacemaker (treat symptomatic bradycardia of any origin), time of placement, life of pacemaker, extent of dependency, distance from surgical site, type of cautery to be used during surgery, possible major blood shift, cardiac changes due to neurological condition before planning anaesthesia for this patient. So proper preanesthetic check-up and effective communication between surgeon, cardiologist and anaesthesiologists is key for management and success of the procedure.

KEYWORDS

pacemaker, embolism, acute ischemic stroke, effective communication.

INTRODUCTION

Patient with pacemaker can pose great challenge to anaesthesiologist in management. We need to know about pacemaker indication (treatment of bradyarrthmias), time, life dependency, battery life, pacemaker position and mode before surgery. Distance from surgical site and use of cautery affects pacemaker function so need to have information preoperatively regarding it. Patients with pacemakers and on treatment with anticoagulant are at high risk for thrombus lodgement during any insults. It can lead to various manifestation one of which can be cerebrovascular incidents. Most common cause of CVA in such cases is acute ischemic stroke. Acute ischemic stroke will have effect on cardiovascular status of patients that gets exaggerated in patients with pacemaker which we need to anticipate and be vigilant about it.

CASE REPORT

A 67 years old female came to emergency medicine with sudden loss of consciousness followed by right sided weakness and mouth deviation to opposite side. There was no history of vomiting, any ear and nose bleeding, decreased vision or head injury. Patient is known case of complete heart block since 40 years and permanent pacemaker (VVIR) was implanted at the same time. She was put on anticoagulant drug. She is also known case of hypertension since 40 years and was taking medication regularly. Patient went suddenly into atrial fibrillation 3 days back and battery replacement was done for same after which patient was apparently alright for 3 days. Pacemaker was on asynchronous mode after battery replacement. No anticoagulant started after procedure. Noncontrast computed tomography of head was done to demonstrate infarct in left main middle cerebral artery. Emergency thromboembolctomy was planned as cause of acute ischemic stroke suspected to be embolic.

On Preanesthetic check-up, patient was unconscious and found to have heart rate of 60/min regular on palpation. Her preoperative Glasgow coma scale score was E1V2M2. Her airway examination could not be done. Other systematic examination was within normal limits. Chest x-ray showed pacemaker in situ. Electrode in RV as shown in figure 1. ECG showed that every QRS complex is preceded by a vertical spike suggestive of paced rhythm but not regularly with left axis deviation and LBBB morphology (RV pacing), no acute ST-T changes as shown in figure 2. This was ECG of day patient came for battery replacement. Echocardiography showed good left ventricular function with ejection fraction of 60%.

Explaining high risk consent to patients keen and confirming ICU backup patient was taken in. Cardiologist was asked to be on standby. All cardiac drugs and Defibrillator checked and kept handy. Pacemaker mode was on VOO asynchronous mode after battery replacement. After shifting the patient to operation theatre standard ASA monitors were attached, including pulse oximeter, NIBP, ECG, Temperature. Induction was done with Injection Fentanyl 2ug/mg IV and Injection Propofol 2mg/kg IV. Injection Rocuronium 1mg/kg was used. Endotracheal intubation was done with videolaryngoscope and endotracheal tube of 7.5 mm internal diameter was used. Maintained

on O2:Air (50:50), sevoflurane and intermediate muscle relaxant. Cautery was not used. Patients cardiac status was stable throughout procedure. Patient was shifted on ventilatory support because of poor preoperative GCS and difficulty in weaning from ventilator. Post operatively developed intracranial haemorrhage post thrombectomy and was still on ventilatory support.



Figure 1. Chest X-ray Showing Pacemaker In Situ.

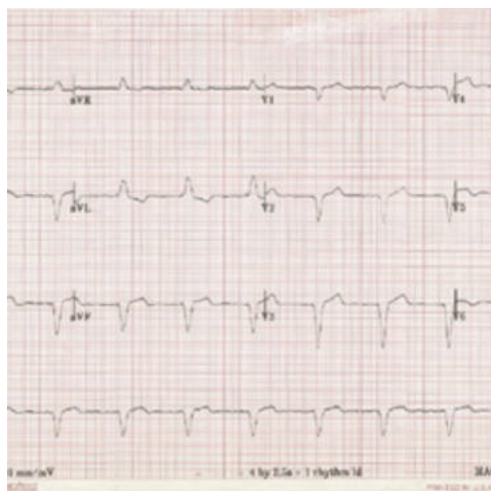


Figure 2. ECG With Irregular Pacing Taken Before Battery Replacement Done.

DISCUSSION

A patient with pacemaker pose challenge to anaesthesiologist. Effective communication between surgeon, cardiologist and anaesthesiologist needed for management of patient with pacemaker. Regarding pacemaker thorough information is needed. Cardiac status and effect of present condition on cardiovascular system need to be understood before deciding plan of anaesthesia. Therefore, proper and detail preanesthetic check-up is must for patients with pacemaker posted for non-cardiac surgery.

The usual problem encountered with pacemaker intraoperatively is electromagnetic interference due to cautery devices. It produces high energetic electromagnetic field causing oversensing of pacemakers. This oversensing leads to a pacemaker inhibition and may cause cardiac arrest. Therefore, pacemakers are put on asynchronous mode before start of surgery. And surgeon has to be informed about less use of cautery and if to be use then preferably bipolar cautery. The interference increases with decrease in distance between surgical site and pacemaker site. Intraoperatively avoidance of precipitating factors like hypoxia, hypothermia, hypotension and acidosis. It will predispose patients to dysarrhythmias and will worsen cardiac status. Always have backup plan for this situation in form of defibrillator with pads or transcutaneous pacing. We need to make sure to reprogram pacemaker mode after surgery to its original mode provided hemodynamically stability.

Acute ischemic stroke of which embolism is most common cause is generally treated with recombinant therapy if contraindicated (risk of bleeding) then endovascular surgery can be planned. Embolic stroke are leading cause of ischemic stroke as found by study done by M. Fisher et al in this kind of patients and it increases cardiac insult of already deteriorating heart. M. Fisher also found that risk of thromboembolism is high in ventricular paced pacemaker than atrial or atrioventricular paced patients. So pacemaker patients are great concerns and need to be manage properly.

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