



## CASE REPORT

### ANAESTHETIC MANAGEMENT OF TWO PATIENTS WITH PACEMAKER IN-SITU POSTED FOR HERNIORRHAPHY

\*Shishir, K. R., Vidya Patil and Renuka Holyachi

Department of Anaesthesiology, BLDEU's Shri B.M Patil Medical College Hospital and Research Centre, Vijayapur, India

#### ARTICLE INFO

##### Article History:

Received 20<sup>th</sup> December, 2015

Received in revised form

14<sup>th</sup> January, 2016

Accepted 18<sup>th</sup> February, 2016

Published online 16<sup>th</sup> March, 2016

##### Key words:

Anaesthesiologist,  
Subarachnoid,  
Anaesthetic,  
Herniorrhaphy.

#### ABSTRACT

**Background:** Patients with cardiac disease presenting for surgery pose a considerable challenge to the anaesthesiologist. Even patients belonging to geriatric and pediatric age group are detected to have electrophysiological disorders. Pacemakers are being used with greater frequency for both conduction and arrhythmia problems in such patients. Although no definite figures are available, the number of patients with pacemaker coming for anaesthesia and surgery is increasing now a days. Case of pacemaker during surgery as well as understanding its anesthetic implications is crucial in management of these patients. The growing use of pacemakers increases the likelihood that the anaesthesiologist will be often required to manage anaesthesia for a patient with an implanted pacemaker.

**Case report:** 1) Here we present a case of anaesthetic implication of 61 year old male patient with pacemaker insitu diagnosed as left sided indirect inguinal hernia posted for herniorrhaphy which was managed under subarachnoid block. Pacemaker was inserted 5 yrs back. On examination pulse 86 per minute, BP 140/90 mm of Hg. CVS/RS normal. ECG: Rate- 70 with pacemaker spikes with LBBB. 2) Anaesthetic implications of 6 years old male child with pacemaker insitu diagnosed as right congenital hernia posted for herniorrhaphy managed under general anaesthesia. Pacemaker was inserted 3 years back. Intense monitoring for rhythm changes were done, other measures to decrease interference of pacemaker with perioperative events were considered. Bradycardia Management. Intravenous pacing was kept ready.

**Conclusion:** Perioperative goal in management of patient with pacemaker. Minimum interference with pacemaker. Manage pacemaker failure.

Copyright©2016, Shishir et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Citation:** Shishir, K. R., Vidya Patil and Renuka Holyachi, 2016. "Anaesthetic management of two patients with pacemaker in-situ posted for Herniorrhaphy", *International Journal of Current Research*, 8, (03), 27681-27682.

## INTRODUCTION

Patients with cardiac disease presenting for surgery pose a considerable challenge to the anaesthesiologist. Patients belonging to geriatric and pediatric age group are detected to have electrophysiological disorders. (Annals of Cardiac Anaesthesia, 2005) Pacemakers are being used with greater frequency for both conduction and arrhythmia problems in such patients. The growing use of pacemakers increases the likelihood that the anaesthesiologist will be often required to manage anaesthesia for a patient with an implanted pacemaker. Care of these patients require identification of risk factors, pre-operative evaluation, optimization of medical therapy, monitoring, choice of appropriate anaesthetic technique and drugs (Tej K. Kaul and Geeta Tayal, 2007).

\*Corresponding author: Shishir, K. R.

Department of Anaesthesiology, BLDEU's Shri B.M Patil Medical College Hospital and Research Centre, Vijayapur, India

## Case Reports

### Case 1

A 61 year old male, ASA physical status III, weighing 75 kg was scheduled for left sided hernia repair under spinal anaesthesia. His medical history included hypertension since 20 years on treatment with Tab. Amlodipine 5mg OD and Tab. Clopidogrel 75mg OD. Permanent pacemaker was inserted 5yrs back in right pectoral area. Correct functioning of pacemaker has been confirmed 3 weeks before surgery. Tab. Clopidogrel stopped 1 week before and Tab. Amlodipine continued till morning of surgery. Intraoperative monitoring included pulse oximetry, NIBP and ECG. Emergency drugs like isoprenaline, atropine was kept ready, Options for transcutaneous pacing was available. In left lateral position, under all aseptic precautions subarachnoid block was performed in L3- L4 space 2.8 ml of 0.5% Heavy Bupivacaine with 60µg Buprenorphine given.

Onset of action was 5 mins. Left sided mesh hernioplasty done. Surgery lasted for 90 mins and was uneventful. There was no episode of hypotension and no vasopressor was administered. No pacemaker dysfunction was noted at any time before or during surgery. Patient remained conscious and no arrhythmias or other symptoms were observed. Patient shifted to postoperative ward and continuous ECG monitoring, pulse oximeter, hemodynamic parameters and urine output was monitored. Recovery period was uneventful and discharged on 7<sup>th</sup> post operative day after taking cardiologist opinion.

## Case 2

A 6 year old male child weighing 20 kg was posted for right hernioplasty under general anaesthesia. He was full term born child by caesarean section. K/C/O mitral valve prolapse with mitral regurgitation on pacemaker. Pacemaker Inserted 2yrs back in left hypochondrium. There was no history of any cyanotic and acyanotic congenital anomalies in the child and family members. On examination, clubbing of fingers was present. Pulse and BP were 82/min and 110/70 mm of Hg respectively. Heart sounds were normal and chest was clear bilaterally. Airway evaluation was unremarkable, blood biochemistry within normal limits, ECHO revealed good LV systolic function with ejection fraction of 50%. Cardiologist opinion was taken for functioning of the pacemaker. Standard monitors like NIBP, pulse oximeter and ECG were attached. Inj. Isoprenaline, atropine and defibrillator was kept ready. Premedicated with inj. midazolam 0.5mg, inj. ondansetron 2mg and inj. fentanyl 40 µg. Induction with inj. propofol 40mg and inj. atracurium 10mg, endotracheal intubation was done with ET tube of internal diameter 5mm, anaesthesia was maintained with sevoflurane, nitrous oxide, oxygen and atracurium. Surgery lasted for 40mins and neuromuscular blockade was reversed with inj. neostigmine 1mg and inj. glycopyrolate 0.1mg at the end of procedure and extubated. Intraoperative and postoperative course was uneventful. Recovery period was uneventful and discharged on 5<sup>th</sup> post operative day after taking cardiologist opinion.

## DISCUSSION

### Goals of anaesthesia

- Maintain stable haemodynamics.
- Prevent MI by optimising myocardial oxygen supply and reducing oxygen demand.
- Monitor for ischemia.
- Treat ischemia or infarction if it develops
- Normothermia.

Preoperative evaluation is an important part of anaesthetic management of a patient with pacemaker undergoing non cardiac surgery. Identify the type of device, details of model and manufacturer, half life of pacemaker battery, the programmed settings (mode and rate) and the indication for the implant should be noted. (Pediatric Anesthesia, 2015) Spontaneous device failure is uncommon but there are number of potential hazards the most important is electromagnetic interference (EMI). Use of electrocautery is a well recognized hazard (Irnich, 1999; Levine *et al.*, 1986). If EMI is recognized

by pacemaker, it can be converted to asynchronous mode by magnet, magnet application is an extremely important function. Electrocautery may cause pacemaker failure even when device has been switched to asynchronous mode. Use bipolar cautery as it is less hazardous than unipolar. (Ramon-Gonzalez, 2001) If unipolar cautery is to be used, grounding plate should be placed close to operative site and as far away as possible from the site of pacemaker, usually on thigh and should have good skin contact. Electrocautery should not be used within 15 cm of pacemaker. Technique of induction and maintenance of anaesthesia will depend on clinical condition, type, duration of surgery and comorbidities. Etomidate and ketamine should be avoided as they cause myoclonic movements. (Senthuran *et al.*, 2002) Succinylcholine should not be used as the myogenic electrical activity associated with muscle fasciculation may result in EMI. (Finfer, 1991) Inhalational agents can be used for maintenance of anaesthesia as they do not alter current voltage thresholds of Pacemaker. (Atlee and Bernstein, 2001) Regional anaesthesia is also considered as a safe technique for a patient with pacemaker if the patient is adequately prepared. Alternative method of pacing must be available.

## Conclusion

- In patients with implantable pacemaker, anaesthetic management should be planned preoperatively as per patient's medical status.
- Careful intraoperative monitoring of ECG, pulse oximetry and arterial blood pressure should be done.
- Electrocautery must be used with precautions for minimum EMI. Provision of temporary pacing should be available in OT to deal with emergency situation of pacemaker malfunctioning.
- Pacemaker should always be rechecked after the procedure.

## REFERENCES

- Annals of Cardiac Anaesthesia, 2005. 8:21-32.
- Atlee, J.L. and Bernstein, A.D. 2001. Cardiac rhythm management devices (Part II) perioperative management. *Anesthesiology*, 95:1492-1506.
- Finfer, S.R. 1991. Pacemaker failure on induction of anaesthesia. *Br J Anaesth.*, 66:509-512.
- Irnich, W. 1999. Pacemaker related patient mortality. *Pace* 22:1279-1283.
- Levine, P.A., Balady, G.J., Lazar, H.L., Belott, P.H., Robert, A.J. 1986. Electrocautery and pacemakers: management of the paced patient subject to electrocautery. *Ann Thorac Surg*, 41:313-317.
- Pediatric Anesthesia and Critical Care Journal, 2015. 3:38-40.
- Ramon-Gonzalez, J., Hyberger, L.K. and Hayes, D.L. 2001. Is electrocautery still a clinically significant problem with contemporary technology. *Pace*, 24:709
- Senthuran, S., Toff, W.D., Vuylsteke, A., Solesbury, P.M. and Menon, D.K. 2002. Implanted cardiac pacemakers and defibrillators in anaesthetic practice. *Br J Anaesth.*, 88:627-631.
- Tej K. Kaul and Geeta Tayal, 2007. Anaesthetic considerations in cardiac patients undergoing non cardiac surgery: *IJA* 51:280.