ORIGINAL RESEARCH PAPER

Anaesthesiology

KEY WORDS: Asynchronous Mode, Electrocautery, Permanent Pacemaker

ANAESTHETIC MANAGEMENT OF A PATIENT WITH CARDIAC PACEMAKER FOR RENAL TRANSPLANT

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ABSTRACT

Patients with permanent pacemaker posted for non cardiac surgery pose challenges for modern-day anaesthesiology. The important considerations in this regard are pacemaker dependency, prior programming to asynchronous mode, electrocautery, perioperative interference leading to pacemaker failure and hemodynamic compromise. We report successful anaesthetic management of a patient of chronic renal failure with permanent pacemaker in situ who underwent renal transplant under general anaesthesia.

Case report: A 40 year old male patient weighing 55kilgrams with diagnosis of chronic renal failure posted for open right renal transplant under general anaesthesia. Patient was k/c/o chronic hypertension since 2013 and hypothyroidism since 2014 Past medical history revealed complete heart block, for which permanent pacemaker was implanted 6 years ago.

Conclusion: Open renal transplant in patients with pacemakers is possible but requires a multidisciplinary approach to care. During surgery, bipolar electrocautery should be used to reduce electromagnetic interference and the grounding pad should be placed as far away from the pacemaker as possible.

INTRODUCTION

Anaesthetic management of a patient with pacemaker is one of the challenges for anaesthesiologist now a day.A pacemaker is a small medical device that helps control heartbeats through electrical stimulation[1][2]. It uses electrodes to send impulses to the heart to maintain a regular heart rate. Management of these patients includes Care of the pacemaker during surgery and Its anaesthetic implications. We report successful anaesthetic management of a patient of chronic renal failure with permanent pacemaker in situ who underwent renal transplant under general anaesthesia.

CASE REPORT

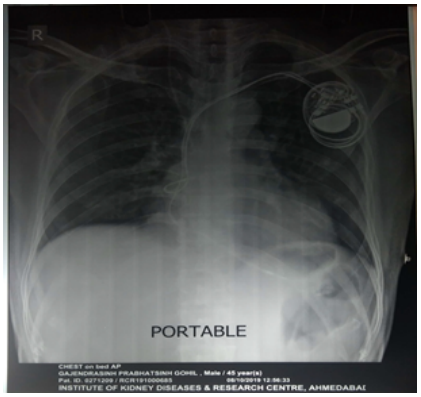
A 40 year old male patient weighing 55kg with diagnosis of chronic renal failure posted for open right renal transplant under general anaesthesia.

Patient was k/c/o chronic hypertension since 2013 and hypothyroidism since 2014

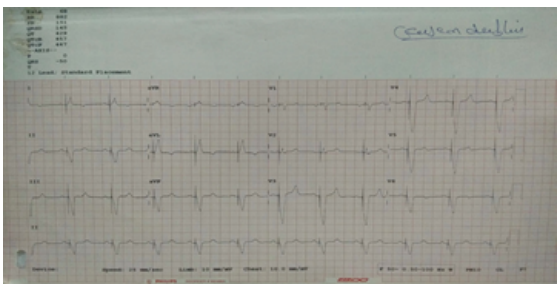
Past medical history revealed complete heart block, for which permanent pacemaker was implanted 6 years ago.

Airway examination - modified mallampati class 1.

Hematological and biochemical investigation were within normal limits except s.creatinine was higher (4.1mg/dl). patient was euthyroid before surgery.



X-RAY CHEST



12 LEAD ECG

Two-dimensional echocardiography revealed mild pulmonary hypertension and mild pericardial effusion with an ejection fraction 55%.

The pacemaker was identified to be IDENTITY ADX VDDR 5480(MODE:VDDR),in proper working condition.It was reprogrammed to asynchronous VOO mode on day before surgery. Defibrillator, transcutaneous pacing crashcart for its all content were checked and kept ready before induction of anesthesia.Grounding plate of unipolar cautery was placed on thigh of the patient.

patient premedicated by inj.Ondesetran (4mg)inj. Glycopyrrolate (0.2mg) and inj.fentanyl(150mg). After preoxygenation, patient induced with inj.thiopenton sodium(350mg) and inj.Atracurium(30mg) to facilitate intubation.Intubation wasdone using 8 no.cuffed endotracheal tube..Aneasthesia was maintained with oxygenation,Air,Savoflurane and Atracurium .

Under aseptic precaution central line (right IJV) secured very carefully especially during insertion of guidewire (It is potentially arrhythmogenic).Cannulation of the right radial artry was done.

Cardiac output monitoring done by flotrac. Intra-op monitoring- Heart Rate,N IBP,IBP, SpO2, ECG, CVP, ETCO2, temprature, U/O. Intraoperative central venous pressure guided fluid was given.

Intraoperative bipolar cautery was used.grounding plate placed on thigh. Careful monitoring of pulse, pulseoximetry

and arterial pressure was done during electrocautery.(ECG monitoring can also be affected by interference).Inj.mannitol 20gm given 20 min before clamp released. Inj. Lasix (100mg) given 5 min. before clamp released. Acid-base status and electrolyte were within normal limits during intraoperative period which was checked by arterial blood gas analysis. Urine output established immediately Intraoperative period was uneventful. Patient was extubated with adequate reversal agent and shifted to post anaesthesia care unit.The device rechecked after operation.

DISCUSSION

Advancement of biomedical engineering,established safety,efficacy of newer generation pacemakers has resulted in increasing number of patients coming for various surgery with pacemaker in situ.It requires thorough understanding about indication of pacemaker insertion, various modes of pacing, and programming of pacemaker.A cardiologist should also be consulted for device evaluation regarding its proper function and life of the batteries. Important concerns during general an anaesthesia are perioperative interference with pacemaker function due to electrolyte, acid-base disturbances, and electromagnetic interference (EMI) leading to pacemaker failure and hemodynamic compromise.

Open renal transplant in patients with pacemakers is possible but requires a multidisciplinary approach to care. During surgery, bipolar electrocautery should be used to reduce electromagnetic interference and the grounding pad should be placed as far away from the pacemaker as possible.

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Disclosure:

Noconflict of interest,financial,or otherwise are declared by authers.

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