



Anaesthetic management of a case of atrial fibrillation posted for transurethral laser resection of prostate.

KEYWORDS

ATRIAL FIBRILLATION, TRANSURETHRAL LASER RESECTION, ANAESTHETIC MANAGEMENT

Dr. Jateen Amonkar

Resident, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

Dr. (col) V.R.R Chari

Prof and HOD, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

Dr. Pranita Kate

Resident, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

Dr. Soumyanath Maiti

Resident, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

Dr. Farha Nasreen

Resident, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

Dr. Arnab Paul

Senior Resident, Dept of Anaesthesia, Dr. D.Y. Patil Medical College, Pimpri, Pune

ABSTRACT Atrial fibrillation is one of the most common arrhythmias occurring in 0.4-0.5% of adult population. It may be encountered preoperatively in patients posted for anesthesia and may occur during anesthesia or may occur or persist in postoperative period. A rapid heart rate with loss of atrial systolic function and irregular ventricular response associated with impaired ventricular diastolic function may result into hemodynamic deterioration and reduced cardiac output. Surgical patients may present with atrial fibrillation due to pre-existing AF, new onset AF or paroxysmal AF. The acute onset AF is usually treated by direct current cardioversion when patient is unstable but pharmacological agents like amiodarone, diltiazem, digoxin can also be used to achieve pharmacological cardioversion. In this case patient was a diagnosed case of atrial fibrillation and was digitalized. He had a 85 gm prostate gland which was resected with the help of a laser. Anaesthesia planned was single shot sacral epidural keeping hemodynamic goals in consideration. Intraoperatively patient developed an episode of atrial fibrillation which was treated with Inj amiodarone 150mg slowly over 10 mins thereafter controlling the heart rate.

The aim of this particular case report is to review the management strategies of atrial fibrillation with particular attention given on the management of perioperative atrial fibrillation and prevent further complications. Here we report a successful management of a 70-year-old diabetic male with atrial fibrillation since 6 months posted for Trans Urethral laser Resection of prostate.

INTRODUCTION

Atrial fibrillation is one of the most common arrhythmias occurring in 0.4-5% of adult population and most of these are not associated with any cardiac disease. Atrial fibrillation may be encountered preoperatively in patients posted for anesthesia and may occur during anesthesia or may occur or persist in postoperative period.¹ A rapid heart rate with loss of atrial systolic function and irregular ventricular response associated with impaired ventricular diastolic function may result into hemodynamic deterioration and reduced cardiac output. This is particularly detrimental in patients with poor cardiac reserve. There is also risk of thromboembolism due to temporary stasis of blood in atria and stroke further.

Surgical patients may present with atrial fibrillation due to pre-existing AF, new onset AF or paroxysmal AF.^{2,3,4} The patient should be examined and assessed for the common risk factors which are responsible for the onset of atrial fibrillation like sepsis, pulmonary embolism, electrolyte and acid base disorders, ischemic heart disease, thyrotoxicosis, hypovolemia and hypoxia.⁵ The mechanism of this arrhythmia is believed to be re-entry. In atrial fibrillation, the atria do not contract, and the atrioventricular (AV) conduction system is bombarded with many electrical stimuli, causing inconsistent impulse transmission and an irregularly irregular ventricular rate.⁶

We present successful management of a patient who is a known case of atrial fibrillation posted for Trans Urethral laser Resection of prostate.

CASE REPORT

A 70-year-old male patient weighing 57 kg presented to our hospital with difficulty in passing urine since 3 months. Patient is a known case of atrial fibrillation since 6 months and has been taking Tab

digoxin 0.25 mg once a day and aspirin 75 mg once a day for the same. Patient is also a known case of diabetes mellitus type 2, since 14 years and has been taking tablet metformin (500 mg) once a day for the same.

On general examination patient had pulse rate of 90 beats per minute which was irregularly irregular. Blood Pressure was 130/80 mm of Hg. Chest xray showed finding suggestive of cardiomegaly and ECG showed absent 'P' waves with irregular R-R interval and mild left axis deviation. 2D echo showed mild LV systolic dysfunction, mild MR, basal inferoposterior wall hypokinesia, mild lateral wall hypokinesia, an ejection fraction of 30%. USG Abdo-Pelvis was s/o prostatomegaly (85 g) with features of bladder outlet obstruction. Preoperative laboratory investigations were all within normal limits.

Oral hypoglycemic drug was stopped on the day of surgery and tablet aspirin was continued in the morning and the patient was adequately digitalized prior to surgery. After obtaining consent for surgery and anesthesia, the patient was shifted to the operating room. Baseline monitoring was established. Intravenous (IV) access was taken with a 20G iv cannula.

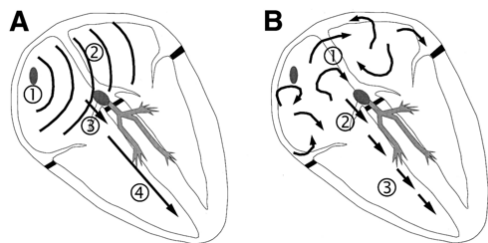
The presence of 85 gm of prostate gland requiring short duration of resection and need for single shot sacral epidural was planned keeping hemodynamic goals in consideration. General anaesthesia was avoided because of the effects of volatile agents on the atria are complex and include depression of sinus node automaticity, increased supra-ventricular refractoriness and depressed atrio-ventricular nodal conduction.⁷⁻⁸

Epidural block was given in L5 S1 under all aseptic precautions using 18 G Tuohys type epidural needle after positioning the patient in sitting position. 12ml of 0.5% of ropivacaine was given to achieve a

block level of T12 dermatome with adequate analgesia and the resection was started. 30 mins after initiation of surgery patient complained of uneasiness and palpitation, heart rate was 220 beats per minute with absent P waves and irregularly QRS complex on electrocardiogram. This intraoperative episode of atrial fibrillation was treated with Inj amiodarone 150 mg given slowly over 10 mins thereafter the heart rate dropped to 110 beats/min and eventually normal sinus rhythm over 20 mins. Patient was haemodynamically stable throughout the episode of atrial fibrillation. The 85 gm of prostatic growth was resected successfully. The procedure lasted a total of 1 hour. Fluid overload was avoided and a total of 750 ml normal saline was infused throughout the duration of procedure.

Systolic and Diastolic blood pressure were kept between 100-120 mm of Hg and 78-96 mm of Hg respectively. There was minimal blood loss during the procedure. surgical hemostasis was achieved and the patient was shifted to recovery room where he had an uneventful recovery.

DISCUSSION



[A] Sinus rhythm. During normal sinus rhythm, the heartbeat is a single carefully coordinated process beginning in the SA node (1). The electrical signal spreads across the atria (2) and via the AV node (3) to the ventricles (4).

[B] Atrial fibrillation. When patients are in AF, the atria are constantly activating in a chaotic way because of multiple electrical signals firing at 400 to 600 beats per minute (1). The AV node (2) filters out most of these extra signals but still usually allows more beats to reach the ventricles than normal (3).

Atrial fibrillation is a common arrhythmia frequently seen during the perioperative period in patients undergoing surgery. Usually new onset atrial fibrillation is uncommon during the perioperative period. Roger et al reported that overall incidence of supraventricular tachycardia was estimated to be less than 1% and in those with an SVT, the incidence of AF and atrial flutter was 30% and 12%, respectively with only 20% of arrhythmias occurring intraoperatively.

The aim of this particular case report is to review the management strategies of atrial fibrillation with particular attention given on the management of perioperative atrial fibrillation and prevent further complications.

Particular emphasis is given on management of AF including the elimination of precipitating factors which might worsen the clinical condition of the patient and treatment of arrhythmia itself with pharmacological intervention. The acute onset AF is usually treated by direct current cardioversion when patient is unstable but pharmacological agents can also be used to achieve cardioversion. In patients with rapid and chronic AF, priority is given to control the ventricular rate using pharmacological interventions. The arrhythmias may develop if precipitating factors are not removed or treated aggressively. Anticoagulation may be given to reduce the risk of thromboembolism.

Various important factors should be kept in mind before giving anesthesia to a patient with atrial fibrillation. All possible precipitating factors for AF should be identified and eliminated before and during anesthesia with effective treatment of arrhythmias to avoid further complications. Amiodarone, a class 3 antiarrhythmic drug, can be used to convert acute onset AF to sinus rhythm or partially effective in some patients. Diltiazem, a calcium channel blocker, provides effective control of ventricular rate but does not convert it into sinus rhythm. Diltiazem has been found to have better rate control than amiodarone but should be used cautiously because of associated hypotension. Digoxin is commonly used for rate control in persistent AF but has no benefit in paroxysmal AF. Weiner et al. found that digoxin resulted in conversion to sinus rhythm in a large proportion of patients with recent-onset atrial fibrillation⁹. Digoxin should be supplemented with other drugs due to its slow onset for better ventricular rate control. So we decided to give Inj. amiodarone during intraoperative atrial fibrillation to control rate and rhythm.

TURP syndrome causes acute changes in the intravascular volume and plasma solute concentrations. Hypervolemia is followed by a hypokinetic phase, characterised by low cardiac output, hypovolemia and low arterial pressure. Patients with cardiac disease may poorly tolerate these changes. Hyponatraemia is accompanied by reduction in serum osmolality, as most irrigating fluids are hypotonic. In cardiac patients who are on diuretics routinely, the risk of hyponatraemia is increased. Dilutional hypokalaemia may precipitate digitalis toxicity. Hypocalcaemia, acute lowering of the body temperature and release of prostatic substances or endotoxins may all increase cardiac morbidity. Goals were directed mainly toward minimizing any decrease in cardiac output & systemic vascular resistance and maintaining sinus rhythm. We also tried to infuse fluid on a lower side to avoid volume overload.

So, unanimous decision was taken to operate the prostate by laser resection. Laser resection decreases the incidence of TURP syndrome as surgeons use normal saline as irrigating fluid.

CONCLUSION

We conclude that patients with Atrial Fibrillation can undergo TURP under epidural anaesthesia with acceptable risk. Patients should be strictly monitored for acute fluid overload, left ventricular dysfunction, electrolyte imbalances and digitalis toxicity.

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