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ANESTHETIC MANAGEMENT OF POSTOPERATIVE ATRIAL FIBRILLATION IN AN ELDERLY PATIENT POSTED FOR LAPROSCOPIC TRANSABDOMINAL PREPERITONEAL (TAPP) INGUINAL HERNIA REPAIR.

Anaesthesiology

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ABSTRACT

Atrial fibrillation is a prevalent cardiac condition characterized by irregular and accelerated heartbeats, particularly common in the perioperative period. Atrial fibrillation during this time can result in hemodynamic instability and thromboembolic events, leading to increased morbidity and mortality rates. This phenomenon frequently occurs following cardiac surgery, affecting approximately 30-50% of patients, while its occurrence post other surgical procedures is less common, impacting around 5-10% of individuals. Risk factors such as advanced age, gender, cardiovascular issues, hypertension, and prior surgeries can elevate the likelihood of developing atrial fibrillation.We have encountered an elderly patient who was undergoing laparoscopic TAPP experienced an episode of atrial fibrillation immediately after extubation which was managed with pharmacological interventions aimed at regulating his cardiac rhythm and rate.

KEYWORDS

Atrial fibrillation (AF), Laproscopic TAPP.

INTRODUCTION

Atrial fibrillation is a supraventricular tachyarrhythmia characterized by disorganized atrial activity. AF manifests with the absence of p waves, which are replaced by fibrillatory waves accompanied by an irregular ventricular response. Diagnosis is typically confirmed through a 12-lead ECG. Atrial fibrillation is a prevalent complication in cardiac surgery, with an incidence ranging from 30-50%, while in noncardiac surgery settings, the incidence is around 5-10%. The development of AF in noncardiac surgery is influenced by various factors, including age, male gender, cardiac history, hypertension, and prior abdominal surgeries. Recently, we encountered a patient with a history of smoking who underwent a laparoscopic TAPP procedure and subsequently developed AF post-extubation despite an otherwise uneventful surgical course.

Case Report

A 62-year-old male weighing 45kg presented to the surgical outpatient department with the primary complaint of swelling in the right inguinal region and was scheduled for a right-sided laparoscopic Transabdominal Preperitoneal procedure. The patient had no history of Ischemic Heart Disease, dilated cardiomyopathy, hypertension, or diabetes. Additionally, there were no reported symptoms of cough. The patient had a smoking history spanning 25 years. The patient's MET score ranged from 4 to 7, and he was not currently taking any medications.

On examination, the individual exhibited a pulse rate of 82 beats per minute, maintaining regular rhythm. Their blood pressure measured at 118/76 mmHg, and oxygen saturation stood at 98%. The respiratory rate was noted to be 16 breaths per minute. Upon examination of the respiratory system, no abnormal sounds or crepitations were detected but air entry was decreased in both the lower lobes.The airway and spine appeared normal, with standard single breath count (SBC) breath holding observed. All routine blood investigations yielded results within the normal range.

ECG was showing sinus tachycardia ,Inverted T wave in lead V1 V2 and lead III.

Chest X ray was showing prominent brochovascular markings .

Anesthetic Management

The patient was transferred to the operating theatre, where peripheral intravenous (IV) access was established using a 20-gauge IV cannula in the right forearm, and a dextrose normal saline (DNS) solution was initiated. An intravenous injection of ondansetron 4 mg was administered. Based on the preoperative assessment, it was determined that the surgery would be carried out under American Society of Anesthesiologists (ASA) grade 3. Vital signs, including non-invasive blood pressure (NIBP), oxygen saturation (SpO2), electrocardiogram (ECG), heart rate (HR), respiratory rate (RR), and end-tidal carbon dioxide (ETCO2) levels, were continuously monitored throughout the surgical procedure.

The patient was positioned in a supine orientation, and medications such as glycopyrrolate 4 micrograms/kg IV, ondansetron 0.15 milligrams/kg IV, fentanyl 2 micrograms/kg IV, and midazolam 0.15 milligrams/kg IV were administered. Additionally, tramadol 2 milligrams/kg IV, paracetamol 15 milligrams/kg IV, and dexamethasone (dexona) 8 mg IV were given preoperatively. Following a 5-minute preoxygenation period using a Bain's circuit with an oxygen flow rate of 10 liters per minute, propofol 2 milligrams/kg IV and succinylcholine 2 milligrams/kg IV were administered to secure the airway with an endotracheal (ET) tube of 8.5mm internal diameter (ID). An atracurium 20 mg stat dose was provided, and closed-circuit ventilation was initiated in assist-control mode with a tidal volume of 380 milliliters, a respiratory rate of 14 breaths per minute, positive end-expiratory pressure of 5, and an inspiratory-to-expiratory (I:E) ratio of 1:2. Anesthesia was maintained by administering atracurium 4 mg IV every 15 minutes, isoflurane 0.8%, and oxygen at a flow rate of 3 liters per minute. The surgery lasted for 2 hours, during which the patient remained stable.

Before extubation, a bilateral transversus abdominis plane block was executed using bupivacaine 0.02% 20 mL on each side. Upon confirmation of the return of laryngeal reflexes and head-holding ability along with adequate motor tone power, Injection neostigmine 2.5 mg and glycopyrrolate 0.5mg were administered. Following extubation, the ECG exhibited an irregular rhythm in figure 1, accompanied by a blood pressure reading of 200/110 mmHg. Intravenous loxcard 1.5mg/kg, esmolol 10mg, and hydrocortisone 120mg were administered. Despite these interventions, the irregular rhythm persisted. After 10 minutes, the ECG showed a heart rate of 170/min with an irregular pattern, leading to a diagnosis of atrial fibrillation. An intravenous bolus of amiodarone 90mg was administered slowly over 5-7 minutes, followed by a continuous infusion at a rate of 1mg/min for the first 6 hours and then 0.5 mg/min for the subsequent 16 hours. The patient was then transferred to the Intensive Care Unit with oxygen therapy via a Hudson's mask at a flow rate of 4L/min. Clinically stable, the patient reported no complaints of pain or chest discomfort. Postoperative investigations such as TSH, 2D ECHO, serum electrolytes, CPK MB, and Trop I were within normal limits, and ABGA showed mild acidosis with pH 7.28, pco2 44, and HCO3 18, accordingly corrected with NaHCO3. After correction, ABGA post 6 hours was normal.

Figure 1: ECG shows Rhythm with Atrial Fibrillation.

On the first day post-surgery, 14 hours after the procedure, the 12-lead ECG displayed a regular rhythm while the amiodarone infusion was ongoing at a rate of 0.5 mg/min. Subsequently, the amiodarone infusion was halted, and tab metoprolol 25 mg was initiated twice daily, in conjunction with subcutaneous injections of LMWH 0.6 mg BD. The patient's vital signs remained stable, and oxygen supplementation at a rate of 4L/min via a Hudson's mask was sustained. By the second day post-surgery, the patient was transitioned to nasal prongs at a rate of 3L/min for 12 hours, followed by a switch to room air. Finally, on the third day post-surgery, the patient was transferred to the general ward.

DISCUSSION

Atrial fibrillation is the most prevalent postoperative cardiac arrhythmia. The primary goal of treatment is to address electrolyte imbalances, optimize intravascular fluid status, correct hypoxia, and optimize pain management to reduce sympathetic output. The management of AF typically involves either rate control or rhythm control, along with anticoagulation. Rate control is utilized to stabilize the patient's hemodynamic status and enhance ventricular filling, while rhythm control is often employed for acute management in hemodynamically unstable or symptomatic patients.

For rate control, beta-blockers (such as esmolol, metoprolol, propranolol), nondihydropyridine calcium channel blockers (like diltiazem, verapamil), or digoxin are commonly utilized. Among these, beta-blockers are the most effective and frequently prescribed. The target heart rate in AF patients is not a fixed range but is determined by the patient's hemodynamic status and comfort level.

In cases of acute management of AF patients who are hemodynamically unstable or symptomatic, guidelines recommend rhythm control or direct current cardioversion. Pharmacologic cardioversion is preferred for patients without structural heart disease and when avoiding general anesthesia is preferred. However, in cases of life-threatening hemodynamic instability, electrical cardioversion is generally advised. Class 1C (flecainide, propafenone) or Class III (amiodarone, ibutilide, dofetilide) antiarrhythmics are effective for pharmacologic cardioversion, with an average success rate of 70%-80% in restoring sinus rhythm.

Restoration of sinus rhythm is warranted in any patient with life-threatening hemodynamic instability, regardless of the arrhythmia's duration. However, it should only be attempted in patients with AF lasting more than 24 hours but less than 48 hours to avoid the necessity for anticoagulation. The evidence supporting anticoagulation in postoperative AF is not well-established. Due to the risk of bleeding in the days following major surgery and the transient nature of perioperative AF, anticoagulation is generally not recommended in these patients.

CONCLUSION

Arial fibrillation may manifest in elderly COPD patients during the postoperative period. In our case, we opted for beta-blockers and amiodarone as the therapeutic approach for atrial fibrillation, resulting in the patient reverting to a normal rhythm within 18 hours post-surgery without any additional complications. We advocate for timely diagnosis, treatment, vigilant monitoring, effective pain management, and early mobilization and postoperative care.

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