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Case Report



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Perioperative management dilemma for first-detected atrial fibrillation on the morning of scheduled non-cardiac surgery: A case report

Manish Keshwani¹, Habib Md Reazaul Karim^{1✉}, Suresh Nagalika¹, Satyajit Singh²¹Department of Anaesthesiology, Critical Care and Pain Medicine, All India Institute of Medical Sciences, Raipur, India²Department of Cardiology, All India Institute of Medical Sciences, Raipur, India

ABSTRACT

Rationale: Atrial fibrillation is a common perioperative arrhythmia, especially in elderly patients. Although a good amount of literature exists on the perioperative management of patients with pre-existing atrial fibrillation, information on managing a case with first-detected atrial fibrillation on the day of scheduled elective surgery is scarce. Although non-cardiac surgery guidelines in patients with cardiac diseases are well-established, this dilemma is not entirely answered.

Patient's concern: A 75-year-old male patient, anemic with suspected carcinoma and planned for diagnostic cystoscopy and biopsy, presented with irregularly irregular heart rate and palpitation on the morning of scheduled surgery.

Diagnosis: First-detected atrial fibrillation with first ventricular rate.

Interventions: Intravenous diltiazem 10 mg was given to control ventricular rate, followed by balanced general anesthesia for the intervention.

Outcomes: Patient responded to diltiazem; heart rate was controlled. General anesthesia was uneventful except for two brief episodes of hypotension. Atrial fibrillation reverted to sinus rhythm spontaneously the next day.

Lessons: The case highlights the dilemma faced in the decision-making based on existing guidelines and successful management of such a rare incident.

KEYWORDS: Atrial fibrillation; Elderly; Decision making; Non-cardiac surgery; Perioperative care; Thrombosis risk

1. Introduction

Atrial fibrillation (AF) is a common arrhythmia, with a 2%-60% incidence depending on the type of surgery, encountered by anesthesiologists in patients posted for surgery[1]. The patient may be asymptomatic or present with palpitations, dyspnea, diaphoresis, lightheadedness, and anxiety. Ineffective contraction of the heart leads to blood stasis predisposing to cardiac thrombus formation and its related complications. Although well tolerated by younger patients, hemodynamic instability can be life-threatening in the elderly. However, clear guidelines for managing elective surgeries in patients with first-detected AF in the preoperative area are lacking. The anesthesiologist making a preoperative diagnosis of AF faces the dilemma of whether to proceed with or to postpone elective non-cardiac surgery to find a possible cause of the arrhythmia such as acute myocardial infarction, pulmonary embolism, pericarditis, or thyrotoxicosis. In the absence of suggestive signs or symptoms, the frequency of new atrial arrhythmias associated with any of the

✉To whom correspondence may be addressed. E-mail: drhabibkarim@aiimsraipur.edu.in

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etiologies mentioned above is less than 1%[2]. Nevertheless, AF itself is a risk factor for morbidity and mortality[3].

In this case report, we present an elderly, anemic patient with suspected carcinoma planned for diagnostic cystoscopy and biopsy. The case highlights the dilemma faced in decision-making based on existing guidelines and successful management of such a rare incident.

2. Case report

Informed written consent was taken from the patient without displaying the name of the patient. A case report does not require ethical or research cell permission in our institute. A 75-year-old male patient presented to the urology outpatient department with hematuria for two days and poor flow of urine. His medical and surgical history was insignificant except for an uneventful transurethral resection of the prostate ten years back. He was hemodynamically stable, and preoperative serum electrolytes and paper tracing electrocardiogram (ECG) (Supplementary Figure 1), serum creatinine, and blood urea were within standard limits except for moderate anemia. On the morning of cystourethroscopy and biopsy, irregularly irregular pulse and ECG tracing on the monitor (Supplementary Figure 1, monitor section) were noted, which was confirmed as new-onset (first-detected) AF with the fast ventricular rate (heart rate 150/min) on 12-lead ECG. Although the blood pressure was slightly lower than the normal range, the fall was minimal, and he had no complaints except for palpitation. The patient was counseled, and after discussion with the patient party and surgical team, it was decided to carry on with the procedure with a continuing risk reduction strategy.

Intravenous diltiazem 10 mg was given to control ventricular rate, and a heart rate of 90/min was attained within an hour (normal: 60 to 100 beats/minute). General anesthesia was induced with an injection of propofol 70 mg and an injection of fentanyl 60 μ g. The airway was secured with size-4 i-gel, and anesthesia was maintained with oxygen, nitrous oxide, and desflurane. The intraoperative course was uneventful except for two brief episodes of hypotension, which was immediately managed with an injection of mephentermine. The patient was extubated on the table and shifted to the postoperative area. His postoperative pain was managed using paracetamol and was followed up until 48 h postoperative. His AF, fortunately, reverted to sinus rhythm by evening and remained so.

3. Discussion

The present case led our team to a dilemmatic situation on whether we should carry on with the proposed surgery or wait for further evaluation and proceed later. Although there is a good amount of literature for perioperative management of patients with existing atrial fibrillation, literature for managing a case with a diagnosis of first onset (first-detected) preoperative AF is either absent or scarce.

After a multi-disciplinary over-the-phone discussion where the cardiologist was consulted and discussion with the patient party and surgical team, we decided to continue with the scheduled surgery because supraventricular arrhythmias with uncontrolled ventricular rates are considered major clinical predictors of adverse cardiovascular events as per the American College of Cardiology/American Heart Association guideline for cardiac patients undergoing non-cardiac surgery[4]. The patient also had a few minor risk factors including advanced age, abnormal rhythm in ECG, and low metabolic equivalent of tasks. On the other hand, the benefit of deferring the surgery and evaluating the patient further for cardiovascular pathology was doubtful. The patient had no diabetes, hypertension, or family history; he had not suffered from any chest pain at any time in his life. Moreover, perioperative AF is frequently triggered by sympathetic activity[5]. Nevertheless, the risk of stroke, myocardial infarction, and death at one year in patients with perioperative AF increases, but even getting back sinus rhythm spontaneously does not reduce the risk to zero[6]. Furthermore, in an otherwise asymptomatic patient, the chance that new-onset AF is associated with an identifiable inciting cardiopulmonary or metabolic etiology such as myocardial infarction, pulmonary embolism, pericarditis, pneumonia, or thyrotoxicosis is less than 1%[2].

In addition, with the loss of sinus rhythm, the potential for thrombus formation increases due to blood stasis, especially in the left atrium. However, the risk of developing thrombus and related complications after the first-detected AF episode is significantly low for the first 48 h[7]. If the arrhythmia persists beyond 24-48 h, anticoagulant therapy should be considered after weighing the risk of postoperative bleeding; patient-specific stroke risk (CHA₂DS₂-VASc) and other factors influence management[7]. We decided not to postpone the case considering the procedure's urgency (possible carcinoma as diagnosis) and utilize the window period between the onset of atrial fibrillation and thrombus formation, if any. We opted for general anesthesia, considering the minimum 4 h lapse advocated between puncture and low molecular weight heparin by

the American Society of Regional Anesthesia guideline[8]. Further, we choose the agents that get eliminated from the body soon after the anesthesia is over. We also implemented precautions for intraoperative hypotension and treated the patient aggressively with a target to maintain mean blood pressure within >65 mmHg and diastolic blood pressure within 20% of the preoperative level.

After diagnosing new-onset AF in the preoperative setting, the first goal of management for the anesthesiologist should be to control heart rate and maintain cardiac output. In an asymptomatic, hemodynamically stable patient, an attempt should be made to achieve a heart rate of <100 to 110/min[9]. Beta-blockers and calcium channel blockers (verapamil, diltiazem) are the drugs of choice for rate control. Amiodarone can be used as a first-line drug in patients with heart failure[10].

We achieved this target with the help of intravenous diltiazem. We avoided beta-blockers and amiodarone, considering the age of the patient and the side effect profile of these drugs. The most common treatable causes of AF in the immediate preoperative setting, like electrolyte abnormalities, fluid imbalance, and/or impairment of arterial oxygen saturation, were ruled out.

With new-onset (first-detected) atrial fibrillation, every case might not need a diagnostic workup before surgery or postpone surgery. Depending on the individual case, a decision should be taken based on the patient's clinical condition, nature of AF, and planned surgery. Tailored anesthesia management and an informed multi-disciplinary decision are essential for such cases.

Conflict of interest statement

The authors report no conflict of interest.

Ethical statement

A case report does not require ethical or research cell permission in our institute.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon request.

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Authors' contributions

All the authors have contributed to the case management, literature search, and draft preparation. The first and the corresponding authors have edited the manuscript. All authors agreed to the final version of the manuscript.

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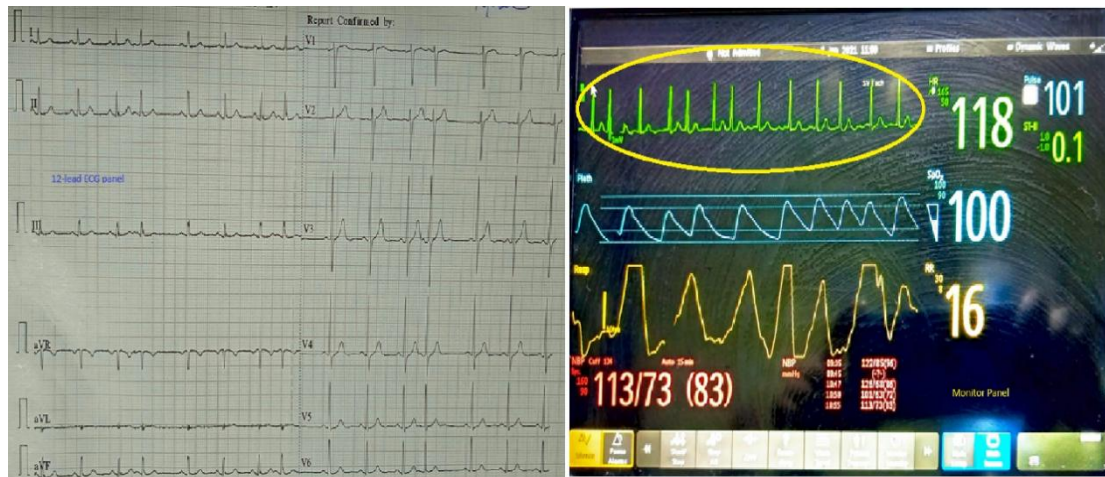
Affiliations:

¹*Department of Anaesthesiology, Critical Care and Pain Medicine, All India Institute of Medical Sciences, Raipur, India*

²*Department of Cardiology, All India Institute of Medical Sciences, Raipur, India*

Corresponding author:

Habib Md Reazaul Karim, Email: drhabibkarim@aiimsraipur.edu.in



Supplementary Figure 1. The 12-lead paper tracing electrocardiogram panel shows the electrocardiogram of a 75-year-old male patient showing normal sinus rhythm of the day before surgery. The monitor panel shows atrial fibrillation in the Lead II electrocardiogram (encircled) in the preoperative area on the day of surgery along with vitals in the multi-parameter monitor.