Case Report
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Ventricular Arrhythmia during Tracheal Intubation and Extubation under General Anesthesia Possibly Induced by Amisulpride: A Case Report

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We are presenting the first documented case of amisulpride related ventricular arrhythmia during tracheal intubation and extubation under general anesthesia in an 48 year-old female with psychiatric history of chronic schizophrenia who was treated with amisulpride. This case suggests the threshold of perioperative arrhythmia is possibly decreased in patients with long-term antipsychotic medication. So, the potential risk of antipsychotics-induced perioperative arrhythmia should be evaluated, as well as heart rhythm monitoring, prophylactic use of antiarrhythmic drugs, and preoperative adjustment of antipsychotics should be considered.

KEY WORDS: Amisulpride; Ventricular arrhythmia; Intubation, intratracheal.

INTRODUCTION

The occurrence of arrhythmia during anesthesia has been associated with increased costs, prolonged hospital stay, and higher mortality.[1] Various factors initiate and sustain arrhythmia, such as hypoxia, electrolyte disturbances, acid-base imbalance, myocardial ischemia, etc. However, little is known about the arrhythmia induced by antipsychotics during anesthesia. Amisulpride, a substituted benzamide derivative, is an atypical antipsychotic agent, effective in treating the positive and negative symptoms of schizophrenia.[2] Compared with the first-generation antipsychotic agents, amisulpride is better tolerated, with relatively few side effects and minimal behavioural toxicity in therapeutic doses with antipsychotic effect[2,3]; however, amisulpride related arrhythmias, such as QT interval prolongation, torsades de pointes, and bradycardia have been reported previously.[4,5] Here, we report a case of ventricular arrhythmia during tracheal intubation and extubation under general anesthesia possibly associated with amisulpride.

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CASE

A 48-year-old female (158 cm, 50 kg, body mass index 20.0 kg/m^2) was scheduled for esophageal foreign body extraction with flexible endoscopy under general anesthesia. The chief complaint was swallowing a date seed by accident for 24 hours. Computed tomography scan showed high density of the upper esophagus. The patient had been diagnosed with chronic schizophrenia, and amisulpride 200 mg was taken orally twice a day for three years.

On arrival in the operation room, electrocardiogram (ECG) showed sinus rhythm of 86 bpm, blood pressure is 86/50 mmHg, SPO_2 is 96%, and body temperature is 36.1°C. Anesthesia was induced with sulfentanyl 0.02 μg/kg, etomidate 0.3 mg/kg. Tracheal intubation was facilitated with cisatracurium 0.15 mg/kg and successfully performed using a video larygoscope (Verathon Inc., Bothell, WA, USA). Immediately after tracheal intubation, ventricular premature beats of bigeminy appeared in the ECG and lasted one minute. At that time, heart rate is 91 to 98 bpm, blood pressure is 100/73 mmHg. Lidocaine

50 mg was intravenously injected. Twenty seconds later, rhythm of the heart reverted to sinus rhythm. Inhaled sevoflurane was used to maintain anesthesia. During the operation, the rhythm of heart and hemodynamics remained stable. After the operation, the patient recovered consciousness, spontaneous breathing, and myodynamia. Immediately after tracheal extubation, ventricular premature beats of bigeminy occurred again, and was treated by intravenous injection of lidocaine 50 mg. Potassium, hemoglobin, glucose, partial pressure of oxygen (PO_2), partial pressure of carbon dioxide (PCO_2), pH and base excess levels measured by arterial blood gas analyzer were 3.6 mmol/L, 105 g/L, 5.8 mmol/L, 81 mmHg, 35 mmHg, 7.45 and 0.3 mmol/L, respectively. The subsequent ECG showed sinus rhythm and the patient was discharged to the original psychiatric hospital the following morning.

DISCUSSION

To the best of our knowledge, this is the first case report of ventricular arrhythmia possibly induced by antipsychotics during anesthesia. Tracheal intubation is the most commonly used method to ensure adequate airway during general anesthesia. Though tracheal intubation and extubation may lead to sympathoadrenal excitement, sustained ventricular arrhythmia is rare, even in patients undergoing cardiac surgery.[6] It is well known that, antipsychotics may cause arrhythmia, such as QT interval prolongation, frequent ventricular premature beat and torsades de pointes, even cardiac arrest.[7-9] Increasing evidence suggests that psychotropic drugs can increase the risk of sudden cardiac death.[10] Moreover, arrhythmias and cardiovascular events are lethal complications in patients with long-term application of antipsychotics.[11] However, little is known about the perioperative occurrence of arrhythmia induced by antipsychotics. In this case, amisulpride was taken for a long period before the surgery. Sustained ventricular arrhythmia occurred during the tracheal intubation and extubation, and disappeared until the application of lidocaine. Other risk factors leading to arrhythmia, such as electrolyte disturbances, acid-base imbalance, hypoxia, myocardial ischemia can be ruled out according to blood gas analysis and ECG. Hence, we speculated the ventricular arrhythmia was possibly associated with preoperative long-term administration of amisulpride. The human Ether-a-go-go related gene potassium ion channel blocking may be an important mechanism of antipsychotics related ventricular arrhythmia.[8] In addition, amisulpride selectively acts on D2/D3 dopamine receptors, and D2-receptor ligand has been shown to potentiate *N*-methyl-D-aspartate-induced intracellular increases in calcium concentration.[12] Furthermore, intracellular calcium overload trigger arrhythmia.[13]

Though the ventricular arrhythmia in this case didn't cause serious adverse consequences and was reversed by lidocaine, the risk factors and undesirable outcomes of antipsychotics-induced perioperative arrhythmia remain unknown. So we strongly suggest that ECG monitoring and suitable depth of anesthesia should be performed, antiarrhythmic drug (e.g., lidocaine) should be prophylactically used or prepared, other risk factors associated with arrhythmias should be avoided. Meanwhile, preoperative adjustment of antipsychotics should be considered for patients with long-term antipsychotic medication.

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