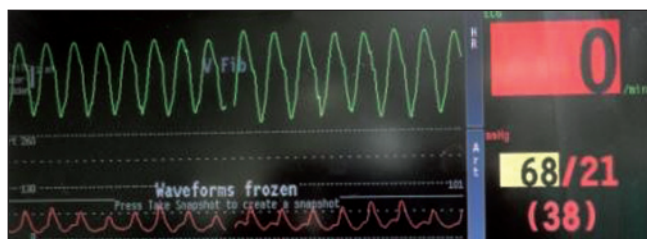


## Intraoperative pulseless ventricular tachycardia after Ondansetron

Sir,

Ondansetron is a 5-hydroxytryptamine (HT)<sub>3</sub> receptor antagonist safely used in the management of postoperative nausea and vomiting.<sup>[1]</sup> Cardiovascular adverse effects like myocardial infarction, arrhythmias such as atrial fibrillation, asystole, and ventricular tachycardia (VT) were rarely reported in adults. We report a case of severe intraoperative pulseless VT after intravenous ondansetron administration which was successfully resuscitated. We have obtained written informed consent for reporting this case from the patient.

A 25-year-old lady (48 kg) American Society of Anesthesiology (ASA) physical class I with history of infertility was posted for diagnostic hysterolaparoscopy. Her airway and baseline investigations were unremarkable. Anesthesia was induced with propofol, fentanyl, and atracurium and maintained with oxygen, nitrous oxide, and isoflurane. Perioperative period was uneventful. Twenty minutes before extubation, ondansetron (Emset from Cipla Ltd, Mumbai) 4 mg intravenous (IV) was given to prevent postoperative nausea and vomiting. Within 3 min, she developed VT [Figure 1] and hypotension with feeble pulse. Immediate cardiopulmonary resuscitation (CPR) was started with 2 minute cycles of high quality chest compressions at the rate of at least 100/minute, simultaneously with 10 breaths being delivered with an inspired oxygen (FiO<sub>2</sub>) of 100%. All anesthetic agents and surgical procedure were discontinued. Securing femoral arterial access, blood gas (BG) sample was taken immediately. Defibrillation using a biphasic shock of 200 J was delivered and five cycles CPR failed to revert into sinus rhythm. High quality CPR was continued. BG report suggested mild hypercarbia (47 mmHg), hypomagnesemia (0.55 mmol/L), and hypokalemia (2.6 Meq/L). Immediately CPR was supplemented with 2 g magnesium sulfate (MgSO<sub>4</sub>) infused over 5 min via



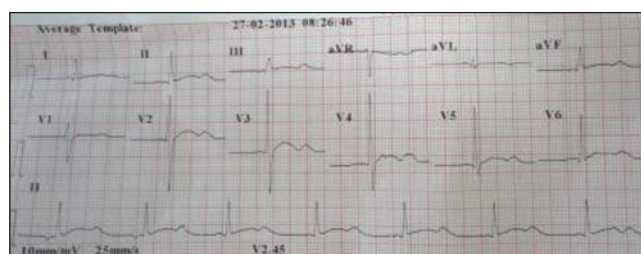
**Figure 1:** Electrocardiography (ECG) showing ventricular tachycardia with hypotension in monitor

external jugular vein followed by a slow infusion of potassium chloride. After the infusion of MgSO<sub>4</sub>, a repeat 200 J biphasic shock was delivered followed by 2 minutes of CPR. This time her rhythm reverted back to sinus and electrocardiography (ECG) was suggestive of QT interval prolongation [Figure 2]. She was then shifted to ICU under monitoring and put on elective ventilatory support. Adrenaline infusion was started and continued for few hours, following which she was hemodynamically stable without inotropes and regained consciousness within 12 h and was subsequently extubated.

5-HT<sub>3</sub> receptor antagonists are known to cause cardiac arrhythmias by several mechanisms.<sup>[2]</sup> There are ligand gated ion channels located on presynaptic terminals of autonomic nervous system.<sup>[3]</sup> Bradycardia can occur due to parasympathetic nervous system mediated actions and are observed during laparoscopy. But in our case VT occurred during laparoscopic surgery. Prolongation of QRS or QT interval has been reported with granisetron, ondansetron, and dolasetron leading to ventricular tachyarrhythmias though not commonly in healthy population.<sup>[4]</sup> Molecular level affinity of ondansetron to human tissue by human ether-a-go-go-related gene (HERG) programmed K<sup>+</sup> channel lead to prolongation of cardiac repolarization and QT prolongation.<sup>[5]</sup> In our case ondansetron induced QT prolongation triggered by electrolyte disturbances thereby leading to pulseless VT. The cardiovascular effects of serotonin are mediated by 5HT<sub>2-4</sub> receptors, which are distributed throughout the cardiovascular system including Bezold-Zarish reflex pathway. Blocking of this reflex by ondansetron can cause tachyarrhythmia.<sup>[6]</sup> 5HT<sub>3</sub> receptor blockade may also lead to unopposed action of 5HT<sub>2</sub> and 5HT<sub>4</sub> receptors resulting in VT.

To conclude, intraoperative ECG monitoring is lifesaving in our case, thus must be applied to any case under anesthesia even it is minor operation with ASA I patient. Ondansetron should be used cautiously in patient with deranged electrolytes.

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**Figure 2:** ECG demonstrated prolong QT after sinus rhythm

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