

Imipenem-induced paroxysmal supraventricular tachycardia in a sepsis patient

Dear Editor,

Patients admitted to the intensive care unit (ICU) often need supportive care with broad-spectrum antibiotics.^[1] A 22-year-old male was admitted to ICU of a tertiary care hospital with a history of pyrexia of unknown origin since 7 days and recent development of breathlessness since 1 day. Fever was of high grade, associated with rigors and chills and not associated with headache, photophobia, phonophobia, cough, chest pain, abdominal pain, vomiting, diarrhea, melena, or burning micturition. Breathlessness was sudden in onset, which was present even at rest. The patient reported one episode of hematuria and epigastric pain on the previous day. There was no history of surgery, drug allergy, or any other comorbidity. He was a non-alcoholic and a non-smoker. The patient was conscious and cooperative with a heart rate of 110 beats per minute, blood pressure of 90/62 mmHg, oxygen saturation of 84%, and respiratory rate of 50 breaths per minute. There was no skin rash, redness of eyes, pallor, icterus, cyanosis, clubbing, lymphadenopathy, and pedal edema. On systemic examination, nasal flaring, use of accessory muscles was present with bilateral crepitations on chest auscultation. Arterial blood gases revealed a pH of 7.31, PaO₂ of 68.5 mmHg, PaCO₂ of 37.6 mmHg, SpO₂ of 85%, HCO₃ of 18.5, lactate of 5.4, and base excess of -5.3 suggestive of compensated metabolic acidosis with Type 1 respiratory failure. The trachea was intubated and lungs were ventilated with assist control pressure mode ventilation. Blood and biochemistry investigations showed leukocytosis, thrombocytopenia, and raised C reactive protein 109 mg/L. Supportive management including intravenous (IV) doxycycline 100 mg, every 12 h and IV imipenem-cilastatin 500 mg every 6 h. On day 3 of ICU admission, the patient had an episode of unexplained paroxysmal supraventricular tachycardia (PSVT), which was managed with IV adenosine 6 mg. This was followed by one more episode of PSVT, which on observation corresponded with the time of administration of IV imipenem. Imipenem was immediately stopped. After this, no more episodes of PSVT were observed. Echocardiography and Trop T done following the PSVT episode showed a normal study. On day 4, Scrub typhus serology was reported as positive. In the next few days, the patient showed hemodynamic, hematological, and clinical

improvement. The patient was weaned off ventilator support and the trachea was extubated. The patient was discharged in a satisfactory condition after 10 days of ICU stay.

Pyrexia of unknown origin associated with respiratory distress requires broad-spectrum antibiotics in accordance with Surviving Sepsis Guidelines.^[2] Imipenem belongs to carbapenems and is well suited for empiric coverage of suspected gram positive, gram negative, mixed aerobic, or anaerobic infections.^[3] The published literature reports seizures, derangement in renal function test, diarrhea, vomiting, and phlebitis as adverse effects with imipenem. Less common side-effects include anaphylaxis, dyskinesia, fever, hypersensitivity, palpitations, deranged liver function test, and pruritis. Rare side-effects include tachycardia, rash, and pancytopenia.^[4] The sensitization of an allergen may require some time to convert into an immune-based anaphylactic reaction. The PSVT episode on day 3 of ICU in patients corresponded with the infusion of imipenem. The first episode of PSVT was managed with adenosine but subsequently, it was correlated and managed effectively after stopping imipenem. The mechanism for PSVT was that the heart is a source and target of chemical mediators released during allergic reactions. Mediators released from allergic reactions strongly influence ventricular function, cardiac rhythm, and sometimes coronary artery tone.^[5] Although no skin rash was observed in the present patient, rhythm changes usually dictate the outcome of a possible anaphylactic event caused by the drug being administered at that time.

The present case highlights that a high level of suspicion for PSVT with imipenem and timely stopping resulted in a successful outcome of the patient.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/joacp.JOACP_409_19

How to cite this article: Ahuja V, Sharma H, Singla V. Imipenem-induced paroxysmal supraventricular tachycardia in a sepsis patient. *J Anaesthesiol Clin Pharmacol* 2021;37:293-4.

Submitted: 03-Dec-2019

Revised: 06-Mar-2020

Accepted: 14-Mar-2020

Published: 15-Jul-2021