

CASE REPORT

Supraventricular Tachycardia: An Unusual Side Effects of Cefuroxime

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ABSTRACT

Anaphylactic reaction towards antibiotics is common during anaesthesia. It may present as bronchospasm, hypotension, desaturation, or urticarial. However it is uncommon for anaphylaxis reaction to present only as supraventricular tachycardia (SVT). This is a rare interesting case report on a 23-year-old healthy man whose anaesthetic categorization is American Society of Anaesthesiologist (ASA) 1, developed supraventricular tachycardia (SVT) towards intravenous cefuroxime, peri-operatively. His condition resolved with carotid sinus massage. No pharmacological interventions were used. His skin prick intradermal tests showed allergies towards cefuroxime, cefazoline and cefoperazone. The patient subsequently underwent.

INTRODUCTION

Cefuroxime is a broad spectrum second generation cephalosporin antibiotics that works widely on Gram positive and Gram negative organisms. It has bactericidal activities by inhibiting the synthesis of bacterial cell wall. Common side effects of cefuroxime are nausea, vomiting, giddiness and abdominal pain which occur in a range of between 3 to 4% of the population treated¹. The incidence of skin rashes was reported to be about 1% of the population². It is commonly used in the operating theatre as prophylaxis against Gram positive bacteria in orthopaedics surgeries with implants. Prompt and early recognition

of signs of severe anaphylaxis reaction of this drug is vital to reduce peri-operative morbidity and mortalities.

CASE PRESENTATION

A 23-year-old man, who had a closed fracture of right tibia and fibula due to a motor vehicle accident two days ago, was slated for an elective interlocking nail (ILN) insertion. He is an ASA 1 young man with no morbidities and no known drug or food allergies. His blood investigations prior to surgery were normal. We inserted an epidural catheter at the third and fourth inter space (L3 – L4) level with ease for intra and post-operative analgesia. Lidocaine 2% 3ml was used to anaesthetize the skin and the catheter was anchored at 9 cm in the epidural space. After that, the patient's trachea was intubated with a size 8 endotracheal tube. Drugs used for induction of anaesthesia were fentanyl, propofol and rocuronium as per ideal body weight. The patient was haemodynamically stable during induction and intubation.

A prophylactic dose of IV Cefuroxime 1.5 gram, diluted into a 20-ml syringe, was prepared. 2 ml of the drug was slowly given to the patient after intubation. After 2 minutes, there was a sudden formation of skin wheals on the left arm and chest, at the same site of the intravenous cannula. There was also abrupt rise of the heart rate from 70 beats per minute to a range of 190 – 200 beats per minute. On the cardiac monitor, there were narrow complex supraventricular tachycardia (SVT) with regular rhythm and P waves were identified. However, the patient's blood pressure was normal at range of 95 – 110 / 60 – 80 mmHg. The oxygen saturation maintained at 100% under FiO₂ of 40% with no rhonchi heard upon auscultation of the lungs. The peak airway pressure maintained at 15 – 17 cmH₂O. The patient was attended immediately and right carotid sinus massage was initiated. The heart rate responded by the gradual decrease to 65 – 70 beats per minute, after 10 minutes of initiation. Other haemodynamic parameters were stable. No pharmacological treatments were used to treat the tachycardia.

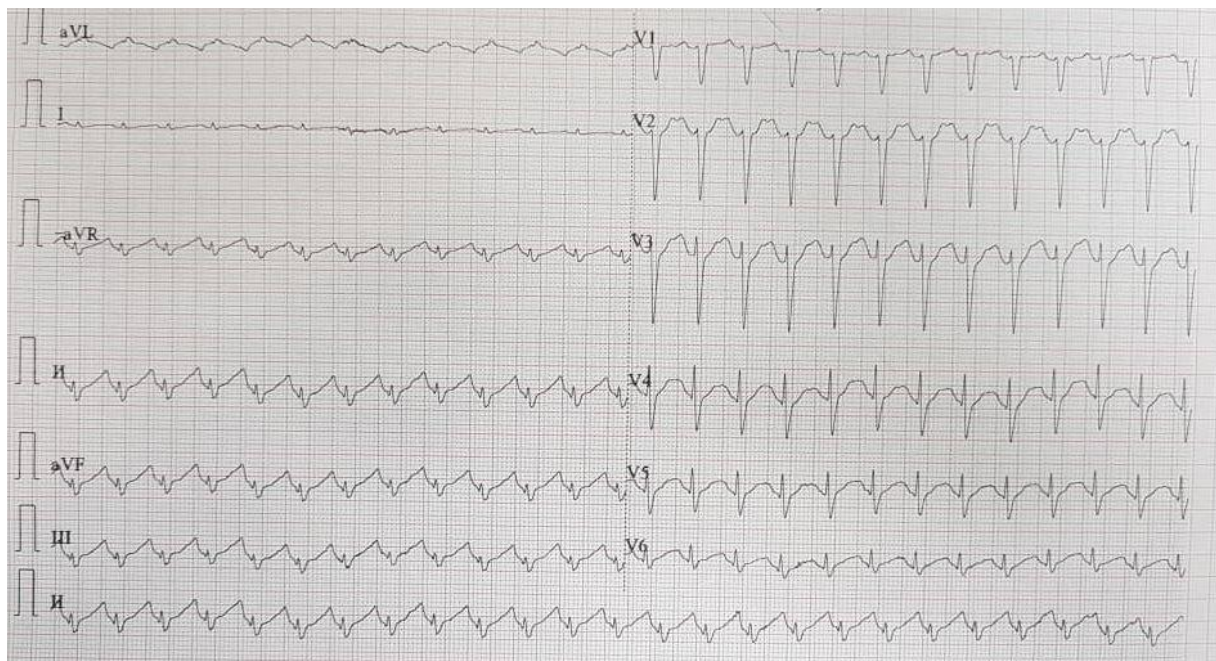


Figure 1 ECG of the patient intraoperatively showing SVT

The surgical procedure was abandoned with a possibility of anaphylactic reactions to IV Cefuroxime. The patient was extubated well and remained haemodynamically stable in the recovery room. He was then transferred to the ward. The patient was referred to the hospital's pharmacist team and an intra dermal skin prick test was performed on the patient 4 weeks later with propofol, fentanyl, rocuronium and cefuroxime. It showed a positive reaction only towards cefuroxime, cefazolin and cefoperazone. There were no reactions towards other antibiotics, anaesthetic agents or opioids. The patient subsequently underwent

of anaphylaxis reactions⁵. Besides that, other features include skin flushing and cutaneous rashes, bronchospasm, hypoxemia and cardiac arrest. These signs usually occur within a few minutes of exposure but may be delayed to after an hour.

Isolated case of second-generation cephalosporin (cefotiam) induced cardiomyopathy during anaesthesia was reported⁸. However, the prevalence of supraventricular tachycardia (SVT) secondary to cephalosporin administration is largely unknown, but its role as potential cause of anaphylactic shock is probably underestimated.

DISCUSSION

Anaphylaxis is a severe, life-threatening, generalized systemic hypersensitivity reaction. Intraoperative anaphylaxis is a common phenomenon. However the exact incidences of anaesthesia-related anaphylaxis vary between 1 in 3,500 to 1 in 20,000 cases^{3, 4}. They are commonly caused by muscle relaxants (60%), latex hypersensitivity (20%) and antibiotics (15%)⁵. Of all the muscle relaxants, rocuronium has the highest incidence of anaphylaxis reactions⁶. However, from our local clinical anaesthetic experiences, rocuronium has the least likelihood to develop anaphylaxis reaction as compared to suxamethonium or atracurium.

S. Mali mentioned that antibiotics are third most common cause of intraoperative anaphylaxis⁷. Among the antibiotics, penicillin and cephalosporin group of drugs as the main culprit at 70%⁵. This is due to both groups of drugs share the common beta-lactam ring. Compared to its common use in antibiotic prophylaxis, the sensitization rate seems to be low. The potential risk of anaphylactic reactions due to cephalosporin antibiotic is well documented.

The clinical features of anaesthesia-related anaphylaxis are hypotension, tachycardia or bradycardia, occurring in 10%

SVT is a type of tachydysrhythmia that arises from above the level of Bundle of His. The common cause of SVT in a structurally normal heart is Atrioventricular Nodal Re-entry Tachycardia (AVNRT)⁹. It is typically paroxysmal and may occur spontaneously or upon provocation. The heart rate usually ranges between 140 – 280 beats per minute and is regular in nature¹⁰. The QRS complex is usually < 0.12 seconds and P waves are visible. AVNRT is usually well-tolerated and rarely life-threatening in patients with concurrent heart disease. It may stop spontaneously or continue until medical therapy is sought. Haemodynamically-stable patients are treated by vagal manoeuvres, intravenous adenosine, diltiazem, or verapamil, whereas haemodynamically unstable patients are treated by cardioversion¹¹.

In this case, the patient developed SVT and skin redness with wheals on the left arm, ipsilateral to the injection site, two minutes after the administration of IV Cefuroxime test dose. Haemodynamically, he was stable throughout. The SVT resolved spontaneously with application of right-sided carotid sinus massage. This is a typical presentation of anaesthesia-related anaphylaxis to antibiotics. As the patient's haemodynamic was relatively stable during and after induction of anaesthesia, the cause of the SVT was due to

IV Cefuroxime, as confirmed by the skin prick test post-operatively. A raised serum tryptase level will be handy in diagnosing anaphylaxis reactions^{12, 13}. Our centre was not able to perform blood test for serum tryptase levels due to logistics issues.

CONCLUSION

This was the case of supraventricular tachycardia which was induced by intravenous cefuroxime. All anaesthetists should note with care that even with a considerably safe drug such as Cefuroxime, a severe cardiorespiratory collapse can still occur. Prompt recognition and treatment of an anaphylactic reaction may prevent its progression to a severe irreversible bronchospasm, laryngeal oedema, cardiac dysfunction, irreversible arrhythmias and cardiac arrest.

CONFLICT OF INTEREST

The authors declare that they have no competing interests in publishing this case.

CONSENTS

Written informed consent was obtained from the patient to publish the case with its related pictures. A copy of the written consent is available for review by the Chief Editor.

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