

Cefuroxime hypersensitivity leading to myocardial ischaemia

Sir,

Cefuroxime axetil is commonly administered for surgical prophylaxis to prevent surgical site infections, however, it has been reported to cause acute coronary syndrome.^[1,2] Here, we present a patient, who developed symptomatic myocardial ischaemia after cefuroxime axetil injection.

A 43-year-old female patient belonging to the American Society of Anesthesiologists (ASA) physical status II, with fistula-in-ano and hypothyroidism was scheduled for fistulectomy. She had no other co-morbidities and her physical examination and preoperative investigations were within normal limits. After informed consent, she was taken into the operation theatre, standard ASA monitors were applied and a 0.9% saline infusion started. Saddle block was performed with 10 mg hyperbaric bupivacaine and 25 µg fentanyl, with aseptic precautions. She was given an intravenous injection of cefuroxime axetil 1.5 g for surgical prophylaxis after the test dose.

Within minutes of cefuroxime axetil injection, she started complaining of a burning sensation in the chest and restlessness. She also complained of suffocation and developed sweating with cold extremities. Her electrocardiogram (ECG) showed ST elevation in chest

lead. Non-invasive blood pressure was non-recordable with feeble radial artery pulse and oxygen saturation by pulse oximetry (SpO₂) was 80%. Supportive conservative management was done with assisted breathing, ephedrine boluses, intravenous fentanyl to relieve chest discomfort, blood sugar estimation and arterial blood gas analysis. Surgery was withheld and the cardiologist's opinion was sought.

The twelve-lead ECG recorded 1 hour after the event was within normal limits. High sensitivity Troponin I level one hour after the event was 4 ng/L but it was raised (161.5 ng/L) after six hours. Two-dimensional echocardiography revealed no regional wall motion abnormalities. She was put on tablets of aspirin 75 mg, clopidogrel 75 mg and atorvastatin 10 mg thereafter. She was advised coronary angiography but she denied a further investigation. She was discharged with advice to continue medical treatment and to undergo surgery after three months.

The patient developed symptomatic myocardial ischaemia, in absence of any known pre-disposing cardiac condition, after administration of intravenous cefuroxime axetil. She did not show any other features suggestive of allergy. The allergic presentation with the acute coronary syndrome is known as Kounis syndrome or allergic angina/myocardial infarction.^[3]

Acute coronary syndrome is associated with mast cell and platelet activation. The triggering agents are drugs, environmental exposure, chemicals, foreign bodies and some specific diseases associated with the release of

inflammatory mediators. Mast cells release mediators such as histamine, tryptase, chymase, platelet-activating factor, leukotrienes and prostaglandins including thromboxane.^[3-5] Leukotrienes and histamine are powerful coronary vasoconstrictors.^[3-5] Tryptase and chymase trigger the degradation of collagen and induce plaque erosion or rupture, thus initiating an acute event.^[3-5] Histamine and thromboxane are implicated in platelet activation and aggregation.^[3-5] These mediators can cause coronary spasm in normal or atheromatous coronary arteries, plaque rupture in patients with pre-existing coronary artery disease or stent thrombosis in patients with a coronary artery stent.^[3-5]

The development of symptoms, ECG changes suggestive of myocardial ischaemia and raised cardiac biomarkers after cefuroxime injection without cardiac risk factors/illness, suggest its allergic aetiology. Coronary angiography could have better confirmed the cause but it could not be conducted due to the patient's denial. Normal echocardiography was probably due to reversal of coronary spasm or small infarct size. Histamine and tryptase levels were not measured because an allergic cause was not suspected initially.^[6] However, based on clinical features, supportive laboratory data and normal echocardiography, we made the possible diagnosis of Kounis syndrome. Though we did not administer antihistaminics or steroids, they might have been useful in the management of allergic myocardial ischaemia.

The present case highlights the fact that physicians should be aware of allergic myocardial ischaemia due to the administration of cefuroxime axetil. Early suspicion and management of allergic myocardial ischaemia are crucial for better patient outcomes.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

**Rashika Tiwari, Monika Singh, Tanushree Srivastava,
Chandra K. Pandey**

Department of Anaesthesiology, Medanta Hospital, Lucknow,
Uttar Pradesh, India

Address for correspondence:

Dr. Rashika Tiwari,
568 kha/204, Geetapalli, Alambagh, Lucknow - 226 005,
Uttar Pradesh, India.

E-mail: rashikatiwari18@gmail.com

Submitted: 15-Feb-2022

Revised: 21-Apr-2022

Accepted: 22-Apr-2022

Published: 17-May-2022

REFERENCES

1. Gao J, Gao Y, Ma J. Cefuroxime-associated Kounis syndrome with unique peculiarity in perioperative prophylaxis. *J Infect Public Health* 2018;11:889-92.
2. Absmaier M, Biedermann T, Brockow K. Allergic myocardial infarction (Kounis syndrome) after cefuroxime with side-chain cross-reactivity. *J Allergy Clin Immunol Pract* 2018;6:1781-3.
3. Kounis NG. Kounis syndrome: An update on epidemiology, pathogenesis, diagnosis and therapeutic management. *Clin Chem Lab Med* 2016;54:1545-59.
4. Alblaihed L, Huis In 't Veld MA. Allergic Acute Coronary Syndrome-Kounis Syndrome. *Emerg Med Clin North Am* 2022;40:69-78.
5. Renda F, Marotta E, Landoni G, Belletti A, Cuconato V, Pani L. Kounis syndrome due to antibiotics: A global overview from pharmacovigilance databases. *Int J Cardiol* 2016;224:406-11.
6. Rahman S, Balakrishnan S, Kumar L, Rajan S. Confirmation of suspected anaphylaxis by measurement of serum tryptase. *Indian J Anaesth* 2021;65:911-2.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/ija.ija_168_22

How to cite this article: Tiwari R, Singh M, Srivastava T, Pandey CK. Cefuroxime hypersensitivity leading to myocardial ischaemia. *Indian J Anaesth* 2022;66:S178-9.

© 2022 Indian Journal of Anaesthesia | Published by Wolters Kluwer - Medknow