

Research Article

Cefuroxime-induced Anaphylaxis: A Case Report

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A B S T R A C T

Cefuroxime auxetil is a second-generation cephalosporin antibiotic that can cause immediate hypersensitivity reactions, ranging from mild urticaria to severe anaphylactic shock. Anaphylactic reactions typically involve multiple systems, notably the skin, the respiratory and cardiovascular systems.

Here, we report an unusual case presented with anaphylaxis secondary to IV cefuroxime administration with no history of any allergic reaction to date. There was no family history of allergic reactions.

A 54 years old male was diagnosed with a left knee meniscal injury and so was posted for arthroscopy. He was given IV cefuroxime (ZOCEF) 1.5 gm intravenously preoperatively and the patient collapsed immediately.

The patient developed chills with rigor, change in voice, profuse sweating, itching and rash all over the body, severe chest pain, difficulty in breathing, abdominal pain, vomiting, and drowsiness.

The patient had hypotension with cold peripheral extremities. He was severely drowsy, and arousable only after deep stimuli.

The patient was resuscitated successfully with IV fluids and steroids.

This case shows that clinicians must be cautious while giving a drug in any form to a patient in OPD or IPD

Keywords: Cefuroxime, Cephalosporin, Antibiotic, Drug Hypersensitivity, Anaphylaxis

Introduction

Cephalosporins are commonly prescribed antibiotics. These can cause mild to severe immediate hypersensitivity reactions.

Anaphylaxis is the most severe and dangerous reaction. It usually involves multiple systems, especially the skin, the respiratory, cardiovascular, and central nervous systems.

Here, we report an unusual case of a patient with injectable

cefuroxime-induced anaphylaxis with multi system manifestations. It is unusual because the patient was 54 years old with no family or personal history of any allergic tendency whatsoever.

Case Report

A 54-year-old man was referred to us for sudden onset dyspnoea and altered sensorium. The patient received an injection of cefuroxime auxetil 1.5 grams intravenously

as preoperative prophylaxis medication. The patient immediately developed a rash all over the body, along with severe chest pain, breathlessness, uneasiness, intractable cough, vomiting, dizziness, and drowsiness.

Clinical signs of shock prevailed. The patient was drowsy, with maculopapular rashes all over the body, cold and clammy extremities, and bradycardia. BP was not recordable, and bilateral rhonchi and minimal stridor were noted.

The patient was administered IV fluids and 1 gm methylprednisolone along with bronchodilator inhalation and antihistamines. The patient responded to the treatment in a span of 3 hours and became completely alright overnight. The patient's medical history was unremarkable and did not include food or drug allergies or epilepsy.



Figure 1. Rash and Condition of the Patient

Routine blood test results at our hospital revealed elevated red blood cell counts of $5.17 \times 10^{12}/L$, a haemoglobin level of 154 g/L, a procalcitonin level of 0.31% and a decreased red cell distribution width of 37.8 fL.

The skin-prick tests for routine food allergen groups were performed 1 week later which was negative. The patient was not willing for to perform any drug allergy test.

Discussion

Anaphylaxis is a severe, potentially life-threatening hypersensitivity reaction involving multiple systems. It is caused by the sudden release of mast cells and basophil mediators into the systemic circulation.¹ A recent study found that the lifetime prevalence of anaphylaxis varies from 0.02% to 5%.² Recorded hospitalisation rates for anaphylaxis are increasing, although it is unclear whether this increase is real or simply the result of better identification.² While anaphylaxis may involve any organ, cutaneous involvement occurs most frequently, accounting for more than 90% of all anaphylaxis patient cases.³ Respiratory involvement occurs with the second-most frequency; its symptoms include dyspnoea, wheeze, upper airway angioedema, and rhinitis. Cardiovascular involvement (hypotension, shock, cardiac arrest) and central nervous involvement (impaired consciousness, seizures, spasms, involuntary voiding and defecating) appear to be more common in severe anaphylactic reactions.⁴

Our patient experienced persistent chest discomfort, along

with nausea, vomiting and persistent hypotension, beginning almost immediately after exposure to the likely allergen. In accordance with the 2011 World Allergy Organization (WAO) guidelines, these reactions are consistent with anaphylaxis.⁵ Figure 1 shows rashes over the body and the general condition of the patient.

Drugs are believed to be the most common cause of anaphylaxis in adults. Beta-lactams are the second most frequent cause of anaphylaxis, reportedly accounting for 14.3% of all drug-induced anaphylaxis reactions.⁶ Cephalosporins are the most frequently prescribed class of antibiotics, and they can trigger hypersensitivity reactions of varying degrees with multi-systemic involvement.

An integral diagnosis and treatment protocol for cephalosporin was proposed by Del Carpio-Orantes L and Azuara-Trujillo HA.⁷

The WAO recommends a clinical diagnosis of anaphylaxis when characteristic signs and symptoms occur shortly after exposure to a known or likely trigger.⁸ Laboratory tests are usually not helpful in diagnosing anaphylaxis at patient presentation.⁸ Diagnoses of drug hypersensitivity reactions are based on the patient's medical history and clinical manifestations, using in vivo and, if possible, in vitro tests.⁹ Compilation of a patient's clinical history requires careful collection of information and evaluation of factors such as symptom aetiology, chronology, other medications taken, and the medical background.¹⁰ In our case, the patient became hypersensitive to cefuroxime after several courses of treatment, which further supports the diagnosis of IgE-mediated hypersensitivity.

Specific allergic diagnostic tests should be performed 4-6 weeks and 6-12 months after the complete resolution of clinical symptoms because false negatives may occur.¹⁰ The chosen test should depend on suspected pathomechanisms: the skin-prick test and intradermal test for an IgE-dependent mechanism, and patch tests and/or a late-reading intradermal test for a T-cell-dependent mechanism.¹⁰ Specific IgE assays are not recommended because they are less sensitive and less readily available than skin tests.¹¹ A medically supervised graded challenge/provocation test is the gold standard to identify the source of drug hypersensitivity reactions,¹⁰ and it is sometimes necessary to confirm and evaluate the recurrence risk.¹²

Conclusion

Anaphylaxis is multi-system pathology that can predispose any individual. It can be life-threatening if not diagnosed and treated properly. The patient in our case presented with classical cefuroxime-induced anaphylaxis with multi-system involvement.

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Conflict of Interest: None

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