

Case Report

Anaphylactic Reaction Following Injection Cefotaxime Sodium

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Abstract

This is a case study of anaphylactic reaction to cefotaxime sodium in a 23-year-old female who underwent a lower segment cesarean section under spinal anesthesia. Cefotaxime sodium, an antibiotic belonging to the class of cephalosporins, was administered intravenously postoperatively for prevention of infection. The patient complained of breathlessness, swelling around both eyes, and pruritus and urticarial rash over her abdomen, legs, and forehead. The case was successfully managed by withholding the medication and treatment of symptoms. According to the WHO-Uppsala Monitoring Centre causality assessment scale, a probable causal relationship between the suspected drug (cefotaxime sodium) and anaphylactic reaction was made. The severity was found to be moderate (Level 3). Although cefotaxime has well established place in surgical prophylaxis, this case study emphasizes on constant observation and meticulous follow-up of patients receiving it in clinical practice as there is possibility of an adverse drug reaction (ADR) which can be life-threatening. Such happenings can add to challenges faced by the treating physician in the present COVID-19 era. Recognizing ADR helps reduce morbidity and mortality. Reporting ADR helps in documentation and education of healthcare professionals.

Keywords: Causality assessment scales, cephalosporins, drug rash, hypersensitivity, lower segment cesarean section

INTRODUCTION

Anaphylaxis is an acute life-threatening hypersensitivity reaction which occurs within minutes, or up to a few hours, after exposure to a provoking agent potentially. There is release of inflammatory mediators from the granulocyte mast cells. The early symptoms may be mild such as skin rash which can progress to severe symptoms to threaten life.^[1] Antibiotics such as penicillin, cephalosporins, and sulfonamides have been reported to cause anaphylaxis.^[2] Use of perioperative antimicrobials as a prophylactic measure for infections is a common practice but needs caution.

CASE REPORT

On May 2, 2021, at 1:00 am, a 23-year-old full-term primigravida with labor pain was admitted in the department of obstetrics and gynecology of a tertiary care institute in Central India. She tested negative for COVID-19 by Reverse Transcription - Polymerase Chain Reaction (RT-PCR) on April 29, 2021. There was no history of drug allergy. She was diagnosed with cephalopelvic disproportion and hence posted for emergency lower segment cesarean section (LSCS) at 5:57 pm.

Injection bupivacaine hydrochloride was used for spinal anesthesia; an analgesic injection pentazocine was administered. Prophylactically administered drugs were cefotaxime sodium 1g intravenously (IV, batch no: HIFT9003 manufactured by Health Biotech Ltd. Unit II Lic No: MB/05/158), amikacin 80 mg IV, metronidazole 100 ml IV, diclofenac 75 mg intramuscular (IM), pantoprazole 40 mg IV, and metoclopramide 2 ml IM. After delivery of the baby, 20 IU of oxytocin was given IM and misoprostol was given 400 µg per rectal. The surgery was completed without any complications, and the patient was shifted to the ward.

One hour after surgery, the patient complained of breathlessness, and swelling around both eyes, and pruritus and urticarial rash over her abdomen, legs, and forehead as seen in the photographs [Figure 1-3]. The patient was examined by the resident doctor and unit in-charge.

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Figure 1: Maculopapular rash over the abdomen



Figure 2: Maculopapular rash over the forearm



Figure 3: Maculopapular rash over the forehead along with periorbital oedema

Considering this an adverse drug reaction (ADR), an urgent physician call was made for management. The patient was examined by the physician. She was afebrile. Her pulse rate was 100/min, blood pressure: 90/60 mm of Hg, oxygen saturation: 96% with 2 l of oxygen, and urine output: 500 ml. She was administered 4 l of pure oxygen. Injection pheniramine 2 ml and hydrocortisone 100 mg IV stat were given. Other medications were withheld and she was kept under hourly monitoring.

Two hours after surgery, the patient was re-examined. She still had multiple rashes. Her breathing was normal; swelling around the eyes was reduced. Blood pressure was 100/70 mm of Hg. Oxygen saturation was 99% on 4 L of oxygen. She was administered hydrocortisone 100 mg IV.

On May 3, 2021 (1st day after surgery), the rash and pruritus had subsided and swelling around the eyes was minimal. Blood pressure was 100/70 mm of Hg. Urine output was 1600 ml. No abnormality was detected on respiratory and cardiovascular examinations. Her laboratory tests were under normal limits. She was also taken off of oxygen.

On May 4, 2021 (the 2nd day after surgery), the patient had minimal swelling around the eyes. Blood pressure 110/70 mm of Hg.

On May 5, 2021 (the 3rd day after surgery), the patient had no complaints and swelling around her eyes had subsided. On examination, her general condition was good. She was discharged with instructions for breastfeeding, personal, and wound hygiene.

According to WHO-Uppsala Monitoring Centre criteria, the causality assessment was made and probable causal relationship between the suspected drug (cefotaxime sodium) and anaphylactic reaction was assessed.^[3] This ADR was reported by the pharmacology department of our institute which is National Medical Commission (NMC)-approved medical college, hence a recognized ADR monitoring center. The complete details of ADR were reported via Vigiflow to Indian Pharmacopoeia Commission, Ghaziabad, which is functioning as National Coordination Centre for Pharmacovigilance Programme of India since April 15, 2011, under the aegis of Ministry of Health and Family Welfare, Government of India.^[4]

DISCUSSION

Pregnant women are a special population, and in the present case study, a pregnant woman developed anaphylactic reaction to cefotaxime sodium after her LSCS. According to the correlation between patient's signs and drug injection time, the possibility of anaphylactic drug reaction to cefotaxime sodium was made because such reactions are not reported by other drugs administered to her. The causal relationship between the drug and the adverse reaction was found to be probable. According to the modified Hartwig and Siegel scale,^[5] the severity assessment was done and was found to be of moderate severity (Level 3). Treatment of such cases requires immediate withdrawal of suspected drugs and prompts management of symptoms. Cefotaxime was discontinued (dechallenged) following which the symptoms subsided gradually. Rechallenge was not done in this case as this has ethical issues.

Studies report similar reactions developed after injection of other drugs in cephalosporins class.^[6] Researchers emphasized on unavailability of database of such drug reactions due to underreporting.

Rashes, itching, and angioedema are the most common manifestations of slowly progressing anaphylaxis. In the present case study, the patient developed rash, urticaria, periorbital edema, and breathlessness – the clinical manifestations of

drug hypersensitivity. In acute anaphylactic reaction, there is involvement of respiratory and cardiovascular system which risks the life of the patient.^[7,8] In the present case study, the patient presented with symptoms 2 h after surgery. The risk factors involved in development of anaphylaxis are the presence of atopy, middle age, concurrent medical diseases, and history of drug exposure.^[9] In the present case, the patient did not have history of any such risk factors. Allergic reactions to medications are mediated by IgE. Challenge provocation testing by drug provocation test (DPT) is considered to be the “gold standard” method of establishing a diagnosis of drug hypersensitivity. The main indications for performing DPTs are: in the context of perioperative anaphylaxis, DPTs may be useful particularly for antibiotics, local anesthetics, opiates, and NSAIDs.^[10]

Based on the characteristics of its broad antimicrobial spectrum, low incidence of allergy, and lack of adverse effects, cefotaxime has been used successfully for surgical prophylaxis including cesarean section.^[11] Patients receiving cefotaxime perioperatively should be monitored for ADR. Prompt recognition of ADR, its treatment, and reporting are essential steps to prevent future episodes.

Informed consent was obtained from the patient for publication of her photographs in medical journal. She was also taken into confidence that her name and identity will not be revealed.

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 her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Sampson HA, Muñoz-Furlong A, Bock SA, Schmitt C, Bass R, Chowdhury BA, *et al.* Symposium on the definition and management of anaphylaxis: Summary report. *J Allergy Clin Immunol* 2005;115:584-91.
2. Blumenthal KG, Peter JG, Trubiano JA, Phillips EJ. Antibiotic allergy. *Lancet* 2019;393:183-98.
3. The Use of the WHO-UMC System for Standardized Case Causality Assessment. Available from: <https://www.who-umc.org/media/2768/standardised-case-causality-assessment.pdf>. [Last accessed on 2021 May 02].
4. Kalaiselvan V, Thota P, Singh A. Current status of adverse drug reactions monitoring centres under pharmacovigilance programme of India. *Ind J Pharm Pract* 2014;7:19-22.
5. Hartwig SC, Siegel J, Schneider PJ. Preventability and severity assessment in reporting adverse drug reactions. *Am J Hosp Pharm* 1992;49:2229-32.
6. Min HK, Oh SH, Lee JM, Im GI, Lee JH. Porous membrane with reverse gradients of PDGF-BB and BMP-2 for tendon-to-bone repair: *In vitro* evaluation on adipose-derived stem cell differentiation. *Acta Biomater* 2014;10:1272-9.
7. Huang J, Zhu X, Jiang C, Liu Z, Zheng W. Rashes following cesarean delivery: A case report. *Ann Palliat Med* 2020;9:4353-8.
8. Lieberman P, Nicklas RA, Oppenheimer J, Kemp SF, Lang DM, Bernstein DI, *et al.* The diagnosis and management of anaphylaxis practice parameter: 2010 update. *J Allergy Clin Immunol* 2010;126:477-80.
9. Pipet A, Veyrac G, Wessel F, Jolliet P, Magnan A, Demoly P, *et al.* A statement on cefazolin immediate hypersensitivity: Data from a large database, and focus on the cross-reactivities. *Clin Exp Allergy* 2011;41:1602-8.
10. Nel L, Eren E. Peri-operative anaphylaxis. *Br J Clin Pharmacol* 2011;71:647-58.
11. Lemus Rocha R, García Gutiérrez LB, Basavilvazo Rodríguez MA, Cruz Avelar A, Peralta Pedrero ML, Hernández Valencia M. Incidence of infected surgical wound and prophylaxis with cefotaxime in cesarean section. *Ginecol Obstet Mex* 2005;73:537-43.