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Case Report

CEFTRIAXONE-INDUCED PERIORBITAL EDEMA

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ABSTRACT

Cephalosporins are widely prescribed antibiotics for common infections and also used for prophylactic measures. Ceftriaxone is a third-generation cephalosporin which is known to cause hypersensitivity reactions presenting in various manifestations. Periorbital edema is a rare presentation of adverse drug reaction produced by ceftriaxone. Here, we report one such adverse drug reaction produced by ceftriaxone.

Keywords: Cephalosporin, Hypersensitivity reaction, Naranjo scale.

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INTRODUCTION

Cephalosporins are the second most important β-lactams for treating infectious diseases. Ceftriaxone is a third-generation cephalosporin, commonly used antibiotic. It is widely used for the treatment of septicemia and approved for the treatment of meningitis, including meningitis caused by pneumococci and meningococci [1]. The common adverse drug reactions to cephalosporins are hypersensitivity reactions, anaphylaxis, urticaria, or maculopapular rashes which are IgE mediated [2]. The frequency of hypersensitivity reactions due to ceftriaxone is between 1% and 3% [3]. There were previous case reports of hypersensitivity and the presentation is mostly anaphylactic or rashes. Here, we present a case of ceftriaxone-induced periorbital edema which is a rare presentation.

CASE REPORT

A 27-year-old female para 1, living 1 (P1, L1) with 40 weeks of gestation came with leaking per vaginum. On examination, cephalopelvic disproportion with fetal distress was present, so emergency lower uterine segment cesarean section was done. The surgery was uneventful and she delivered a female baby of 3.2 kg who cried immediately at birth and had a good Apgar score. A test dose of 0.1 ml of ceftriaxone was given intradermally pre-operative, which was non-reactive. Postoperatively, injection ceftriaxone 2 g i.v was given, following which she developed periorbital edema after 2 h with breathing difficulty. Ceftriaxone was withdrawn. On examination, there was bilateral erythema around the eyes, chemosis, and massive periorbital edema as shown in the Fig. 1.

Injection dexamethasone 8 mg i.v stat, injection furosemide 20 mg i.v stat, injection pheniramine maleate 45.5 mg (2 mL) i.v stat, and injection hydrocortisone 100 mg i.v stat were given as treatment. The patient did not have any previous history of atopy or allergy to any other substances. Ophthalmology and medicine consultations were sought. Blood urea and serum creatinine levels were 21 mg/dl and 0.6 mg/dl, respectively. T3, T4, and thyroid-stimulating hormone were within normal limits throughout her pregnancy and also postpartum. A differential diagnosis of periorbital cellulitis was made, which was then ruled out by a thorough ophthalmological examination as there was no local rise of temperature, no skin color change, and no tenderness, and the edema was bilateral, it was diagnosed as a case of ceftriaxone-induced periorbital edema. After stopping ceftriaxone, she was started on injection gentamicin 160 mg i.v and ciprofloxacin eye drops bilaterally 4 times a day with cold compression over the swelling. Her concomitant medications included intravenous oxytocin 10 units, pantoprazole 40 mg, tramadol 50 mg, and promethazine 28 mg.

DISCUSSION

Ceftriaxone has a broad spectrum of activity against Gram-positive and Gram-negative aerobic and some anaerobic bacteria. Ceftriaxone has a greater activity over the first- and second-generation cephalosporins against Gram-negative bacteria. It selectively and irreversibly inhibits bacterial cell wall synthesis by binding to penicillin-binding proteins that catalyze the cross-linking of the peptidoglycan polymers forming the bacterial cell wall [4]. Ceftriaxone is administered intravenously or intramuscularly. For adults, recommended dosage is 1–2 g once daily. It is indicated for the treatment of pediatric, lower respiratory tract infections, and skin, bone, and joint infections. It is also found effective in intra-abdominal, obstetric and gynaecological infections [5,6].

In this case, ceftriaxone was given initially as a test dose before the surgery and also postoperatively for chemoprophylaxis. When the test dose was given, there was no allergic reaction. However, later, when the entire dose was given, the patient developed gross periorbital edema with chemosis which is an unusual presentation of the adverse reaction due to ceftriaxone. Earlier cases of hypersensitivity type-1 with

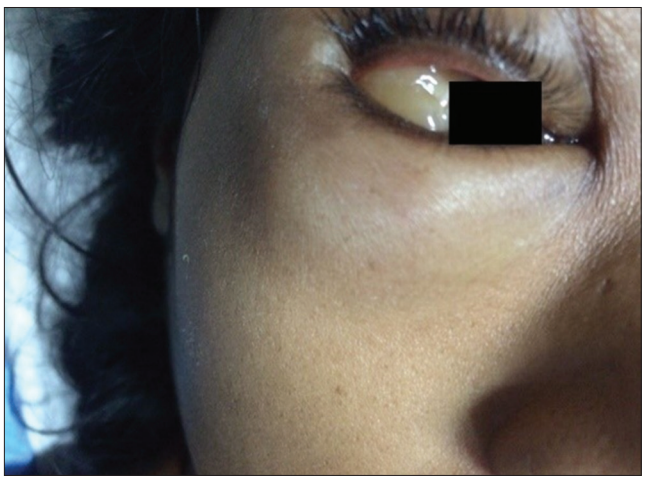

Fig. 1: Periorbital edema

ceftriaxone were reported with maculopapular rashes, urticaria, and angioedema which is an IgE-mediated allergy. The possible mechanism is thought to be development of IgE antibodies against antigenic determinants that are unique to β-lactams. The core structure of these has a four-membered β-lactam ring *and* there could be sensitization to this core structure or its metabolite or the side chain groups [7].

The causality assessment score based on Naranjo's algorithm was 7. Therefore, it is a "probable" adverse drug reaction [8].

CONCLUSION

Periorbital edema is a rare presentation among the other types of hypersensitivity reactions associated with ceftriaxone. Hence, clinicians should be cognizant of such an occurrence.

AUTHORS' CONTRIBUTIONS

All authors have contributed to concept, structure, and processing of the article.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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