



Case Report

A CASE REPORT ON INTRAVENOUS MONOCEF INDUCED DRUG RASH

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Received on: 12-02-2019; Revised and Accepted on: 27-03-2019

ABSTRACT

Ceftriaxone is a semisynthetic cephalosporin with broad-spectrum in vitro activity and an unusually long serum half-life that has been used to treat a wide variety of bacterial infections. This drug is generally given in IV and Oral routes as therapy, depending upon the requirement of the patient and the severity. This antibiotic has its fair share of adverse effects such as tarry stools, fever, chest pain etc. Drug rash due to hypersensitivity has also been noted which is the drug induced condition in this patient.

KEYWORDS: Ceftriaxone, Drug rash, Hypersensitivity, Pedal edema, Cephalosporins.

INTRODUCTION

Ceftriaxone, an FDA-approved third-generation cephalosporin antibiotic, is used primarily to treat community-acquired or mild-to moderate pneumonia and is also a drug of choice for treatment of bacterial meningitis and gonorrhea [1]. The most likely reason for its widespread use is its effectiveness in susceptible organisms in complicated and uncomplicated urinary tract infections, respiratory tract infections, skin, soft tissue, bone and joint infections, bacteremia/septicemia, meningitis, infections in immunosuppressed patients, acute bacterial otitis media, genital infections, disseminated Lyme's disease and in surgical prophylaxis of infections [2]. The primary targets of the β -lactam agents are the Penicillin binding proteins (PBPs). It has been hypothesized that the β -lactam ring mimics the D-alanyl D-alanine portion of peptide chain that is normally bound by PBP. The PBP interacts with β -lactam ring and are not available for the synthesis of new peptidoglycan. The disruption of peptidoglycan layer leads to the lysis of bacterium [3].

Treatment with ceftriaxone can cause hematological changes (eosinophilia, thrombocytosis, less frequently leucopenia). Diarrhea occurs in about 3% (children 5-6%). Ceftriaxone causes reversible biliary pseudolithiasis mainly in young women and children (sludge in the gallbladder), occasionally with colics. Allergic skin reactions occur in about 3%. Other adverse effects that are reported but are rare include headaches, dizziness, nausea, vomiting,

abdominal pains, reduction of the renal functions, vaginitis, etc. Pain can occur at the site of injection. Isolated cases of pseudomembranous colitis have been observed. Since ceftriaxone may suppress bilirubin from the protein binding, bilirubin encephalopathy in neonates is possible [4]. Ceftriaxone can be administered intravenously or intramuscularly. For adults the recommended dosage is 1 to 2g once daily (or in equally divided doses twice a day). In severe infections and in cases in which the pathogens are only moderately sensitive the daily dose may be increased but should not exceed 4g [5].

Cephalosporins can cause a range of hypersensitivity reactions from mild, cutaneous reactions to life-threatening anaphylaxis in patients with IgE-mediated allergy. As the number of cephalosporin prescriptions has increased, the prevalence of immediate hypersensitivity reactions to cephalosporins also seems to rise proportionally. Allergic reactions to cephalosporins have been considered primarily in conjunction with penicillin allergy. However, cephalosporin allergy can occur to a specific cephalosporin, a group of cephalosporins, or as a cross-reaction to other β -lactam antibiotics [6]. The clinical manifestations of drug allergy are quite varied with different manifestations in different people based on risk factors like age, gender, and genotype, route of administration and presence of certain viral infections. Rashes resembling exanthematous illness are known to occur following exposure to antibiotics like penicillins, cephalosporins and sulfonamides. Cephalosporin induced reactions may be immediate or non-immediate depending on the time of occurrence of symptoms after the administration of the drug [7]. Adverse drug reactions (ADRs) are a major hazard of modern medicine. Cutaneous ADRs are an important clinical entity that can endanger the life of the patient. Cephalosporins can induce severe or life-threatening IgE-mediated reactions in some individuals. Causal relationship between the drug and the reaction is assessed depending on the lag period between the start of the drug and the appearance of the reaction, responses

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DOI: <https://doi.org/10.5281/zenodo.2620456>

to de-challenge and re-challenge tests and the data available regarding the drug [8].

Many patients are being recognized as being allergic or having allergic reactions to a number of antigenically unrelated drugs, antibiotics in particular. Indeed, one study of 312 penicillin allergic patients found that 21% of them experienced reactions to non-beta-lactam antibiotics. Since Cephalosporins and penicillins share the same Beta-lactam ring, patients allergic to penicillin have adequate chances of reacting to the cephalosporins [9].

Case Presentation:

A 55 year old female, known case of HTN (since 4 years) was admitted in the General Medicine Department of a

tertiary care hospital with chief complaints of sudden onset of SOB-grade 4 associated with chest pain. She had H/O band like constriction around the chest (retrosternal in origin), H/O palpitations and H/O pedal edema+.

On examination, patient was conscious/coherent, BP-140/90mmHg, PR-114/min, P/A-soft, CVS- S1S2+, R/S-BAE+, CNS-NFND and GRBS was found to be 189mg/dl. She has pedal edema+ on her right leg. After 4 days of therapy with Inj. Monocef 1gm IV BD, she developed rash over her right limb (red in colour, itching+).



Fig. 1: Rash over the right limb associated with pedal edema



Fig. 2: Hypersensitivity reaction-red, itchy rash over the right limb

Past medication History: She is a K/C/O HTN since 4 years and was on T. Amlodipine 5mg PO OD

Laboratory Investigations: Revealed normal CBP except for lymphocytes which were decreased - 3.5% (20-40%). Her serum electrolytes were normal. Her blood urea was increased to 38.85mg/dl (7-20mg/dl).

Her 2D Echo report shows:

- Mildly dilated Right atrium/Right ventricle/Left ventricle

- Global hypokinesia of Left ventricle
- Mod. Left Ventricular dysfunction

Her ECG report shows Biventricular hypertrophy

Provisional Diagnosis: Hypertensive heart block

Confirmational Diagnosis: Congestive heart failure with urinary incontinence.

Treatment: She was started with the following medications:-

Table No. 1: Treatment was started with the following medications

S. NO	BRAND NAME	GENERIC NAME	DOSE	FREQUENCY
1	Tab. Lasilactone	Spironolactone+Furosemide	70/50mg	1-0-0
2.	T. Cardivas	Carvedilol	3.125mg	1-0-0
3.	T. Enam	Enalapril	5mg	1-0-0
4.	T. Atorvas	Atorvastatin	40mg	0-0-1
5.	T. Clopitab A	Clopidogrel+Aspirin	75mg	1-0-0
6.	T. Isorus	Isosorbide Dinitrate+Hydralazine	50mg	1-0-1
7.	Inj. Monocef	Ceftriaxone	1gm	1-0-1
8.	T. Cal/D3	Calcium+Vitamin D3	1 tab	0-1-0
9.	T. BC	B complex	1 tab	0-1-0
10.	T. Rantac	Ranitidine Hydrochloride	150mg	1-0-1
11.	Inj. Augmentin	Amoxicillin/potassium clavulanate	1.2gm	1-0-1
12.	T. Azee	Azithromycin	500mg	1-0-0
13.	Syp. Grillinctus	Guaifenesin	10ml	1-1-1
14.	T. PCM	Acetaminophen	500mg	1-1-1
15.	T. Enzoheal	Trypsin+Bromelain+Rutoside Trihydrate	48mg+90mg+100mg	1-0-1
16.	T. Diclofenac	Diclofenac Sodium	50mg	1-0-1
17.	T. Aldactone	Spironolactone	25mg	1-0-1

The patient was discharged with the following medications:-

Table No. 2: The patient was discharged with the following medications

1.	Tab. Enam	5mg	PO	1-0-0
2.	Tab. Cardivas	3.12mg	PO	1-0-0
3.	Tab. Lasilactone	20/50mg	PO	1-0-1
4.	Tab. Ultracet	500mg	PO	1-0-1
5.	Tab. Pan	40mg	PO	1-0-0

DISCUSSION

In this case the patient was admitted for complaints of shortness of breath and chest pain. Her investigations revealed certain cardiac conditions for which she was prescribed the drugs as listed above and one among them was Inj. Monocef 1gram IV BD to which she was hypersensitive and developed red, itching rash over her right limb.

Monocef is a broad spectrum antibiotic used for a wide variety of diseases and it is used widely as an antibiotic. Here ceftriaxone is attributed to the following conditions:

Drug rash on the right lower limb in this patient can be owed as a response of a non-immediate hypersensitivity reaction. Cross reactivity is also known to occur between the cephalosporins and penicillins and within cephalosporins. The degree of cross reactivity is determined by the similarity of beta-lactam side chain that is shared by the cephalosporins among themselves as well as among penicillins and is largely

IgE mediated. The allergic manifestations are due to a breakdown compound, formed during drug metabolism [10].

Appropriate sensitivity tests can be carried out if a patient is known to be hypersensitive to a particular type/class of antibiotic, thereby, reducing the incidences of hypersensitivity reactions.

CONCLUSION

Hypersensitivity to a certain antibiotic is subjected to each individual's response to it. Drug rash occurring due to monocef indicates that the drug should be withdrawn and an alternative choice of antibiotic can be initiated. To recognize the drug reaction in the patient attributed to a particular drug (Ceftriaxone in this case) is anticipated for its immediate withdrawal to prevent future recurrence of the condition. In this patient, withdrawal of the drug followed by topical therapy is recommended to boost the healing/recovery process.

ACKNOWLEDGEMENT

We express our profound gratitude to all the doctors of In-patient department Of General Medicine for providing their unflinching support.

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How to cite this article:

G. Sarah Marlyn et al. A CASE REPORT ON INTRAVENOUS MONOCEF INDUCED DRUG RASH. J Pharm Res 2019;8(3):97-100.
DOI: <https://doi.org/10.5281/zenodo.2620456>

Conflict of interest: The authors have declared that no conflict of interest exists.

Source of support: Nil