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Case Report

Ceftriaxone-Induced Generalized Urticaria in an Elderly Patient: A Case Report

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ABSTRACT

Adverse drug reactions (ADRs) can result in a great deal of morbidity, such as prolonged hospitalisation and the imposition of a high healthcare cost. This case study describes the outcome of a 76 year old male patient who developed extensive urticaria reactions as a result of ceftriaxone therapy while admitted to the hospital for pneumonitis (both sides) and a spinal compression fracture, along with other medical complications. About 24 hours after intravenous ceftriaxone was started, the patient developed erythematous, itchy blisters on all limbs, although his mucosa was not swollen, and he had no low blood pressure or breathing problems. Immediately after ceftriaxone was rapidly discontinued, intravenous pheniramine and dexamethasone were administered, and all of the lesions resolved after 48 hours. According to WHO-UMC causality assessment method assessment, the reaction was probable using NARANJO Adverse Drug Reaction Probability Scale with a score of 6. Save lives and minimise potentially burdensome follow up effects by pulling the drug in question, supportive care handling and systemised reporting of pharmacovigilance answers. This case illustrates the need for these measures.

Keywords: *Ceftriaxone-induced urticaria, Adverse drug reaction (ADR), Pharmacovigilance, Naranjo Adverse Drug Reaction Probability Scale, WHO-UMC causality assessment.*

INTRODUCTION

Cephalosporins have a wide range of microbes they may kill, good effects on the body, and a low risk of side effects, making them one of the most often given β-lactam antibiotics. Ceftriaxone is an empirical antibiotic for infections of the respiratory tract, urinary tract, intra-abdominal space, central nervous system, and circulation and is commonly used for hospitalized patients. While most individuals are able to tolerate them without difficulty, skin reactions as well as more serious occurring in certain instances even with anaphylaxis which can be fatal is still a significant issue in the medical profession.

The mechanism of action appears to be similar in drug induced urticaria, where mast cells degranulate and release histamine, which produces wheals that are erythematous, pruritic, and are indicative of an acute hypersensitive reaction. Antibiotics, particularly β-lactams are among the most common causes. If allergies are not diagnosed promptly, they can cause serious systemic allergic reactions, so detecting the drug that is causing the allergy and eliminating it is important. Although ceftriaxone is widely used, generalized urticaria has rarely been reported in older people with other comorbidities. A case of ceftriaxone-induced systemic urticaria which resolved completely within hours after Ceftriaxone was discontinued and supportive therapy was given is reported. The case underlines the role of pharmacovigilance reporting and the standardised causality assessments in enhancing medication safety.

CASE REPORT

A 76-year-old male patient, who had a fall accident four days ago while making the roof of a building, was brought to the Department of General Medicine at Dr. Susheela Tiwari Government Hospital, Haldwani on 17 June,2026 with a complaints of pain and sensation from the tips of toes to the lower back. He was a known case of hypertension, type 2 Diabetes mellitus and had a history of acute kidney damage, pulmonary TB (treatment history), pneumonitis bilateral, ischemic stroke. The patient did not have a history of adverse reactions to drugs, hives, chronic urticaria, or β-lactam antibiotics.

Upon entrance, the patient seemed to be alert but confused. The following were noted in his vitals: Blood pressure 106/66 mmHg, Heart rate 94 beats per minute, Respiration rate 28 breaths per minute and oxygen saturation 97% on room air. On neurological examination, bilateral lower limb weakness and lumbar spine tenderness were noted relating to the vertebral fracture. All of the cardiac tests came back normal during the cardiovascular evaluation. On examination of the respiratory system it was found that the results showed that the patient had bilateral pneumonitis and bilateral air entry to and from the airway was confirmed. A soft, non-tender abdomen free of organomegaly was found during the abdominal examination.

Laboratory investigations at baseline confirmed the underlying renal dysfunction, revealing hemoglobin of 9.7 g/dL, total leukocyte count $5.8 \times 10^3/\mu L$ with relative neutrophilia 89%, an ESR of 45 mm/hour and slightly elevated serum creatinine. A lower respiratory tract infection was suspected and so the patient was begun on Day 1 ceftriaxone 1 g given twice a day intravenously. Other symptomatic treatments used were Pantoprazole, Paracetamol and Ondansetron. On day 2 ,His upper and lower limbs broke out in a rash of pruritic around 24 hours after he started taking ceftriaxone. No clinical symptoms were noted suggestive of anaphylaxis including mucosal changes, angioedema, bronchospasm, hypotension, and stridor.

Generalized urticaria was suspected to be the result of ceftriaxone since onset of symptoms coincided with commencing the ceftriaxone treatment. When ceftriaxone was discontinued, the patient was immediately started on treatment with dexamethasone and intravenous pheniramine. Within 24 hours of Ceftriaxone cessation (positive dechallenge), skin lesions began to resolve and after 48 hours of treatment with intravenous pheniramine and dexamethasone, skin lesions were completely resolved. No other hypersensitivity responses were seen for the rest of the patient's hospital stay after antibiotic treatment was adjusted based on his clinical status.

Two tools were used to assess causality: Naranjo Adverse Drug Reaction Probability Scale and WHO-Uppsala Monitoring Centre (WHO-UMC) Causality Assessment System. Based on the WHO-UMC criteria, the answer was coded as 'Probable/Likely' (Naranjo score: 6). As part of their activities to enhance medication safety and nation-wide pharmacovigilance, the adverse drug reaction was reported to the NCC-PvPI/Indian Pharmacopoeia Commission (IPC) Ghaziabad.

DISCUSSION

Ceftriaxone is a third-generation cephalosporin that is commonly prescribed, given its broad spectrum of activity against bacteria, its pharmacokinetic properties and relative safety. The most severe side effect that patients may suffer from is hypersensitivity. In the drug-induced urticaria, mast cells degranulate and release histamine leading to brief erythematous pruritic wheals, representing an acute hypersensitive response. The most commonly suspected medications are B-Lactam antibiotics, such as cephalosporins. The importance of early recognition of generalized urticaria is that although it usually self resolves it may progress to angioedema and anaphylaxis.

In this case, 24 hours after commencing intravenous ceftriaxone the patient began to develop generalized pruritic wheals. The time course of drug administration and symptom onset, the improvement with withdraw of ceftriaxone (positive dechallenge) and lack of an alternative explanation strongly suggest that ceftriaxone is the causative agent. Challenge was not conducted because there was the risk of causing greater hypersensitive response.

Non-IgE mediated mechanisms of reactions have been reported, but most acute hypersensitivities to β-lactam antibiotics are IgE-mediated. It has been recognised that the R1 side-chain structure, rather than the β-lactam ring, is the main factor involved in determining cross-reactivity of the β-lactam antibiotics. Selective ceftriaxone hypersensitivity cannot be confirmed as no formal allergy tests were performed; however, when ceftriaxone was withheld, our patient was able to take other β-lactam antibiotics without further complications.

Generalized urticaria appears within hours to 48 hours of ceftriaxone administration, according to published reports, and goes away after the drug is quickly withdrawn and any symptoms are treated. As associated with this ceftriaxone induced hypersensitivity are the numerous cases reported involving younger age groups, our patient introduces the notion of hypersensitivity in the older hospitalized patient being a potential adverse effect of ceftriaxone.

An approved pharmacovigilance methods for causality evaluation was also used to further solidify the diagnosis. The Naranjo Adverse Drug response Probability Scale score was 6 and by WHO-Uppsala Monitoring Centre (WHO-UMC) Causality Assessment System was rated Probable/Likely. Hence, early identification of drug allergy, prompt withdrawal of

the drug, proper treatment of symptoms, drug allergy documentation and reporting to PVPI are highlighted in this case for the purpose of patient safety.

CONCLUSION

Rapid diagnosis of ceftriaxone induced generalized urticaria is of utmost importance as it is a rare but potentially serious adverse medication response that can develop into serious hypersensitivity reactions. Prompt administration of the suspected drug, accompanied by appropriate therapy for the onset of right treatment, will enable full recovery. This case emphasizes the importance of timely reporting of adverse events, providing adequate supportive treatment, identifying ceftriaxone-induced hypersensitivity reactions, and promptly removing the medication. Such interventions can both reduce patient risk and prevent development of severe allergies.

Declaration of Patient Consent

Written Informed Consent Taken.

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Nil.

Conflicts of Interest

The writers have no conflicts of interest to declare.

Ethical Approval

For this case report, no ethical approval was required as per institutional policy. We made sure to get the patient's written informed consent before publishing anything.

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