

Urticaria due to Ceftriaxone: A Case Report

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ABSTRACT

Cephalosporin are one of the most commonly prescribed antibiotics along with penicillin's, because of their broad spectrum of activity. As the therapeutic use of cephalosporin are increasing, reports of Hypersensitivity reactions are also on the rise. Ceftriaxone, a cephalosporin is used for variety of infections. The drug is known to be associated with rare and mild side effects such as Urticaria, skin rash, diarrhea, vomiting, transient neutropenia and hemolysis. Antibiotics are the most common causes of drug-induced urticaria, of which cephalosporins were the most common causative drugs. Safe way of diagnosing Cephalosporin induced specific gamma interferon, interleukin (IL)-5 and IL-10 release from peripheral blood mononuclear cells. The allergic manifestations are due to breakdown compound formed during drug metabolism.

Key Words: Ceftriaxone, cephalosporin, Antibiotics, allergy, Urticaria, drug metabolism, diagnosis.

INTRODUCTION

Cephalosporins are one of the most commonly prescribed antibiotics along with penicillins, because of their broad spectrum of activity. As the therapeutic use cephalosporins are increasing, reports of Hypersensitivity reactions are also on the rise. ⁽¹⁾ Ceftriaxone a cephalosporin is used for variety of infections. This drug is known to be associated with rare and mild side effects such as Urticaria, skin rash, diarrhea, vomiting, transient neutropenia, and hemolysis. ⁽²⁾ Drug induced allergic reactions can be grouped into IgE mediated and non IgE mediated. IgE mediated reactions include angioedema, urticaria, anaphylaxis and bronchospasm which occurs within 72 hours of exposure to the drug. Non IgE mediated reactions are characterized by interstitial nephritis, Steven Johnson syndrome, serum sickness, hemolytic leukemia. ⁽³⁾ In Allergy to cephalosporins, skin testing may reveal negative results as had happened in the present case because native compound is used for skin testing. The allergic

manifestations are due to a breakdown compound, formed during drug metabolism. In such instances drug challenge serves as the gold standard in ruling out drug allergy. Another safe way of diagnosing Cephalosporin induced rash is to use enzyme linked immunosuppressive assay to estimate the cephalosporin specific gamma interferon, interleukin (IL)-5 and IL-10 release from peripheral blood mononuclear cells. ⁽⁴⁾ Antibiotics are the most frequent causes of drug-induced urticaria, of which cephalosporins were the most common causative drugs. The median duration of onset and of Clinical remission was 18 hours and 24 hours, respectively. ⁽⁵⁾ Urticaria is characterized by transient swelling of the skin, which fluctuates over hours. Deeper swellings of the subcutaneous and submucosal tissue are known as angioedema. Drug-induced urticaria has been reported with a wide range of drugs and vaccines. NSAIDS and antibiotics are the drugs most commonly associated with urticaria. ⁽⁶⁾ Urticaria may be elicited by a considerable number of drugs, particularly

nonsteroidal anti-inflammatory drugs, angiotensin converting enzyme inhibitors, radio contrast media and antibiotics. Pathogenic mechanism involved includes pseudoallergy, idiosyncrasy and IgE-mediated Hypersensitivity, occasionally also IgE antibodies. (7)

CASE: A 14years old female with chief complaints of fever, vomiting 4-5 times, abdominal pain since 1day. High grade fever not associated with chills. On examination patient was conscious and coherent, PR was 100bpm, P/A-Soft, BP-110/70mmhg, RS-BAE+, RR-30bpm. Laboratory findings show Haematology reports decreased blood gas value ph- 7.124, decreased Pco2-11.3, increased Po2-131, monophils-15.8. Biochemistry reports show random blood sugar 220mg/dl, urea-36mg/dl, serum creatinine- 1mg/dl. Urine analysis: color-pale yellow, reaction was acidic, Albumin present, sugar present. The treatment was initiated with IV fluids-NS 76ml/hr SOS, Inj. Ceftriaxone 1gm IV BD, Inj. Ranitidine 20mg IV BD.

ADR was managed by withdrawing the suspected drug and administration of supportive therapy for a fast recovery.



Figure 1: Clinical Image

DISCUSSION

When the patient exposed to certain drugs like cephalosporins production of IgE antibodies fix to mast cells then again re exposure to the same drug antigens,

antibodies reaction occurs. On the mast cell surface then release of inflammation mediators like 5HT, PG3, PAF causes urticaria.

Cephalosporins have a four membered beta lactam ring, whose structure varies from substitution at the R1 and R2 side chains. Cefotaxime, Ceftriaxone, Cefepime and Cefuroxime have a R1 side chain and the Hypersensitivity reactions with the above mentioned drugs are due to the presence of these side chains. (8) Hypersensitivity reactions that occur immediately within the first hour of administration are characterized by urticaria, angioedema, rhinitis, and anaphylactic shock. (9) Most common manifestations are development of maculopapular rash, urticaria and anaphylaxis. (10) The basic treatment. Chronic urticaria involves second generation Non-sedating, non-impairing H1 antihistamines as first line treatment. The major therapeutic advance in recent years has been in third line treatment with Omalizumab, a humanized monoclonal anti-immunoglobulin E(anti-IgE) antibody that prevents binding of IgE to the high-affinity IgE receptor. (11) By inhibiting IgE from binding the FcRI receptor, Omalizumab also has the effect of down regulating the FcRI receptor on the surface of mast cells and basophil.

The monoclonal antibody has also been shown to decrease the release of circulating interleukin-6 and tumor necrosis factor alpha, and to decrease the recruitment of T cells, eosinophils, and macrophages in the inflammatory response. (12)

CONCLUSION

Ceftriaxone is a commonly used antibiotic in both inpatient and outpatient department but have multiple potential adverse events. Clinicians should be aware of the possibility of anaphylaxis occurring with the test dose of Ceftriaxone, especially because such a reaction could go unnoticed in patients with life threatening infections and unstable vital signs. Hence, it is

important to recognize it rapidly and treat it effectively.

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