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# A Case Report on Ceftriaxone Induced Hypersensitivity Reaction (Urticaria)

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**A B S T R A C T**
Ceftriaxone is a third generation cephalosporin's group of broad spectrum antibiotic. It is active against gram positive and gram negative organism and is commonly used for respiratory tract infections, urinary tract infections and meningitis. Diagnosis of anaphylaxis is clinically based and usually straight forward. Usually ceftriaxone is well tolerated and serious adverse effect like anaphylaxis is rare. Hypersensitivity reaction with ceftriaxone is unusual but is potentially life threatening it is rapidly occurring reaction hence called immediate hypersensitivity reaction. Whenever the patient exposes to certain drugs (penicillin, cephalosoprins and aspirins) production of IgE E anti bodies occurs that fix to mast cells then again reexposure to same drug causes antigen – antibody reaction on mast cell surface then release of inflammatory mediators like histamine, 5HT, PG'S, LT'S, PAF occurs. These mediators cause the hypotension bronchospasm angioedema urticaria rhinitis and anaphylactic shock. Management of hypersensitivity reactions include Inj. Adrenaline 0.3-0.5ml, intramuscularly, Inj. Hydrocortisone 100-200mg intravenously, Inj. Pheneramine maleate 45mg intravenously.
**Keywords:** ceftriaxone, 3rd generation cephalosporin's, hypersensitivity reactions

**A R T I C L E  I N F O**

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## 1. Introduction

Ceftriaxone is a third generation cephalosporin's group of broad spectrum antibiotics. It is active against gram positive and gram negative organism and is commonly used for respiratory tract infections, urinary tract infections meningitis, etc.It mainly acts by inhibiting last step of cell wall synthesis.Anaphylaxis is an acute life threatening reaction usuallybut not always mediated by immunologic mechanisms that result from sudden systemic release of mediatorsfrom mast cells and basophils. Other mediator cascade includes non-mastcell-derived mediators responsible for many symptomsoccurring in anaphylactic reaction. [1, 2]Anaphylaxis often produces signs and symptoms withinminutes to an offending stimulus but some reactionsmay develop later (>30 mins after exposure). Biphasicreactions which occur 1-72 hours after the initial attackhave also been reported. [3] Drug allergies are classified into IgE mediated (type I hypersensitivity) and non IgE mediated. IgE mediated reactions include urticaria, angioedema, bronchospasms, skin eruptions, anaphylactic

reactions. Non IgE mediated includes SJS, haemolytic anemia, interstitial nephritis, serum sickness, etc.Diagnosis of anaphylaxis is clinically based and usually straight forward. Usually ceftriaxone is well tolerated and the serious adverse effect like anaphylaxis is rare. There are inadequate results that say that cephalosoprins are causing this kind of hypersensitivity. Incidence of ceftriaxone related hypersensitivity reaction is between 2.7% to 3.3%.

**Figure 1:** Ceftriaxone induced hypersensitivity reaction (Urticaria)

## 2. Case Report

A 42yrs female patient was presented in the ward of general medicine with the chief complaints of fever, headache, body pains, giddiness, vomiting, and neck stiffness since 4 days. On the day of admission she was kept on treatment based on her complaints. On day 2 she was suspected with viral meningitis thus the treatment for meningitis was started with acyclovir and mannitol. She had developed hypersensitivity reactions (urticaria) around the nose as shown in the figure. For which she was prescribed with dexamethasone and then ceftriaxone was withdrawn. The previous day she was started treatment with ceftriaxone to reduce hospital acquired infections. After 24hrs of treatment she has developed the urticaria around her nose.

**Treatment outcome and follow up:** She was treated with Mannitol 20% 8$^{th}$hourly, Dexamethasone 100mg and Acyclovir 100mg then the ADR was reduced after 2 days of discontinuation of drug.

## 3. ADR Assessment

After collection of all the subjective and objective data it was suspected that the current treatment with the drug ceftriaxone is responsible for the occurrence of this reaction. After checking all the ADR profiles of prescribed drugs it was confirmed that ceftriaxone has a most probable relation in causing this reaction. ADR assessment is done by using scales like narinjo scale and WHO-UMC scales and those scales conforms this reaction is a probable type as shown is table1.

**Discussion**

Anaphylaxis is an acute, life threatening reaction which is often associated with dyspnoea, angioedema and hypotension, resulting from the release of preformed, newly sensitized bioactive mediators from mast cells and basophils. Anaphylaxis is a medical emergency and usually requires active and prompt resuscitative measures such as airway management, supplemental oxygen, adrenaline, intravenous fluid boluses along with steroids and antihistamines as adjunctive therapy. A patient who has an allergic reaction to a specific cephalosporin probably should not receive that cephalosporin group again.[5]Cross reaction between cephalosoprins do occur. Thus it is really difficult to predict anaphylaxis to cephalosporin and strict vigilance and preparedness is mandatory.

**Table1. Causality assessment of suspected ADR**

| S.No | Suspected drug | ADR | Narinjo scale | WHO-UMC |
|---|---|---|---|---|
| 1 | Ceftriaxone (Gemtrex) 1g, BD | Hypersensitivity reaction (Urticaria) | Probable | Probable |

**Table2. Severity, Predictability, Preventability**

| ADR | Suspected drug | Severity | Predictability | Preventability |
|---|---|---|---|---|
| Ceftriaxone induced hypersensitivity reaction | Ceftriaxone | Moderate (level4) | Predictable (Type B) | Probably preventable |

## 4. Conclusion

Even there in a lower increase in possibility of causing anaphylaxis but when it occurs in a patient there is a role of health care providers to be aware of this complication which can occur even after first dose and should be vigilant on recognizing anaphylaxis and provide prompt treatment accordingly.

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