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Ceftriaxone induced anaphylaxis in a tertiary care hospital in central India

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Abstract

Anaphylaxis is a life threatening emergency condition which can be prevented by simple precautionary diagnostic test. Penicillin allergy can occur frequently and it shows cross resistance with cephalosporins. Sensitivity test should be routinely performed before administration of the cephalosporins.

Keywords: Ceftriaxone, anaphylaxis, Adrenaline

1. Introduction

An allergy is an adverse reaction that results from previous sensitization to a particular chemical or to one that is structurally similar.[1] Such reactions are immunologically mediated subsequent exposure even to a very smaller dose to the chemical results in antigen-antibody interaction that provokes the typical manifestations of allergy. There is a latent period of at least 1-2 weeks between first and second drug dose exposure. The main targets of these reactions are GI tract, skin (urticaria & dermatitis), the respiratory tract (asthma & rhinitis) and the vasculature (anaphylactic shock). The responses tend to occur quickly after challenge with antigen to which the individual has been sensitized and are termed as immediate hypersensitivity reaction.

Anaphylaxis is defined as a severe, life-threatening, generalised or systemic hypersensitivity reaction & characterised by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes.[2] Anaphylaxis can be triggered by any of a very broad range of triggers, include food, drugs and venom.[3] According to American College of Allergy, Asthma and Immunology Epidemiology of Anaphylaxis concluded that the frequency of episodes of anaphylaxis lies between 30 and 950 cases per 100,000 persons per year.[4]

Ceftriaxone is a semisynthetic antimicrobial agent of cephalosporin group chemically related to penicillins, the nucleus consists of β lactum ring fused to dihydrothiazine ring. It is a third generation cephalosporin having augmented activity against Gram negative enterobacterociae, pseudomonas and β lactum producing gram negative bacteria. Ceftriaxone has high efficacy in a wide range of serious infections, bacterial meningitis, multidrug resistant typhoid fever, complicated UTI, abdominal sepsis and septicemias.[1]

2. Case report

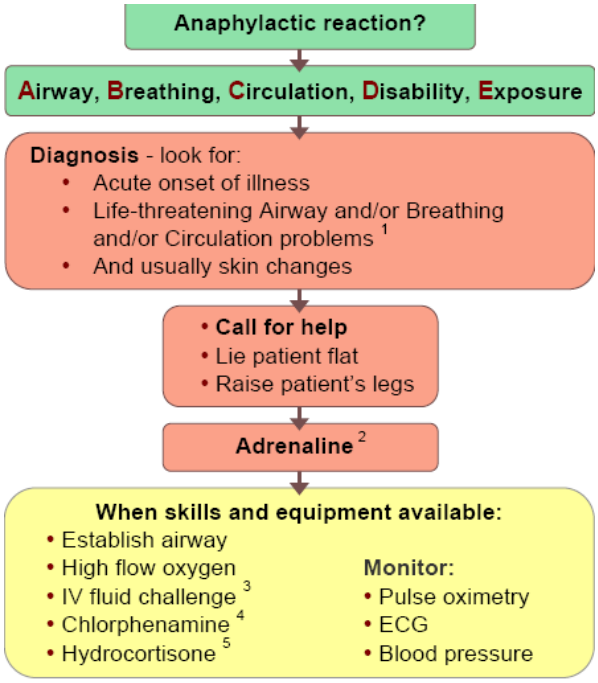
A 36 year old male patient came with a referral from a private practitioner to the hospital with chief complains of difficulty in breathing, burning sensation all over the body, headache and giddiness. Patient had the history of administration of Inj. Ceftriaxone 1 gm deep i.m. for wound infection over his right leg 2 hrs before admission. Patient and his relatives did not give the history of any other concomitant medications. On examination the physician found out that patient was afebrile, his B.P was 60/50mmHg, SPO2 was 92%, RR was 32/min, Pulse was very feeble and low volumic, Random Blood Sugar was 118mg/dl and generalized erythematous rash with itching was present on the body. Patient soon developed anaphylaxis in the form of respiratory distress and palpitation. Diagnosis of anaphylactic reaction was made on the basis of history and clinical examination. Patient was admitted in medicine ICU. Patient received emergency treatment consisting of Inj. adrenaline 1 cc s.c. stat (1 in 10,000), Inj. Dexamethasone 4 mg i.v. 6hrly & i.v fluids (normal saline and ringer lactate). On the same day, after 10 hrs of resuscitative treatment, patient had pulse rate 98/min, B.P. 110/70 mm of Hg & RR 22/min. Patients laboratory investigations showed raised serum creatinine 1.3 mg/dl. Other laboratory

investigations like LFT (SGOT 29IU/L, SGPT 16IU/,Serum AlpO4 51IU/l,Sr Total Proteins 6.4mg%, Sr Bilirubin D: 0.3mg/dl, T 0.9mg/dl), KFT(BUL 35 mg/dl) & ECG came out to be within normal range. Patient was a known case of epilepsy but was not any medications. He was prescribed Tab. Phenytoin 100 mg tds with folic acid 5mg OD on discharge.

3. Discussion

Anaphylaxis is defined as a serious allergic reaction that is rapid in onset and may cause death. About 0.001% of patients treated with these β lactum groups of antimicrobials die from anaphylaxis. Hypersensitivity reactions are most important adverse effect of cephalosporins occurring in 1-3% of cases though anaphylaxis is rare (<0.02%).[5] Manifestations are similar to that of penicillins but incidence is rare. About 10% of patients allergic to penicillins show cross reactivity with cephalosporins.[6] Rash is the most common manifestation which is also seen in our case. According to UK resuscitation guidelines, ideal treatment should consist of inj. Adrenaline stat 1 in 10,000 s.c. with the administration of steroids like hydrocortisone 200mg i.m 6 hrly, along with I.V. fluids. Frequent monitoring of SpO_2, pulse, B.P. should be done using pulseoxymeter.[7] In our case, similar resuscitation guidelines were followed monitoring of SpO_2, pulse, B.P. was done with the help of pulseoxymeter .According to WHO causality assessment [8] this reaction falls in probable and it falls in Severe category according to severity scale (Hartwig and seigel).[9]

According to UK Guidelines Emergency treatment of Anaphylaxis is as follows[10]



4. Conclusion

Those patients who are allergic to penicillins should be better avoided cephalosporin administration. Intradermal Skin tests before administration of cephalosporins are unreliable but still recommended. Ideally, all patients should be assessed by an allergy specialist and have a treatment plan based on their individual risk.[11] Adverse drug reactions that include an anaphylactic reaction should be reported to the regulatory agency i.e. CDSCO (Central Drug Standard Control Organization) in India.

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