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Case Report

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LEVOFLOXACIN INDUCED HYPERSENSITIVITY REACTION- NEED FOR DOSE ADJUSTMENT

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ABSTRACT

A female patient of 65 years admitted with complicated Urinary tract infection (UTI) with Septicemia, Acute kidney injury (AKI) and Dyselectrolemia. She was put on intravenous fluids, Dopamine, Optineuron, Paracetamol and Levofloxacin. She is a known case of DM2 and hypertension on treatment. On physical examination, the patient posed edema in upper limbs pitting type, facial edema and erythema extending entire left fore-arm. Her blood examination results showed abnormality of renal and liver function. The physician in charge suspected for the possible adverse effect of Levofloxacin and adjusted the drug. The patient slowly got spontaneous resolution of the edema problem within 4 days. In fact, edema is an important uncommon adverse effect of Levofloxacin. Her symptoms resolved after dose adjustment of Levofloxacin and supportive care.

KEYWORDS: Edema, Levofloxacin, Drug-induced hypersensitivity reaction, Case report.

INTRODUCTION

Levofloxacin is commonly prescribed antibiotic for managing chest and urinary tract infection. Levofloxacin is a third generation fluoroquinolone antibiotic.[1] It is well tolerated by most of the patient. It has good mono therapeutic action with extended coverage against pseudomonas patient as well as excellent activity against pneumococcus. It is a L-stereoisomer of parent compound ofloxacin. The common adverse effects involve gastro intestinal and central nervous system disturbances, hypersensitivity reactions and anaphylactic reactions. In a clinical trial study, 11% of patients experienced side effects. Out of only 4% relieved from the symptoms after discontinuation of therapy.[3] Serious and occasionally fatal hypersensitivity and/ or anaphylactic reactions have been reported in patients receiving levofloxacin. In some patients the reactions occur immediately after the first dose such as prolonged QT interval, tachycardia, toxic epidermal necrosis, vasodilation, photosensitivity reaction, pancytopenia, exacerbation of myasthenia gravis, uveitis and visual disturbance, tinnitus, dyspnoea, urtricaria, itching. First step is immediate discontinuation of the drug. Serious acute hypersensitivity reaction may require treatment with epinephrine and other resuscitative measures, including oxygen, IV fluids, antihistamines, corticosteroids, pressure amines and airway management as clinically indicated.[4]

CASE REPORT

A female patient of age 65 years and weighing 63 kgs was admitted to the hospital with fever, incoherent and 2 episodes of vomiting. She is a known case of type-2 Diabetes mellitus, Hypertension and is under regular medication. Up on admission her vitals were with pulse rate of 90 beats per minute and Blood pressure of 100/50 mmHg and she was put on following medications: Intravenous fluids – DNS,NS 1 unit each per day, Injection Dopamine infusion 20 µg/kg/ml, Injection Levofloxacin 500mg IV OD, patient undergone for laboratory investigations and observed plenty of pus cells and presence of albumins in urine, serum creatinine:2.3 mg/dL, uric acid:7.8 mmol/L, urea:83 mmol/L, electrolytes were Sodium:120 mmol/L, Potassium:2.3 mmol/L and Chloride: 85 mmol/L. complete blood picture were platelet count: 1.8 Lakhs, WBC: 28,000, differential counts of N87L11M1E0, Aspartate aminotransferase (AST): 56 U/L, Total bilirubin: 2.5µmol/L. By ultra sonography: bilateral grade 1 renal parenchymal changes and mild pleural effusions were seen. On day-2 patient was confused and complaints of neck stiffness and her total bilirubin: 1.7, direct bilirubin: 1.4, indirect bilirubin: 0.3, ALP levels were 203U/L and electrolytes were sodium: 137mmol/L, potassium: 4mmol/L and undergone with same treatment. On day 3 patient was complaining about pedal edema-pitting type, facial puffiness and erythema extending entire left forearm and the interventions was noted that the kidney diseases and the quinolones are need for dose adjustment

and the intervention has accepted by the duty doctor in the department and adjusted dose to Injection. Levofloxacin 250mg IV OD. Next day patient symptoms were resolved.

DISCUSSION

Levofloxacin is a third generate on fluoroquinolone. It is the active levo (s) isomer of ofloxacin having improved activity against Strep. Pneumonia and some other gram-positive and gram-negative bacteria.[3] Anaerobes are moderately susceptible. Oral bioavailability of levofloxacin is nearly 100%; oral and IV doses are similar. It is mainly excreted unchanged and a single daily dose is sufficient because of slower elimination and higher potency. Theophylline, warfarin, cyclosporine and zidovudine pharmacokinetics has been found to remain unchanged during levofloxacin treatment. The primary indication of levofloxacin is community acquired pneumonia and exacerbations of chronic bronchitis in which up to 90% cure rate has been obtained. High cure rates have been noted in sinusitis, pyelonephritis, prostatitis and other UTI, as well as skin/soft tissue infections.[1] First generation drugs (e.g. nalidixic acid) can achieve minimal serum levels. Second-generation quinolones (e.g., ciprofloxacin) have increased gram-negative and systemic activity. Fourth generation quinolone drugs (currently only trovafloxacin) add significant activity against anaerobes.[2] The adverse drug reactions associated with the intake of fluoroquinolone most commonly affect gastrointestinal system, central nervous system and skin.[5] The prevalent gastrointestinal adverse effects include nausea, vomiting and diarrhoea, which occur in 3 to 6 per cent of recipients.[6] Flouroquinolones are associated with increased risk of tendinitis and tendon rupture in ages, the risk is further increased in older patients, in kidney, heart and lung transplant recipients and with use of concomitant corticosteroid therapy. May exacerbate muscle weakness in patients with myasthenia gravis. Also fatal hypoglycaemia reported in elderly patients with or without diabetes. It was also produce fungal or bacterial super infection with prolonged treatment. Other common side effects are central nervous system effects (headache, confusion and dizziness), phototoxicity (more common with lomefloxacin and sparfloxacin), cardiotoxicity (sparfloxacin) and hepatotoxicity (levofloxacin, trovafloxacin). Levofloxacin mediated Achilles tear has been reported recently however tendinopathy was associated with earlier quinolone classes.[7] Angioedema is defined as sudden swelling of skin, subcutaneous and sub mucosal tissue, respiratory or gastrointestinal tracts.[4] Angioedema is non-pitting transient (lasting up to 7 days) and independent of the position of the body-in contrast to oedema, which is pitting, persistent, and dependent on body position. The chance of drug induced angioedema is extremely uncommon. The main pathophysiologic process is due to the release of inflammatory mediators such as histamine, bradykinins and serotonins which are responsible for inflammation, arteriolar dilation, eventually vascular leakage and tissue swelling.[1] Angioedema is classified as either hereditary or acquired.[8] Acquired angioedema (AAE) can be immunologic, nonimmunologic or idiopathic. It is usually caused by allergy and occurs together with other allergic symptoms and urticarial. It can also occur as a side effect to certain medications, particularly ACE inhibitors. It is characterized by repetitive episodes of swelling, frequently of the face, lips, tongue, limb, genitals. Oedema of the gastrointestinal mucosa typically leads to severe abdominal pain, in the upper respiratory tract, it can be life threatening.[4] Hereditary angioedema (HAE) exists in three forms, all of which are caused by a genetic mutation inherited in an autosomal dominant form. They are distinguished by the underlying genetic abnormality. Types I and II are caused by mutations in the SERPINGI gene. Type III HAE has been linked with mutations in the F12 gene.[2]

CONCLUSION

Levofloxacin is a third generation fluroqiunolone antibiotic with broad spectrum of activity more susceptible to anaerobes. Here, in our case report patient experienced a hypersensitivity reaction of angioedema of face resulting in facial swelling and puffy eyes which are rare reported in less than 5% of users. Angioedema is often self-limiting may result in respiratory obstruction and be fatal, mainly implicated in NSAID'S and Antibiotics. Clinicians should be aware of this potential event, which might also lead to pulmonary oedema even in setting of normal renal function. According to the literature survey this is the second kind of reported case for angioedema, for future this acts as signal generator.

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