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Case Report

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Norfloxacin Induced Steven Johnson's Syndrome: A Case Study

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Abstract

Fluoroquinolones have a wide range of activities, which makes them quite popular. Since they can cause T cell-dependent reactions like Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), their benefit-risk profile needs to be carefully examined. Unfavourable drug reactions frequently result in Stevens-Johnsons syndrome (SJS), a rare and sometimes fatal cutaneous reaction. SJS is distinguished in particular by severse epidermal detachment, acute skin blisters, and extensive skin and mucous membrane lesions (including those of the month, nose, oesophagus, anus and genitalia). Drugs were discovered to be a significant factor in the development of SJS in 95% of case report. In the present case, a 59-year-old female patient presented to the hospital with oral lesions, significant oral ulceration, redness, and pain. Her complaint of watery diarrhoea led to the prescription of Norfloxacin. This case study investigated the possibility of a severe hypersensitivity reaction to norfloxacin, which is extremely risky and perhaps lethal.

Keywords: stevens-johnsons syndrome; norfloxacin; fluoroquinolones; adverse drug reactions

Introduction

Antibiotics in the fluoroquinolone class have occasionally been linked to adverse skin responses. Mild rashes to serious skin disorders can result from these reactions. Rash is a typical cutaneous reaction that can occur when using fluoroquinolones. This rash may be moderate and self-limiting, or it may be more serious [1]. Fluoroquinolones, in particular ciprofloxacin, can raise the risk of photosensitivity responses, which make the skin more sensitive to sunlight. This may result in symptoms similar to a sunburn [2]. These skin rashes are severe and potentially fatal. Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) have been linked to fluoroquinolones, including ciprofloxacin, despite these findings being extremely rare [3]. Fixed drug eruptions are localised skin reactions that happen at the same spot with repeated exposure to the drug, and they can occur in some people. A possible cause of these responses is fluoroquinolones [4]. A severe, systemic hypersensitivity reaction called Drug Hypersensitivity Syndrome (DRESS) that can affect the skin. Fluoroquinolone usage has been linked to some incidences [5].

Fluoroquinolones (FQs) are counted among broad-spectrum antimicrobials and are used to treat genitourinary, respiratory, gastrointestinal, skin and soft tissue infections. FQs are generally well tolerated antimicrobials: the discontinuation of treatment due to adverse effect is required in fewer than five percent of consumption. FQs are also associated with serious adverse effect including clostridium difficile infections, prolonged QT interval, tendinitis and tendon rupture [6]. Norfloxacin is a first-generation fluoroquinolone with variable activity gram-positive and gram-negative bacteria. Norfloxacin is indicated in the treatment of acute uncomplicated/complicated chronic recurrent urinary tract infections. Adverse side effect of norfloxacin include prolongation of the QT interval, tendon rupture, hypersensitivity reactions, Stevens Johnson syndrome (SJS- skin hyperpigmentation) and toxic epidermal necrolysis (TEN). Hyperpigmentation refers to patches of skin that became darker than the surrounding area of the skin. It occurs when the skin produces excess melanin, the pigment that gives skin its colour [7].

Case Summary

A 59-year-old female presented with a severe lip skin reaction, which was diagnosed as SJS. She had received norfloxacin 400 mg/day for acute gastritis, immediately after finishing the first dose of treatment

regimen; she developed cutaneous and mucous lesions on lips typical of mucosal damage and SJS. After a referred to hospital and treatment with oral prednisolone therapy, the female recovered. She had past history of same type of reaction with fluoroquinolone group of antibiotics. Doctor identified the Norfloxacin induced Steven-Johnson syndrome and advised to stop the suspected drug and additionally, advised patients to avoid any fluoroquinolone group of antibiotics in future. Patients had provided consent for the data publishing.

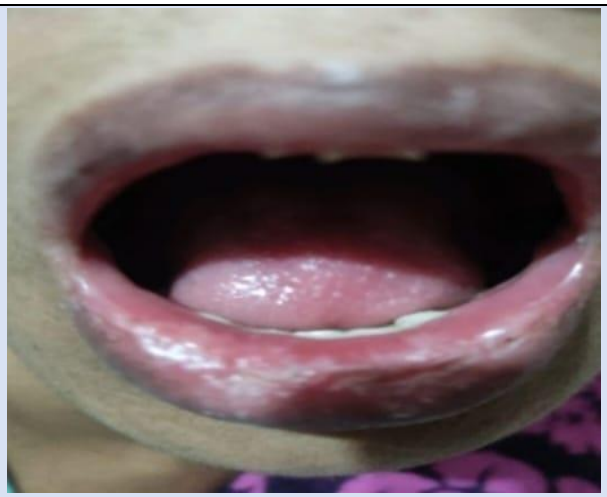

Figure 1: Lips swelling, ulceration erosions, SJS

Discussion

The most common causes of morbidity and mortality are adverse drug reactions (ADRs). Hospital admissions in India are caused by ADRs in the range of 2.9 to 5.6% [8]. Hospitalisation is necessary for the rare and severe cutaneous ADR known as SJS. FQs have been documented to cause TEN in the past [9]. Sulfa drugs, phenytoin, carbamazepine, lamotrigine, phenobarbital, allopurinol, piroxicam, nevirapine, and diclofenac are the most typical medications with a high risk of causing SJS [10]. Around 40% of drug-induced SJS is attributed to antibiotics [11]. Sulphonamides and penicillins are the antibiotics most frequently linked to drug-induced SJS. Ciprofloxacin (less than 0.01%) and Norfloxacin (0.01% to 0.1%) among FQ very infrequently cause drug-induced SJS [12].

Variations in the HLA-B gene lead to abnormal immune responses to the probable medicines that are known to cause SJS. Drug-induced cytotoxic T cells and natural killer cells generate granulysin, which kills skin and mucous membrane cells, as a result of the body's inability to remove reactive metabolites. As a defining trait of SJS, the death of these cells results in skin blistering and peeling. Granulysin content in blister fluid corresponds with the severity of SJS, and CD8+ T lymphocytes have been recognised as crucial blister-forming mediators [13].

In this case, Naranjo's algorithm [14] was used to determine a plausible reaction due to Norfloxacin. Based on the total score of 8, this SJS was categorized as "probable" reaction to Norfloxacin administration. Indian guidelines for the treatment of SJS suggested that all suspicious medications be stopped right away. If a patient with SJS has been diagnosed at a primary or secondary healthcare facility, treatment should begin right away, followed by a referral to a tertiary care facility, where the patient will get care in an intensive care unit or an isolated room while a sterile environment is maintained. Additionally, advised to focus on linked co-morbidity while receiving symptomatic treatment IV or IM corticosteroids therapy such as Prednisolone 1–2 mg/kg/day, dexamethasone 8–16 mg/ day and pulse form employing slow intravenous infusion of methylprednisolone 500–1000 mg/day or dexamethasone 100 mg for 3 days should be given within 72 hrs. with total duration of 7–10 days. Assessment of appearing of new lesions, peri-lesional erythema and skin tenderness should be done daily. If steroid is contraindicated in patient i.e. in tuberculosis and severe hyperglycaemia, Cyclosporine 3–5 mg/kg/day for 10–14 days should be used [15].

Table1: Naranjo's algorithm

Question	Yes	No	Do not know	Score
1. Are these previous conclusive reports on this reaction?	+1	0	0	1
2. Did the adverse event appear after the suspected drug was administered?	+2	-1	0	2
3. Did the adverse event improve when the drug was discontinued, or a specific antagonist was administered?	+1	0	0	1
4. Did the adverse event reappear when the drug was readministered?	+2	-1	0	2
5. Are there alternative causes that could on their own have caused the reaction?	-1	+2	0	0
6. Did the reaction reappear when a placebo was given?	-1	+1	0	0
7. Was the drug detected in blood or other fluids in concentration known to be toxic?	+1	0	0	0
8. Was the reaction more severe when the dose was increased or less severe when the dose was decreased?	+1	0	0	0
9. Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	+1	0	0	1
10. Was the adverse event confirmed by any objective evidence?	+1	0	0	1

Total Score 08

Conclusion

The frequency of SJS linked to norfloxacin and ciprofloxacin is quite uncommon. The use of these medications, which have the potential to cause SJS, requires close observation. Doctors should use cautious when prescribing norfloxacin with ciprofloxacin and keep an eye out for such uncommon adverse drug reactions (ADRs).

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