

**Topical ciprofloxacin induced ocular toxicity: case report****Uttiya Deb<sup>1\*</sup>, Soumya Ray<sup>2</sup>, Supreeti Biswas<sup>1</sup>**<sup>1</sup>Department of Pharmacology,<sup>2</sup>Department of Ophthalmology,  
Burdwan Medical College and  
Hospital, Burdwan, West  
Bengal, India**Received:** 10 September 2019**Accepted:** 10 October 2019**\*Correspondence to:**

Dr. Uttiya Deb,

Email: [dr.uttiyadeb@gmail.com](mailto:dr.uttiyadeb@gmail.com)**Copyright:** © the author(s),  
publisher and licensee Medip  
Academy. This is an open-  
access article distributed under  
the terms of the Creative  
Commons Attribution Non-  
Commercial License, which  
permits unrestricted non-  
commercial use, distribution,  
and reproduction in any  
medium, provided the original  
work is properly cited.**ABSTRACT**

Ciprofloxacin is a commonly used fluoroquinolone group of antimicrobial which is used for treating infective conditions like community acquired pneumonia and urinary tract infections. A patient of cataract was treated with ciprofloxacin eye drop as her pre-operative medication. She presented after four days with itching and redness in her right eye with swelling of the peri-orbital skin. We report this rare case where topical application of ciprofloxacin was responsible for the ocular symptoms.

**Keywords:** Ciprofloxacin, Ocular symptoms, Ocular toxicity**INTRODUCTION**

Ciprofloxacin is one of the most commonly used fluoroquinolone group of antimicrobial. It inhibits DNA replication by binding to bacterial DNA gyrase and topoisomerase IV.<sup>1</sup> It is used for treatment of several infective conditions like urinary tract infections, bacterial gastroenteritis and community acquired pneumonia. Among the adverse drug reactions of ciprofloxacin, GI disturbances, neuropsychiatric problems and musculo-skeletal events are commonly encountered.<sup>1</sup> However, ocular toxicity due to topical application of ciprofloxacin is rarely reported. Here we present a case of peri-orbital swelling with itching and redness of eye after application of ciprofloxacin eye drop.

**CASE REPORT**

A 60 years old female patient visited the outpatient clinic of ophthalmology department for cataract operation of her right eye. As pre-operative medication, she was prescribed topical ciprofloxacin eye drop (0.3%) four times daily for consecutive five days to be applied in her right eye.

After four days she visited the outpatient clinic again complaining of itching and redness in her right eye with swelling of the peri-orbital skin. There was no past history or family history of drug allergy. Upon clinical examination, visual acuity of her right eye was 2/60. Her conjunctiva was congested and there was watery

discharge. Her cornea was clear. Anterior chamber was within normal limit. Iris was normal. Pupil was of normal shape, size and reacting to light. Her lens was of immature senile cataract variety. Fundus was normal. Ocular movement of her right eye was mildly restricted in lateral gaze. There were blisters on her periorbital skin.



**Figure 1: Patient after receiving ciprofloxacin eye drop for four days.**

The scheduled cataract operation was immediately postponed. Ciprofloxacin eye drop was stopped. Tablet levocetizine (5 mg) and tablet paracetamol (500 mg) was prescribed. The patient was followed-up twenty days later. She had regained her visual acuity to 6/60. Conjunctival congestion and chemosis had resolved completely. Swelling of her peri-orbital skin had also reduced.



**Figure 2: Patient during follow-up after twenty days.**

A causality analysis was done using WHO-Uppsala Monitoring Centre scale and the causal association was found to be 'probable'. The severity of reaction was assessed by Hartwig adverse drug reaction assessment scale and it was 'moderate'.<sup>3</sup>

## DISCUSSION

It has been widely reported that ciprofloxacin use is associated with GI symptoms ranging from nausea, vomiting to abdominal discomfort.<sup>3</sup> Neuropsychiatric disturbances comprise mild headache and dizziness.<sup>4</sup> Tendinitis and tendon rupture have also been induced by ciprofloxacin.<sup>5</sup> There are several ocular complications

which arise due to ciprofloxacin but they are occasionally reported. Among the reported cases retinal detachment during ciprofloxacin use was found.<sup>7</sup> However, swelling, redness and itching of eye have been rarely reported.

The causality assessment of this adverse drug reaction using the WHO-Uppsala Monitoring Centre scale revealed that this is a 'probable' type of adverse drug reaction. Rechallenge was not done because of ethical reasons.

It is difficult to ascertain whether the reaction occurred due to the drug or its excipient. We propose the reaction to be 'bizarre' type after excluding all other possibilities. The exact mechanism behind such adverse drug reaction is unknown. It may be because of hypersensitivity to fluoroquinolone group of drugs.<sup>8</sup> Fluoroquinolones can elicit delayed-type of hypersensitivity reactions presumably T-cell mediated.<sup>9</sup> Further studies are needed for evaluation of adverse drug reaction in such individuals.

## CONCLUSION

Topical ciprofloxacin may lead to ocular toxicity. Caution should be taken while administering ciprofloxacin eye drop to the patients. Also, such adverse events should be carefully reported.

## ACKNOWLEDGEMENTS

Authors would like to thank the ophthalmology department for reporting the adverse drug reaction to the pharmacovigilance unit of Burdwan Medical College and Hospital.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

## REFERENCES

1. MacDougall C. Sulfonamides, trimethoprim-sulfamethoxazole, quinolones and agents for urinary tract infections. In: Brunton L, Hilal-Dandan R, Knollmann B, eds. Goodman and Gilman's The Pharmacological Basis of Therapeutics. 13th ed. New York: McGraw Hill Education; 2018: 1011-1021.
2. Edwards IR, Biriell C. Harmonisation in pharmacovigilance. Drug Saf. 1994;10(2):93-102.
3. Hartwig SC, Siegel J, Schneider PJ. Preventability and severity assessment in reporting adverse drug reactions. Am J Hosp Pharm. 1992;49(9):2229-32.
4. Stahlmann R. Clinical toxicological aspects of fluoroquinolones. Toxicol Lett. 2002;127(1-3):269-77.
5. Grover JK. Unwanted effects of ciprofloxacin in Indian population. Indian J Physiol Pharmacol. 1993;37(3):232-4.

6. Stephenson AL, Wu W, Cortes D, Rochon PA. Tendon injury and fluoroquinolone use: A systematic review. *Drug Saf*. 2013;36(9):709-21.
7. Raguideau F, Lemaitre M, Dray-Spira R, Zureik M. Association between oral fluoroquinolone use and retinal detachment. *JAMA Ophthalmol*. 2016;134(4):415-21.
8. Fernández TD, Ariza A, Palomares F, Montañez MI, Salas M, Martín-Serrano, et al. Hypersensitivity to fluoroquinolones: The expression of basophil activation markers depends on the clinical entity and the culprit fluoroquinolone. *Medicine (Baltimore)*. 2016;95(23):e3679: doi: 10.1097/MD.0000000000003679.
9. Schmid DA, Depta JP, Pichler WJ. T cell-mediated hypersensitivity to quinolones: mechanisms and cross-reactivity. *Clin Exp Allergy*. 2006;36(1):59-69.

**Cite this article as:** Deb U, Ray S, Biswas S. Topical ciprofloxacin induced ocular toxicity: case report. *Int J Basic Clin Pharmacol* 2019;8:2570-2.