

## Treatment Outcome Of Corneal Ulcers Using Levofloxacin Hydrate 1.5% Ophthalmic Solution And Adjuvant Oral Ciprofloxacin, A Treatment Strategy Applicable To Primary Healthcare

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**Abstract :** Background: Infectious keratitis is one of the leading causes of blindness worldwide. Prompt treatment with effective medication will control the infection early, preventing corneal scarring and visual loss. fluoroquinolones ophthalmic medication is used because of its broad-spectrum properties, potency, good intraocular penetration, and low toxicity. The study aims to evaluate the treatment outcome of corneal ulcers using Levofloxacin 1.5% ophthalmic solution (LVFX) with adjuvant oral ciprofloxacin when indicated and apply this treatment strategy in primary health care as first-line treatment. Methods: Patients with infective corneal ulcer treated in an eye center were recruited. Inclusion criteria includes Corneal infection consistent with bacterial keratitis, single or multiple small corneal ulcers. Treatment regime: LVFX hourly for the first 2 days, 2 hourly from the 3rd day, and 3 hourly on the 5th day of review. Adjuvant oral ciprofloxacin 500mg BD was administered for 5 days if there were multiple corneal ulcers or when the location of the cornea ulcer was central or paracentral. Results: 47 subjects were recruited. There were 16 (34%) males and 31 (66%) females. 40 subjects (85%) were contact lens (CL) related to corneal ulcer, and 7 subjects (15%) were non-contact lens related. 42 subjects (89%) presented with one ulcer, of which 20 of them (48%) needed adjuvant therapy. 5 subjects presented with 2 or 3 ulcers, of which 3 needed adjuvant therapy. A total of 23 subjects (49%) was given adjuvant therapy (oral ciprofloxacin 500mg BD for 5 days). 21 of them (91%) were CL related. All subjects recovered fully, and the average duration of treatment was 3.7 days, with 49% of the subjects resolved on the 3rd day, 38% on the 5th day of and 13% on the 7th day. All subjects showed symptoms of relief of pain, light-sensitivity, and redness on the 3rd day with full visual recovery post-treatment. No adverse drug reactions were recorded. Conclusion: Our treatment regime demonstrated good clinical outcome as first-line treatment for corneal ulcers. A corneal ulcer is a common eye condition in Singapore, mainly due to CL wear. Pseudomonas aeruginosa is the most frequent and potentially sight-threatening pathogen involved in CL related corneal ulcer. Coagulase-negative Staphylococci, Staphylococcus aureus, and Streptococcus Pneumoniae were seen in non-CL users. All these bacteria exhibit good sensitivity rates to ciprofloxacin and levofloxacin. It is therefore logical in our study to use LVFX Eyedrops and adjuvant ciprofloxacin oral antibiotics when indicated as first line treatment for most corneal ulcers. Our study of patients, both CL related and non-CL related, have shown good clinical response and full recovery using the above treatment strategy. There was also a full restoration of visual acuity in all the patients. Eye-trained primary Healthcare practitioners can consider adopting this treatment strategy as first line treatment in patients with corneal ulcers. This is relevant during the COVID pandemic, where hospitals are overwhelmed with patients and in regions with limited access to specialist eye care. This strategy would enable early treatment with better clinical outcome.

**Keywords :** corneal ulcer, levofloxacin hydrate, treatment strategy, ciprofloxacin

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