Clearing the Fog with Ketotifen

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Background

As scleral lens fitting becomes more commonplace, so too are their complications. Midday fogging, or accumulation of particulate matter behind the lens, has been reported to affect roughly 20-33% of patients[1] leading to blurred vision, lens discomfort, and possibly corneal toxicity[1,2]. Causes of midday fogging have been attributed to various fitting parameters and ocular surface diseases[2]. Mitigating fogging has been a challenge for both patients and practitioners. Numerous solutions have been proposed; however, without an underlying condition, there are currently no recommended medical therapies. Ultimately, most patients must remove and reinsert their lenses as this debris accumulates, sometimes multiple times per day. This constant lens manipulation not only complicates the lens care and handling, it represents a burden on our patients requiring them to carry lens solutions and accessories everywhere they go, as well as removes them from daily tasks while tending to their lenses.

Case Summary

A 37 year-old Hispanic male keratoconus patient fit scleral lenses was experiencing lens fogging. Despite minimizing central vault, aligning scleral curves, and modifying lens solutions, our patient was able to only achieve about 4 hours of uninterrupted lens wear before needing to remove and reinsert his lens due to hazy vision. Moderate fogging of the post-lens tear reservoir including mucous debris was found on exam. Ketotifen fumarate therapy was initiated twice daily in the hopes of decreasing mucous production, and therefore increasing comfortable wear time. After 1 month on therapy, the patient reported being able to comfortably wear his lenses for 7 hours before noting foggy vision; and after 3 months of therapy, this had improved to 12 hours of comfortable, uninterrupted lens wear.

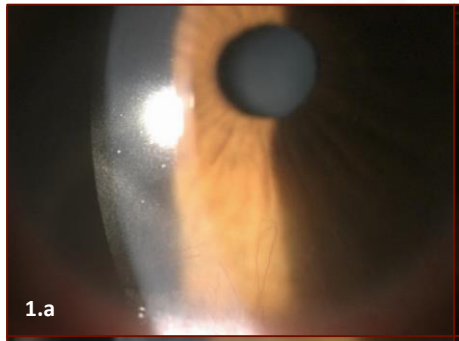

***Figure1**: Slit lamp photographs OD (1a) & OS (1b) prior to therapy*

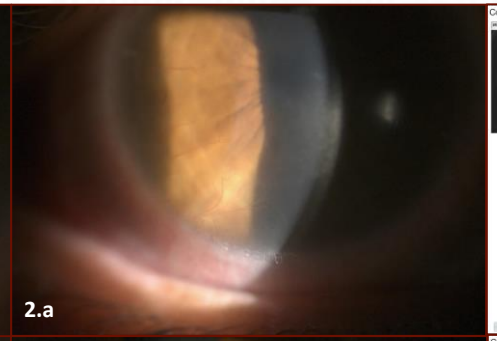

***Figure 2:** Slit lamp photographs OD (2a) & OS (2b) after 1 month therapy*

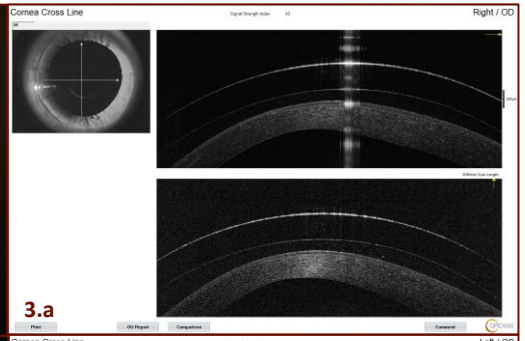

***Figure 3:** Avanti Anterior Segment OCT images OD (3a) & OS (3b) after 3 months therapy*

Discussion

With midday fogging affecting so many scleral lens patients, finding effective solutions for this problem should be high on our list of priorities to improve our patient's experience. Midday fogging has been described to present in three types: mucous debris, milky fog from atopic disease, and lipid particles[2]. Our observations of increased mucous deposition in the fluid reservoir is postulated to occur due to mechanical irritation of goblet cells in the lens/conjunctiva interface[3]. As shown in our patient, utilization of ketotifen fumarate worked to reduce mucous production and decreased the symptoms of fogging, ultimately increasing lens wear; suggesting this may be an effective therapy in at least our patients presenting with fogging due to mucous hypersecretion.

References

1 Walker MK, Bergmanson JP, Miller WL, Marsack JD, Johnson LA. Complications and fitting challenges associated with scleral contact lenses: A review. *Cont Lens Anterior Eye.* 2016;39(2):88–96.

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3 García-Posadas L, Contreras-Ruiz L, Soriano-Romaní L, Dartt DA, Diebold Y. Conjunctival Goblet Cell Function: Effect of Contact Lens Wear and Cytokines. *Eye Contact Lens.* 2016;42(2):83–90.

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