Navigating Hydrops in a Scleral Lens Wearer

Lilly Tran, OD, Jan Bergmanson, OD, PhD, DSc
University of Houston College of Optometry, Houston, Texas

College of Optometry
UNIVERSITY OF HOUSTON

INTRODUCTION

Acute corneal hydrops (AH) is an uncommon complication, occurring in 3% of those with keratoconus.[6] AH involves corneal edema as a consequence of a rupture in the posterior limiting lamina and endothelial barrier.[1] This leads to an influx of aqueous humor into the stroma.[1] This case report highlights how a habitual scleral lens wearer suffering from AH was managed.

CASE DESCRIPTION

A 56 year old BF with bilateral keratoconus presented to the optometry clinic as an emergent add-on:

- Right eye - red, swollen, painful (7/10), moderately photophobic
- Onset - one day ago while wearing scleral lenses
- First occurrence
- No improvement with artificial tears
- (+) clear tearing, clear mucus
- (-) scratches/damages to scleral, symptoms OS

Ocular History:

- Keratoconus OU
- Allergic conjunctivitis OU
- Dry eye OU

PERTINENT EXAM FINDINGS

Visual Acuities:

- OD: 20/400, PH 20/100
- OS: 20/50 (stable)

Anterior Segment:

- *Figures 1, 2, 3*

TREATMENT AND MANAGEMENT

Muro 5% 1 gtt QID OD and Tobradex 1 gtt QID OD

4 DAY FOLLOW UP

- Improving symptoms, released back into sclerals due to visual needs for work.
- Continue on drops, RTC 3 days.

1 WEEK FOLLOW UP

- Improving hydrops symptoms, started wearing scleral but limited d/t irritation, reported irritation with this pair prior to hydrops event (*Figure 4)*
- Examination revealed inferior scleral touch (*Figure 5)*
- Ruled out significant corneal edema. (*Figure 6*)
- Limit lens wear. Re-fit after hydrops fully resolved.
- Continue on drops both tapered to TID. RTC 5 days.

12 DAY FOLLOW UP

- Symptoms almost fully resolved, limited lens wear
- RTC for scleral lens re-fit. (*Figures 7, 8)*

IMAGING

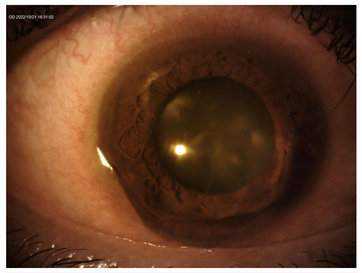

Figure 1: initial visit slit lamp presentation

Figure 2: initial visit anterior segment OCT

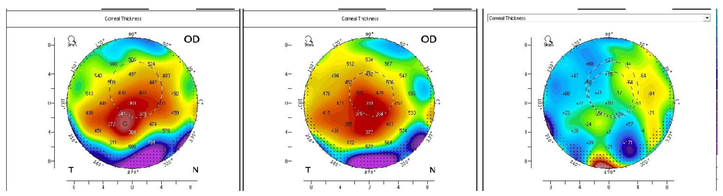

Figure 3: initial visit corneal topography

Figure 4: 1 week f/u slit lamp presentation

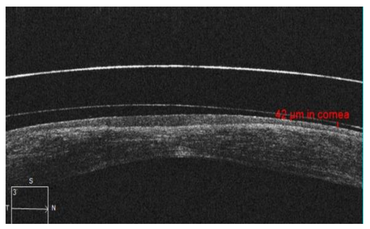

Figure 5: 1 week f/u anterior segment OCT

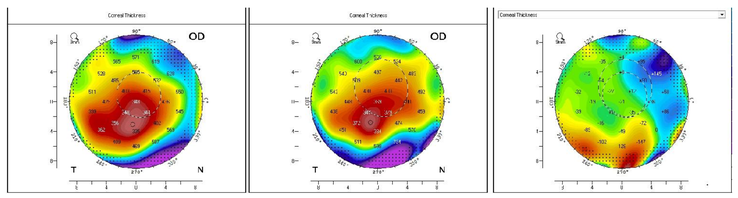

Figure 6: 1 week follow up corneal topography

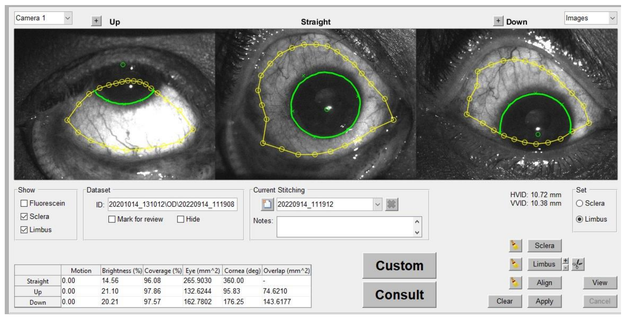

Figure 7: scleral map scans OD

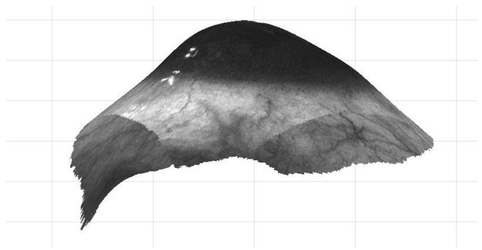

Figure 8: scleral map stitching OD

DIFFERENTIAL DIAGNOSES

- Fuchs corneal endothelial dystrophy[2]
- Bacterial keratitis[2]
- Infectious keratitis[2]
- Allergic conjunctivitis[2]

DISCUSSION

- The pain our patient experienced was due to pressure from the corneal edema onto the free epithelial nerve endings.[1]
  - Hyperosmotic agents are used to reduce corneal edema and patient discomfort.[6] Other deployable drops include anti-inflammatory agents to reduce inflammation/scar formation, and antibiotics to prevent infection.[6]
  - In severe cases, surgical intervention may be necessary.[6]
- Imaging such as anterior segment OCT and corneal topography can be useful in monitoring corneal changes and dictating management and prognosis in AH, as well as in scleral lens fit assessments.[4,5]
- Corneal edema from AH should not significantly impact scleral lens fit on the anterior corneal surface, as the endothelium moves inward and the posterior corneal surface is more affected.[1]
- In literature, hydrops are customarily described as a break of the posterior limiting lamina that leads to an influx of CE.[3]
  - However, it is the endothelial cellular coverage of the posterior surface that is more responsible as a barrier to AH.[1] Therefore, the break in the endothelium is the more likely culprit of the CE.[1]

CONCLUSION

In rare incidences of AH, patients can experience significant pain and decrease in vision due to corneal edema. When managed appropriately with an appropriate drop regimen and follow-up schedule, symptoms will improve. In incidences of AH in scleral lens wearers, patients must be monitored even more closely for any significant increase in corneal edema.

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