Corneal Melt from Metarhizium Keratitis in a Monthly Contact Lens Wearer

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Case

A 52-year-old contact lens wearer with history of glaucoma on travoprost presented to Upstate with 4 days of left eye pain. He had a history of wearing Air Optix monthly contact lenses which are worn without removal or cleaning for one month per his optometrist. The day before his symptoms started he had switched to a new pair of contacts and had mowed the lawn. He was not sure if he got anything in his eye.

Exam

VA: 20/20 OD, 20/25 PH OS
IOP: 15 OD, 17 OS
Pupilis: Equal, round, reactive

OD: wnl
OS: 2.3 x 2.5 inferonasal corneal ulcer with feathery infiltrate and 1+ Descemet folds (Figure 1 and 2); no AC cell or flare, DFE wnl

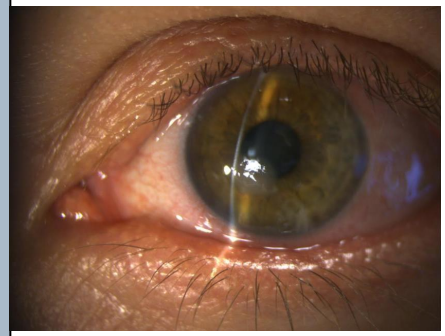

Figure 1: Feathery infiltrate the day after starting medications

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Management

Day 1

- Corneal scrapings obtained, sent for bacterial and fungal cultures
- Initiated fortified vancomycin and fortified tobramycin q2 hours OS and amphotericin B q1 hours OS

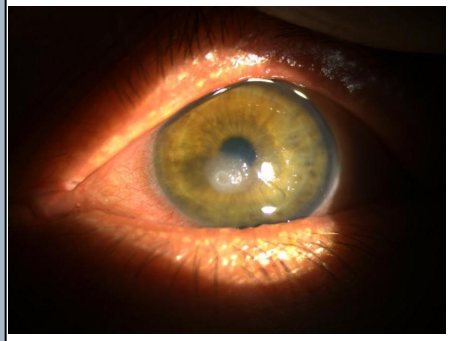

Figure 3: Day 4 exam unchanged

Day 6

- Enlarged epi defect and infiltrate, so fortifieds stopped and switched to vigamox QID
- Recommended follow up with cornea

Over the next few weeks:

- Oral fluconazole added to the topical voriconazole and amphotericin
- Patient developed progressive corneal thinning and failed prokera and tape tarsorrhaphy
- PKP performed for definitive management (Figure 3)
- Culture with sensitivities results as Metarhizium 2 days after PKP (Figure 4)

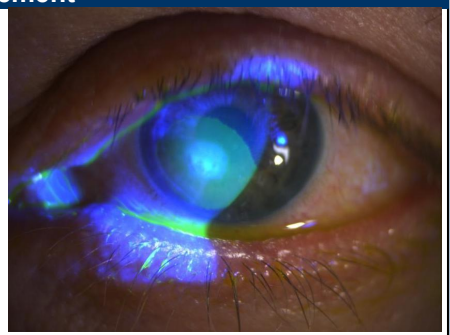

Figure 2: Epithelial defect surrounding the infiltrate the day after starting medications

Day 4

- Preliminary cultures result as verticillium species without sensitivities. Sensitivities are requested with anticipated turn around time of 1 month.
- Minimal improvement in symptoms and size of epi defect (Figure 3)
- Travoprost held, topical voriconazole added, fortified antibiotics decreased to QID

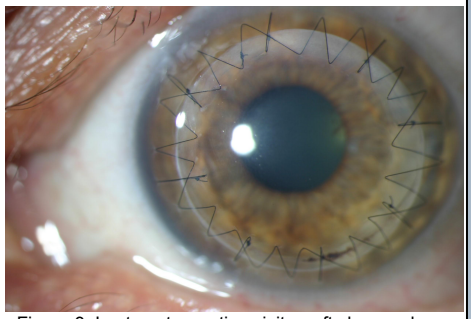

Figure 3: Last postoperative visit, graft clear and BCVA 20/30-2

Discussion

- Metarhizium is a fungus usually found in soil and used in insecticide.[1]
- There have only been 9 other reported cases of metarhizium keratitis, two of which also failed topical therapy and required PKP.[1]
- A few of these reports had successful medical management with natamycin.[2]
- Per our result there are no guidelines on MIC and MECs for Metarhizium, making interpretation difficult (note in figure 4) and natamycin was not tested.
- Our patient was wearing 30 day extended wear contacts made of silicone hydrogel
- A post-market study of extended wear lenses with more than 6,000 patients showed an infection rate of 18 per 10000 for > 3 week wear vs 39 per 10000 for < 3 week wear.[3]
- There is about a 4x higher risk of infection in extended wear compared to daily lenses.[3]
- Vision reducing infection is less than overwearing daily lenses: 1 per 5000 in extended wear vs 1 per 2500 in daily wear worn for 1-2 weeks.[3]

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Organism: Metarhizium species
Amphotericin B MIC (ug/mL): >=8
Anidulafungin MEC (ug/mL): 1
Caspofungin MEC (ug/mL): 1
Itraconazole MIC (ug/mL): >=16
Micafungin MEC (ug/mL): 0.25
Posaconazole MIC (ug/mL): 4
Voriconazole MIC (ug/mL): 4
Interpretive Information Interpretation: SEE NOTE
At the present time there are no CLSI guidelines for performance
and/or interpretation of susceptibility testing for the above
organism and/or the indicated antimicrobial agent(s).
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Figure 4: Sensitivities for Metarhizium species

Resources

1. Showail MJ, Kus JV, Tsui GK, Chew HF. Fungal keratitis caused by *Metarhizium anisopliae complex*. Med Mycol Case Rep. 2017 Jun 23;17:28-30.
2. Gunn DJ, Tavassoli S, Darcy K. Treatment of Metarhizium fungal keratitis in the United Kingdom. Eye (Lond). 2018 Nov;32(11):1790-1796.
3. Schein OD, McNally JJ, Katz J, Chalmers RL, Tielsch JM, Alfonso E, Bullimore M, O'Day D, Shovlin J. The incidence of microbial keratitis among wearers of a 30-day silicone hydrogel extended-wear contact lens. Ophthalmology. 2005 Dec;112(12):2172-9.