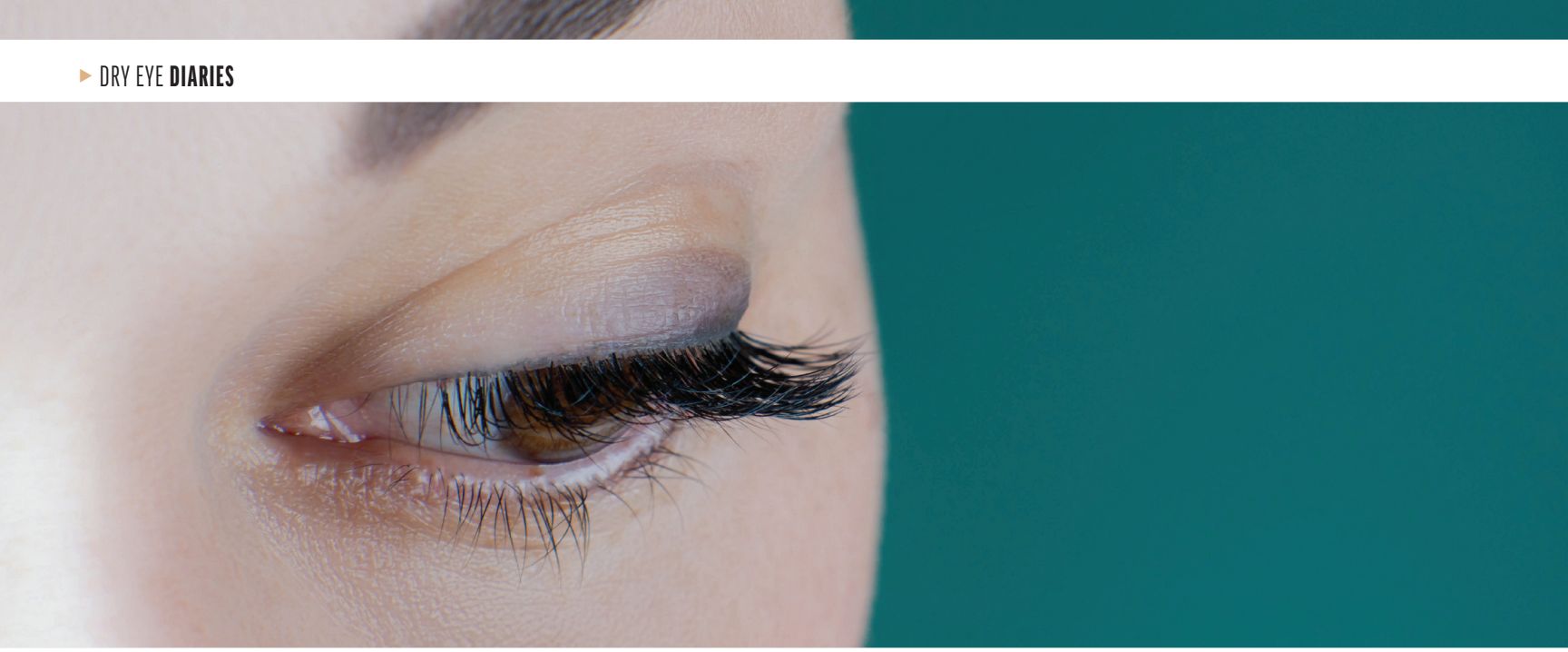

WHEN LASHES HARBOR INVADERS

Demodex case files offer pointers for improving patient outcomes.

BY LESLIE O'DELL, OD, FAAO

Inflammation of the lid margin, or blepharitis, is a common finding in both routine and problem-focused ocular evaluations. Patients with blepharitis sometimes present with symptoms such as redness, itching, or debris on the lashes. Other times they are asymptomatic. Seborrhea, meibomian gland dysfunction (MGD), bacteria overgrowth, rosacea, and *Demodex* mites contribute to the signs and symptoms. *Demodex* blepharitis makes up an estimated 69% of all blepharitis, and these mites are the most common ectoparasites found on the human body.[1,2]

Mites present in the eyelashes are known as *Demodex* folliculorum. They are longer than those found in meibomian glands, which are called *Demodex* brevis (0.3 mm – 0.4 mm vs 0.2 mm – 0.3 mm, respectively). *Demodex* mites have about a 2-week life cycle, and eye care providers can easily detect them using a slit lamp by asking the patient to look down.[3] The presence of collarettes, translucent, colored, wax-like cuffs surrounding the lash base, is pathognomonic for the diagnosis of *Demodex* blepharitis.[4,5] Collarettes consist of excreted waste, bacteria, and dead mites.

Don't let this pass you by in your clinic. Below are a few case examples to sharpen your mite-sleuthing skills.

AT A GLANCE

- *Demodex* is the most common ectoparasite found on humans and is typically found in the eyelash follicles and within the meibomian glands.
- To diagnose *Demodex*, look for collarettes while the patient gazes downward as you begin the slit-lamp examination.
- *Demodex* blepharitis is often found in patients with meibomian gland dysfunction, cataracts, glaucoma, and those who wear contact lenses.

CASE NO. 1

A 50-year-old male patient presented for evaluation after seeking medical attention from three

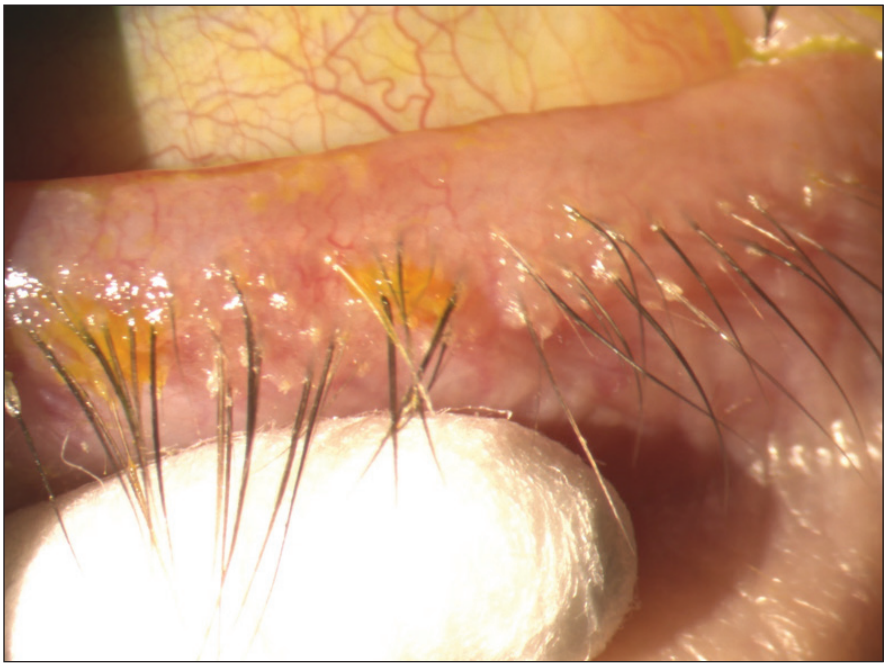

Figure 1. This view of the lower lid margin demonstrates the presence of both collarettes and lid margin telangectasia.

TABLE 1. Examination Findings From Case Number One

Acuity CC	20/20	20/20
IOP	12 mm Hg	14 mm Hg
Slit-lamp examination		
Lids/lashes	2+ collarettes Eyelid telangiectasia Turbid secretions from the MG with grade 1 atrophy	2+ collarettes Eyelid telangiectasia Turbid secretions from the MG with grade 1 atrophy
Cornea/conjunctiva	Pterygium 1 mm x 2 mm temporally Normal corneal findings	Pinguecula temporally Normal corneal findings
Lens	1+ NS cataract	1+ NS cataract
SPEED	15/28	
Point of care testing **Osmolarity** **MMP-9**	OD 299 mOsm/L (+)	OS 298 mOsm/L (+)

Abbreviations: BCVA, best-corrected visual acuity; MMP-9, matrix metalloproteinase-9; MG, meibomian gland; NS, nuclear sclerotic; RLL, right lower lid; LLL, left lower lid; PVD, posterior vitreous detachment; SPEED, Standard Patient Evaluation of Eye Dryness; WNL, within normal limits

other providers—an urgent care provider and two eye care providers (Figures 1 and 2). He complained of chronic red eyes and eyelids lasting 5 years. His symptoms were intermittent but would often flare without reason. They would also cause psycho-social stress, as the patient has endured many comments from his employer and others about the appearance of his eyes. After reviewing the examination findings (Table 1), we landed on a four-part diagnosis and treatment plan.

Diagnosis No. 1: *Demodex* Blepharitis OU

We instructed the patient to start an at-home cleansing routine, which included an eyelid cleanser wipe (Cliradex Towelette, BioTissue) used nightly on the upper eyelid margin while the lids are closed to allow the lids to air dry prior to opening the eyes. This can sting the skin, but it improves as the solution dries.

Diagnosis No. 2: MGD OU With Rosacea

We asked the patient to use warm compresses, omega-3 fish oils, and lipid-based lubricants as needed. We also recommended that he return for four sessions of intense pulsed light (IPL) therapy, one every 3 weeks.

Diagnosis No. 3: Pterygium OD

We took external photos to document the location and size of the patient's pterygium, intending to monitor progression and refer accordingly. We educated the patient on the findings and the need for inflammation control and sun protection.

Diagnosis No. 4: Cataract OU

We educated the patient on the findings and the natural progression of cataracts and will be monitoring him for changes over time.

4-Week Follow-Up

At the 4-week follow-up examination, the patient reported improvement of symptoms with mild irritation when using the eyelid cleanser wipe. He continued to be bothered by the redness of the lid and eye, but is hopeful for better treatment options.

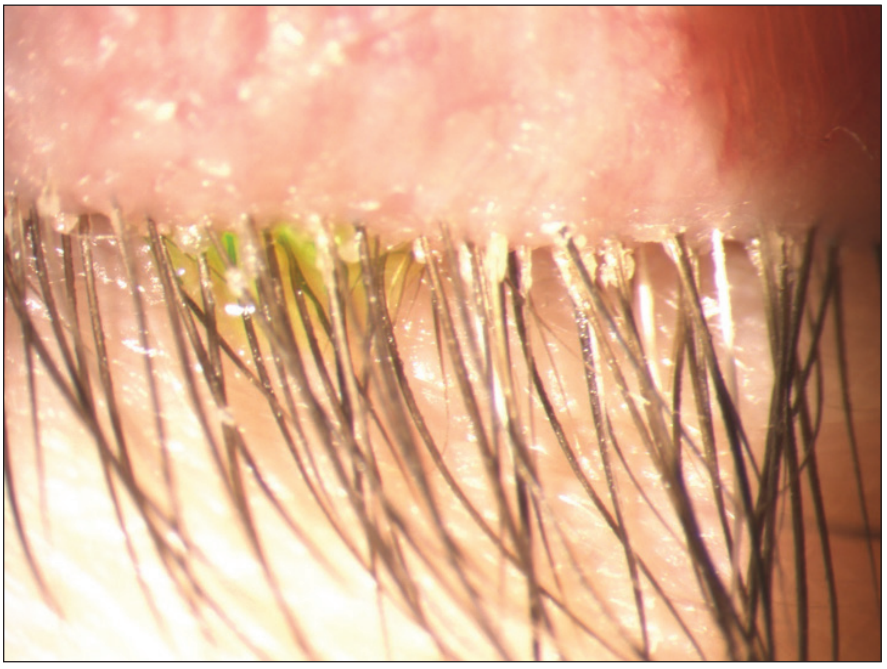

Figure 2. In this view from the slit lamp, it is apparent that the patient has significant collarettes at the lash base in addition to telangiectasia often noted with ocular rosacea patients.

TABLE 2. Examination Findings From Case Number Two

Acuity CC	20/20	20/20
IOP	15 mm Hg	13 mm Hg
Slit-lamp examination		
Lids/lashes	2+ collarettes Turbid secretions from the MG with grade 2 atrophy	2+ collarettes Turbid secretions from the MG with grade 2 atrophy
Cornea/conjunctiva	Clear cornea without staining Mild hyperemia of the conjunctiva - diffuse	Clear cornea without staining Mild hyperemia of the conjunctiva - diffuse
Lens	Clear	Clear
SPEED	20/28 (0 is normal and 28 is max symptoms)	
Point-of-care testing: **Osmolarity** **MMP-9**	OD 325 mOsm/L (++)	OS 310 mOsm/L (++)

Abbreviations: BCVA, best-corrected visual acuity; MMP-9, matrix metalloproteinase-9; MG, meibomian gland; RLL, right lower lid; LLL, left lower lid; PVD, posterior vitreous detachment; SPEED, Standard Patient Evaluation of Eye Dryness; WNL, within normal limits

The new clinical findings showed that collarettes remained on about two-thirds of the lid margin bilaterally, while the SPEED questionnaire showed slight improvement from baseline (12/28). Based on these findings, we recommended that the patient use lotilaner ophthalmic solution 0.25% (Xdemvy, Tarsus Pharmaceuticals) OU twice daily for 6 weeks.

6-Week Follow-Up

The patient was happy with the results, noting that his eyelids felt so clean and less red. He also pointed out that he had gone 2 weeks without anyone asking him what was wrong with his eyes.

The clinical findings from this visit showed a SPEED questionnaire of 5/28 and significant improvement of the collarettes from two-thirds of the lid margin exhibiting collarettes to now two to three lashes per lid. The IPL treatment for MGD and rosacea was due to the continued reduction in function of the meibomian glands.

CASE NO. 2

A 33-year-old mother and ICU nurse presented for an examination and fourth opinion on her chronically irritated eyes (Figure 3). This irritation was beginning to consume her on a daily basis and interfere with her ability to work. She was upset with how her eyes felt daily and her inability to tolerate her mascara and eye makeup. Her examination results (Table 2) showed *Demodex* blepharitis and MGD OU.

Diagnosis No. 1: *Demodex* Blepharitis OU

As in Case 1, we recommended an at-home cleansing routine with nightly use of an eyelid cleanser wipe, noting that the patient should wipe it gently onto the upper eyelid margin with the lids closed and allow the eyelid to air dry prior to opening the eyes. This can sting the skin but improves as the solution dries. We also recommended using lotilaner twice daily for 6 weeks.

Diagnosis No. 2: MGD OU

For her MGD, we recommended using warm compresses, omega-3 fish oils, and lipid-based lubricants as needed. We also noted that we would consider foundational medication to aid in the restoration of homeostasis if her symptoms persist on the return examination.

Diagnosis No. 1: Chalazion

To treat this patient's recurrent chalazion, we advised that he start applying dexamethasone, neomycin sulfate/polymixyin B sulfate (Maxitrol sterile ophthalmic suspension, Novartis) nightly to the lesions for 7 to 10 days. We also considered IPL therapy (vs surgical removal) for the reduction of the chalazion.

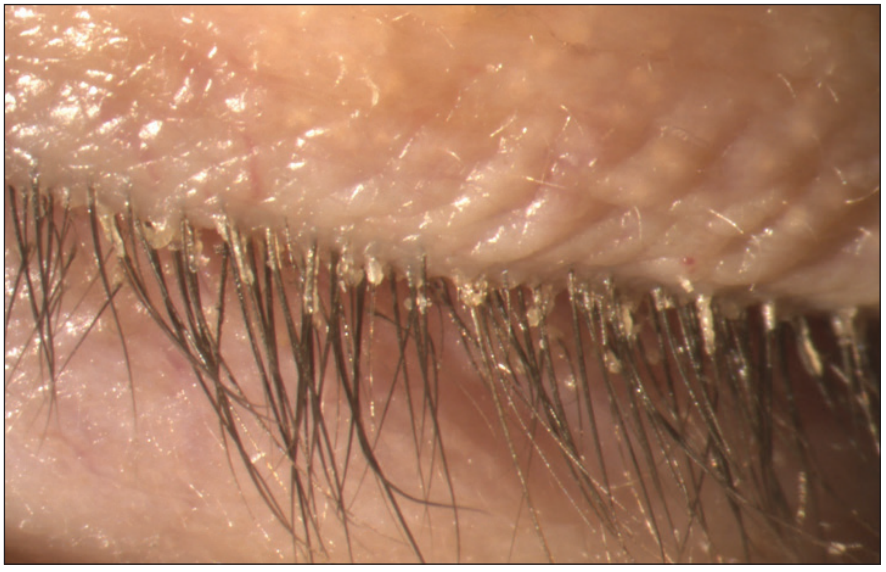

Figure 3. This view from the slit lamp shows significant collarettes at the lash base. It is imperative to have the patient look down during the evaluation to better visualize the lash base to aid in the diagnosis.

Follow-Up

The patient remarked that she could work without discomfort and her eyes no longer had the build-up and crusting. She said, most importantly, that she was able to wear mascara again, and it had been years.

CASE NO. 3

A 72-year-old retired physical therapist who was new to the area came to our office for recurrent chalazion and blurred vision. This was thought to be from his previously diagnosed cataract. His clinical findings (Table 3) led to the diagnosis of chalazion of both the right and left lower lids, cataract OU, *Demodex* blepharitis OU, and MGD OU.

Diagnosis No. 2: Cataract OU

The patient was also diagnosed with a visually significant cataract OU. After reviewing the findings, the plan was to refer him for cataract evaluation for consideration of premium IOLs as the health of his ocular surface improves.

Diagnosis No. 3: *Demodex* Blepharitis OU

We educated the patient on our findings and his treatment options. The patient elected to try topical therapy, so we recommended that he start using lotilaner twice a day for 6 weeks.

Diagnosis No. 4: MGD OU

This patient was also diagnosed with MGD OU. As in other cases, we recommended that he use warm compresses, omega-3 fish oil supplements, and lipid-based lubricants as needed.

Follow-Up

The patient returned for his recommended 2-week follow-up visit, where we did an IOP check with the dexamethasone, neomycin sulfate/polymixyin B sulfate ophthalmic solution.

DISCUSSION

Demodex blepharitis is commonly found in patients with MGD (57%), cataract (56%), and glaucoma (65%), and in contact lens wearers (51%). It is routinely seen in clinical care, with estimates of 58% of patients presenting with collarettes.[2,5,6]

It has long since been underdiagnosed or misdiagnosed, which has contributed negatively to the quality of life of these patients. Patients commonly report itchy (55%), dry (46%), watery eyes (21%) and foreign body sensation (23%).[6] It can take two to six visits before a *Demodex* diagnosis is made—further contributing to the negative affect of this condition.[6]

These case files help highlight the common pitfalls that can be easily overcome with a few simple tools: a good history and a slit lamp.

The first case demonstrates the frustrations from an untreated chronic condition and the social effects on patients. There is concern for long-term progression of his pterygium from the chronic inflammation and exposure to toxins from chronic untreated *Demodex* blepharitis, which could impact his lifelong vision.

The second case demonstrates how *Demodex* blepharitis can be found in patients in the absence of increased age and facial or ocular rosacea. It also highlights the need to discuss cosmetic use and change in habits as it relates to ocular surface conditions. If the *Demodex* blepharitis is treated, there is hope for return to those cosmetics in a safer way—with eye-safe brands.

The last case highlights the need to rehabilitate the ocular surface

TABLE 3. Examination Findings From Case Number Three

Acuity CC	20/40 – BCVA with -1.00 -2.00x 90 ADD: +2.50	20/50 – BCVA with -0.75 -2.00x 80 ADD: +2.50
IOP	15 mm Hg	13 mm Hg
Slit-lamp examination		
Lids/lashes	2+ collarettes Chalazion RLL Turbid secretions from the MG with grade 2 atrophy	2+ collarettes Resolving Chalazion LLL Turbid secretions from the MG with grade 2 atrophy
Cornea/conjunctiva	Clear cornea without staining Mild hyperemia of the conjunctiva - diffuse	Clear cornea without staining Mild hyperemia of the conjunctiva - diffuse
Lens	2+ NS cataract	2+ NS cataract
Optic disc	0.3	0.3
Vitreous	PVD	PVD
Vessels	Normal	Normal
Macula	Normal findings	Normal findings
Periphery	WNL	WNL
SPEED	5/28	
Point-of-care testing **Osmolarity** **MMP-9**	OD 300 mOsm/L (-)	OS 290 mOsm/L Weak (+)

Abbreviations: BCVA, best-corrected visual acuity; MMP-9, matrix metalloproteinase-9; MG, meibomian gland; NS, nuclear sclerotic; RLL, right lower lid; LLL, left lower lid; PVD, posterior vitreous detachment; SPEED, Standard Patient Evaluation of Eye Dryness; WNL, within normal limits

prior to cataract referral to prevent refractive and not optimal surgical outcomes. It also shows that chalazion are not only found in patients with chronic MGD, but also in those with *Demodex* blepharitis.

YOUR TURN

Diagnosing *Demodex* blepharitis is easy—just have the patient look downward at the start of the slit-lamp exam and look for collarettes. We have had topical tea tree oil eye lid cleansers for years (with some challenges), but with the recent FDA approval of lotilaner, we have a new tool to treat *Demodex* blepharitis. This eye drop is dosed twice daily over 6 weeks. Another unmet need addressed for our patients with ocular surface disease. Here's to the future—it sure looks bright! ■

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