MULTIFACTORIAL TREATMENT OF DRY EYE DISEASE

Because many components contribute to this condition, treatment plans should be tailored to the individual patient.

BY JUSTIN SCHWEITZER, OD, FAAO

"Dry eye is a multifactorial disease," the Tear Film & Ocular Surface Society Dry Eye Workshop II definition begins,[1] describing a familiar reality for every patient and physician who battles dry eye disease (DED), a chronic, progressive condition that is multifactorial in its origins, influences, and manifestations.

Evaporative DED is characterized by inadequate or poor-quality lipid content in the tear film due to meibomian gland dysfunction (MGD). By contrast, in *aqueous-deficient* DED, the problem is that the eyes do not produce enough tears. Many patients have a combination of both types. Blepharitis can contribute to DED, with the eyelids' bacterial load and *Demodex* mite infestation increasing ocular inflammation. Many other factors, from age and genetics to air conditioning and computer use, can also contribute to DED severity.

A multifactorial disease deserves a multifactorial treatment. To ensure we treat each patient's DED effectively and efficiently, my team and I follow a systematic approach for routine screening and testing, followed by use of established treatment guidelines that may involve both prescription and OTC medications.

SCREENING AND DIAGNOSIS

We ask each of our patients to complete an eight-question Standard Patient Evaluation of Eye Dryness (SPEED) questionnaire. This validated screening tool gives us an idea of their individual symptoms. If a patient scores a six or higher, we ask our technicians to perform point-of-care testing, such as tear film osmolarity, matrix metalloproteinase-9 inflammatory marker testing, and in some cases, meibography.

Once these tests are complete, I perform the slit-lamp examination. Using vital dyes (eg, fluorescein and lissamine green dye) allows me to perform a tear film break-up time assessment and to assess for corneal and/or conjunctival staining. I may also express the meibomian glands to assess the consistency of the meibum (eg, whether it is thick, whitish, or clear) and to determine the ease with which they can be expressed. I also have patients look down while assessing the lids and lashes for signs of blepharitis.

After the examination is complete, if I have determined that the patient has DED, then I educate them about their occupation, activities,

A COMBINED CASE OF AQUEOUS DEFICIENT AND EVAPORATIVE DED

A 53-year-old woman presented with red, gritty eyes that made it impossible for her to wear her contact lenses while working at her computer all day. Her Standard Patient Evaluation of Eye Dryness score was 19. Meibography and physical examination showed that she had mild gland atrophy with a few blocked glands, but retained decent quality liquid meibum. Corneal and conjunctival staining was present. She had a tear osmolarity of 320 mOsm/mL OD and 310 mOsm/mL OS and a positive matrix metalloproteinase-9 result. Her eyelids looked normal, with no signs of anterior blepharitis.

As we talked, I discovered that she was using an anti-redness vasoconstricting eye drop preserved with benzalkonium chloride and a systemic allergy medication. I recommended that she discontinue using the eye drops and switch to a more targeted antihistamine (in this case, a nasal spray). I started the patient on a preservative-free hyaluronic acid/trehalose artificial tear for use morning, night, and as needed to quickly improve her comfort, as well as a 4-week course of a topical corticosteroid to reduce the inflammation. I performed an in-office MGD gland-clearing procedure for the patient as well, and I instructed her to use a heated mask every day and recommended a quality nutraceutical.

When I saw the patient back 6 weeks after in-office treatment, she was much happier and less symptomatic. The goal at this point is to maintain her happiness. I initiated treatment with an immunomodulator, instructed her to continue the artificial tears and take a nutraceutical, and started her with a heated mask for 5 to 10 minutes daily. She will return for another follow-up visit in 6 months.

screen time, contact lenses, health conditions, medications, and what specific situations contribute to making their eyes feel uncomfortable. I often delve deeper with questions about their day-to-day lifestyle and environment. For example, if a patient wakes up with dry eyes, I might ask if they have a fan or heating/cooling system blowing in their bedroom at night.

With the diagnosis complete, I then educate patients about what's happening to their eyes, talk to them about the chronic, progressive nature of DED, and discuss treatment options.

TREATMENT OPTIONS

I again suggest altering environmental and lifestyle factors (eg, taking breaks from screen time, using safer, eye-friendly cosmetics, aiming car vents away from eyes while driving, and not using ceiling fans while sleeping) to ease symptoms of DED. If systemic medications are contributing to DED, I will discuss with the patient's primary care physician the use of an alternative medication.

Treatment in the Short Term

The best treatment course addresses both aqueous deficiency and evaporative DED, alongside disease severity, whether it's mild, moderate, or severe. As with any chronic condition, it's important to head off progression by treating mild, moderate, and severe DED. For my patients, the therapies described below have worked well.

For aqueous-deficient DED, if corneal staining is present, I initiate therapy with a topical corticosteroid for 2 to 4 weeks. Once the staining has improved and inflammation has subsided, I use punctal plugs to keep more tears on the ocular surface and prescribe an immunomodulator drop. I also have patients use a preservative-free artificial tear as adjunctive therapy. I prefer long-lasting products that contain hyaluronic acid, which naturally retains aqueous and promotes healing, and trehalose to protect the ocular surface. iVIZIA Sterile Lubricant Eye Drops (iVIZIA) and Systane Complete PF (Alcon) are examples of artificial tear products that provides quick relief and helps patients remain compliant with therapy.

For my patients with MGD, I usually start treatment with an in-office procedure to clear their glands. If they also have signs of rosacea and telangiectasia or inflammation of the lid margin, then I will pair the in-office MGD gland-clearing procedure with four broad-band light or intense pulsed light treatments 2 to 4 weeks apart. I prescribe a topical corticosteroid for about 2 to 4 weeks after the initial MGD procedure.

In cases where patients have both types of DED (see *A Combined Case of Aqueous Deficient and Evaporative DED*), I treat their MGD as described above, and then, based on their clinical presentation, I will

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prescribe an immunomodulator and a preservative-free artificial tear.

When anterior blepharitis is involved, I often recommend an in-office microblepharoexfoliation procedure to clean the eyelid margin. I instruct these patients to also use a hyaluronic acid cleansing wipe or spray.

Treatment in the Long Term

For maintenance, I have patients use a heated mask once a day for 5 to 10 minutes, and recommend that they use a lipid-based artificial tear two to four times daily. I also recommend that patients with MGD take a nutraceutical (I prefer a product that contains eicosapentaenoic acid, docosahexaenoic acid, and gamma linolenic acid). In addition, if I observe rosacea, I may send a note about this to the patient's primary care provider to comanage this symptom.

REGULAR FOLLOW-UP IS CRUCIAL

These treatments can be successful for many cases of DED, but severe DED may require some combination of further steps, such as an additional or longer-term topical corticosteroid, amniotic membrane grafts, autologous serum drops, and/or other measures. Patients must be seen back in the clinic 6 to 8 weeks after the initial visit, or after the conclusion of in-office treatments.

Regardless of the type or severity of DED, it's essential to see these patients regularly to maintain control of their condition and monitor compliance with recommended treatments. ■

1. Craig JP, Nichols KK, Akpek EK, et al. TFOS DEWS II Definition and Classification Report. *Ocul Surf*. 2017;15(3):276-283.

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