



## Blepharitis Disease and Its Management

By Rodolfo L. Rodriguez, O.D.

Blepharitis is an eyelid disease that affects the eyelid margin and the lashes, leading to ocular surface disease responsible for multiple symptoms. The term blepharitis literally means "inflammation of the eyelid." The word originates from the Greek word "*blepharos*," which means "eyelid," and the Greek suffix "*itis*," which means "inflammation."

Usually, blepharitis is characterized as either **anterior blepharitis** or **posterior blepharitis**. However, clinicians categorized various forms of blepharitis. **Anterior blepharitis** affects the front edge of the eyelid and lashes. It is associated with *Staphylococcus* bacteria. **Angular blepharitis** affects the corner of the eyelids. Another form is **seborrheic blepharitis**, in which soft greasy scales are seen in the eyelid and lashes. **Ulcerative blepharitis** demonstrates crusts around the eyelashes, which leave small sores that ooze and bleed when they fall off or are removed. **Posterior blepharitis** involves the rear portion of the eyelid, where the meibomian glands are found, near the inner edge of the lid close to the eye. Posterior blepharitis could exist as a result of rosacea. Blepharitis frequently presents as a mixed form, involving both the anterior and the posterior forms. **Atopic blepharitis** is related to allergic reactions.

Blepharitis is one of the most common ocular conditions seen in optometric practices. Some reports indicate that it is present in almost 47 percent of ophthalmic patients.

Blepharitis is a complex disease and has multiple causes. It cannot be cured, but fortunately it can be controlled. Generally, the disease starts slowly, affecting both eyes and usually chronic with periods of remission and relapse. Patients over the age of 18 are more likely to be affected, but the disease is also found in children.

Blepharitis often presents in a cluster of ocular surface conditions, overlapping with Dry Eye Disease and Allergic Conjunctivitis. The treatment aims at providing patient comfort, preserving visual performance and preventing permanent damage to the ocular surface. Like many illnesses, it can exist as a mild, moderate, or severe form of the disease. It is not contagious. Common sequelae of blepharitis include blepharoconjunctivitis, hordeolum and chalazion (styes). Sometimes patients may have no obvious symptoms.

The affected patients can suffer a multitude of symptoms, including:

- Burning
- Itching
- Tearing
- Foreign body sensation
- Irritation
- Photophobia (light sensitivity)
- Tired eyes

- Swelling
- Grittiness
- Redness of the eyelids or eyes
- Crusting around the lashes
- Mucous discharge
- Blurry vision
- Eyelids stuck together upon awakening (mattering)

Until recently, there was no universal classification system or a clear algorithm for the diagnosis and treatment of blepharitis. This was solved in 2011 when the International Workshop on Meibomian Gland Dysfunction (MGD) provided a consensus definition of MGD, as well as a classification and grading system. Later that year, a panel of 11 expert optometrists and ophthalmologists developed a treatment algorithm for eye care practitioners to follow.

The paraoptometric plays an essential role in the process of helping manage the disease, particularly in eliciting a medical history, aiding the optometric physician in testing and in patient education.

## MEDICAL HISTORY

Identifying the disease starts with conducting a thorough patient history. The paraoptometric should consider administering a symptoms questionnaire to facilitate an overview of the patient's history when appropriate. However, a questionnaire is not a substitute for conducting a complete medical history. Administering a patient history is often difficult and time consuming; however, a complete medical history facilitates the diagnosis.

### HISTORY OF PRESENT ILLNESS

The patient is asked to verbalize the chief complaint and any additional complaints or symptoms. Afterward, additional questions are asked and recorded. Pre-printed exam forms and electronic health records, in particular, facilitate accurate documentation.

- **Location:** "Right, left or both eyes?" Blepharitis usually is bilateral, but any associated chalazion (stye) is often unilateral.
- **Duration:** "When did symptoms start?" Days or several months ago? Seasonal symptoms, such as those experienced during the spring or fall, may be associated with allergy disease.
- **Quality:** "Are symptoms improving or worsening?"
- **Severity:** "Mild, moderate or severe?"
- **Context:** "Upon awakening, during the day or evening, or associated with visual tasks?" Symptoms that are worse upon awakening may be indicative of blepharitis, due to the upper and lower eyelid being in contact during sleep. Prolonged exposure of inflammatory mediators in the tear film during sleep can also cause irritation. Symptoms that worsen toward the end of waking hours may indicate dry eye disease caused by tear insufficiency, or as a result of evaporative dry eye, which is caused by Meibomian Gland Dysfunction (MGD) type blepharitis. Blurred vision during prolonged visual tasks is associated with ocular surface diseases, such as dry eye and blepharitis.
- **Modifying factors:** "Does anything make symptoms worse or better?" Using eye drops, warm compresses and/or eyelid scrubs may help relieve symptoms of blepharitis. Use of cool compresses may ameliorate allergic symptoms. Use of lubricant eye drops may help several ocular surface conditions, including blepharitis, dry eye disease and allergies.
- **Associated signs and symptoms:** "Redness, eyelid mattering, discharge?" All may be related to blepharitis.

### PAST OCULAR HISTORY

Inquire about contact lens wear; many studies suggest that more than 50percent of contact lens wearers complain of dry eye symptoms. Ask whether the patient has consulted other eye care practitioners for similar symptoms, and inquire about his or her history of past eye infections, styes (chalazion), or surgeries for styes.

## **PRESENT AND PAST MEDICAL HISTORY**

Investigate for systemic diseases, such as diabetes, that could lead to dry eye. Other diseases that could lead to dry eye include hypertension, scalp dandruff, seborrheic dermatitis and rosacea, as well as autoimmune diseases that affect the ocular surface, including systemic lupus erythematosus, rheumatoid arthritis, thyroid disease, sarcoidosis, Sjögren's, and psoriasis. Particular systemic diseases can point to ocular surface disease or to a specific type of blepharitis.

## **MEDICATION HISTORY**

Inquire about and document all your patient's medication. Ask about prescriptions, over-the-counter medications (OTC) and any eye drops your patient is using, including the frequency of instillation of any eye drops. A common side effect of many systemic medications is dry eye.

Some of the systemic medications associated with dry eyes:

- High blood pressure medications, such as beta blockers and diuretics.
- Allergy medications: antihistamines and decongestants.
- Hormonal anti-contraceptives, as well as hormone replacement therapy given to post-menopausal women.
- Gastric ulcer medications, such as Zantac (ranitidine, GlaxoSmithKline) and Nexium (esomeprazole magnesium, AstraZeneca).
- Incontinence medications.
- Antidepressants and antipsychotic medications.
- Pain medications, including the common OTC ibuprofen.
- Skin medications, particularly Accutane (isoretinoin, Genpharm) for the treatment of severe acne and psoriasis, which produces MGD.
- Chemotherapy medications.

## **ALLERGIES**

It is imperative to ask, update and document any drug allergies. Record the reaction to the drug. Allergies to foods and seasonal allergies should also be recorded.

## **SOCIAL HISTORY**

Document if alcohol is consumed, and if so, how much. Document smoking and the quantity smoked. Alcohol consumption and smoking are associated with ocular surface disease.

Document the patient's profession and make note of his or her working conditions, such as use of a computer. When staring at a computer monitor, the person blinks less frequently, resulting in dryer eyes. . Driving a motor vehicle and working outdoors or in a dusty work environment can also be associated with ocular surface disease symptoms.

The optometric physician reviews the medical history provided and further investigates key elements of the history.

## **EXAMINATION**

The optometric physician takes several steps in determining the precise diagnosis. The doctor performs a careful eye examination, starting with gross observation of the face. The physician looks for facial redness, papules, pustules, and telangiectasia (dilated small blood vessels), such as those found in rosacea. The doctor will look for any signs of rhinophyma (enlarged nose), particularly if a male patient has rosacea. Rosacea is a common condition affecting approximately 14 percent of women and approximately 6 percent of men. Rosacea can also be found in children, but the signs are subtle and often overlooked.

The slit-lamp biomicroscopic exam is imperative, providing various magnifications. Slit-lamp examinations aim to detect any eyelid inflammation and evaluate the width of the palpebral fissure. The doctor will carefully evaluate the lashes for crustiness and madarosis (loss of lashes). Cylindrical dandruff around the

eyelash is associated with Demodex mites, which is linked to blepharitis. The doctor will examine the cornea, the bulbar and tarsal conjunctiva for signs of scarring, inflammation or infection.

The quantity and quality of the patient's tears must be evaluated, and the doctor must measure the lower tear meniscus height and look for evidence of tear film debris.

Instilling fluorescein dye and observation under a cobalt blue light is used in the examination of the conjunctiva and cornea, as well as to measure Tear Film Break-Up Time (TFBUT). The TFBUT measures the interval between the blink and the breakup of the tear film. Appearing as a black streak, spot or blob, the TFBUT indicates the quality of the tear film, as well as the lipid (oily) layer. A TFBUT less than 10 seconds indicates tear film instability and less than five seconds is considered abnormal.

Instillation of Lissamine green or Rose Bengal dyes that stain desiccated and dying cells on the ocular surface further facilitate the analysis.

Abnormal TFBUT, fluorescein, Lissamine or Rose Bengal staining is indicative of Dry Eye Disease due to insufficient tear volume or tear evaporation attributable to Meibomian Gland Disease (MGD) related to blepharitis.

The optometric physician will inspect and express the meibomian glands to observe any abnormal quality or quantity and the type or lack of secretion.

Slit-lamp photography, when available, is utilized to document the disease, facilitate monitoring and observe change over time, as well as serving as a great tool to educate the patient.

The paraoptometric is often involved in assisting the doctor during the examination, as well as recording the findings.

#### **TREATMENT:**

Depending on the severity of the disease, one or multiple therapeutic treatments are utilized; pharmacologic agents and mechanical treatments are often required.

- **Warm compresses** (for 5 minutes) applied to the lids can increase oil production and melt the oil in the meibomian glands. While warm compresses are universally accepted as a therapeutic management modality, there is no universal recommendation regarding how to apply warm compresses. Many doctors recommend the use of a warm washcloth to apply heat. There are many commercially available eyelid-warming devices on the market. Each clinician usually recommends one or more ways to undertake warm compresses therapy. The paraoptometric should educate the patient to properly apply the warm compresses over both upper and lower eyelids.
- **Eyelid scrub hygiene** is utilized in the management of anterior blepharitis and is particularly targeted to remove eyelash debris, bacteria, bacteria toxins, oil and scurf. Most practitioners no longer recommend using the old fashioned method of baby shampoo to clean the lashes. Today, there are several commercially available eyelid scrub products exclusively formulated for that purpose. These are available in foam, gel and pre-moistened pads such as OCuSOFT Eyelid Cleanser and SteriLid (TheraTears) Eye Cleanser.

It is important to emphasize that patient education, warm compresses and eyelid hygiene are the key elements of blepharitis management.

- **Mechanical glandular eyelid massage** is frequently recommended to facilitate the flow of the meibomian oil from the glands. This is accomplished by applying light pressure with a fingertip or a Q-Tip to the lid margin near the base of the lashes.
- **Artificial Lubricants:** OTC, preserve, preservative free (for frequent use) solutions, gels and ointments. Some artificial lubricants claim to be expressly designed to alleviate the symptoms of blepharitis, such as Systane Balance (Alcon), Refresh Advance (Allergan), and Retaine MG Ophthalmic Emulsion (OcuSoft).

- Several types of **topical antibiotics**: drops and ointments, some of the commonly prescribed are:
  - Azithromycin (AzaSite, Bausch & Lomb), usually prescribe as one drop at bedtime for one week or more.
  - Bacitracin ophthalmic ointment: apply ½ inch strip; apply to base of eyelids one or more times a day for several days.
  - Erythromycin ophthalmic ointment: apply ½ inch strip; apply to base of eyelids one or more times a day for several days.
- **Topical corticosteroids**: ophthalmic suspensions, gels and ointments.
  - Corticosteroids are associated with increasing IntraOcular Pressure (IOP); whether single or in combination with other medications, patients must be monitored closely when corticosteroid are prescribed. These are usually prescribed for less than 14 days.
  - Lotemax (loteprednol etabonate 0.5 percent, Bausch & Lomb), one drop, once or more times a day
  - Prednisolone acetate 1percent, one drop, one or more times a day.
- **Combination topical corticosteroids and antibiotic** medications available in suspension or ointment.
  - Tobramycin/dexamethasone or tobramycin/loteprenol combinations are prescribed for the management of blepharitis or related conditions, such as blepharoconjunctivitis or hordeolum. Some forms are available as brand name only, others are available as generic. When any eye drop comes as a suspension, the patient must be instructed to shake the bottle prior to instillation.
  - A recent drug, TobraDex ST (tobramycin/dexamethasone, Alcon) ophthalmic suspension, has a decreased amount of dexamethasone corticosteroid to 0.05percent and has added xanthan gum for greater retention in the ocular surface. Often prescribed one drop, four times a day for less than 14 days.
  - Zylet (tobramycin/loteprenol, Bausch & Lomb) ophthalmic suspension. Loteprednol has a lesser tendency to increase IOP than other topical corticosteroids. Often prescribed one drop, four times a day for less than 14 days.
  - TobraDex (tobramycin/dexamethasone, Alcon) ophthalmic ointment: often prescribed: apply ½ inch strip apply to base of eyelids one or more times a day for less than 14 days.
- **Restasis (cyclosporine A, Allergan, Inc.)** is commonly prescribed for Keratoconjunctivis Sicca; however, it is also utilized in the management of blepharitis.
- **Meibomian gland expression**: for MGD, when the orifices are blocked, the optometric physician may mechanically express or “milk” the meibomian glands in the office, utilizing a sterile cotton-tipped applicator or any of several specialized devices developed for that purpose.
  - The doctor may employ an in-office procedure involving prooving the meibomian glands.
  - The doctor may utilize a LipiFlow system, which is a new instrumentation designed to heat the obstructed glands and create compression aimed at “milking” the meibomian glands during a 12 -minute, in-office treatment. The procedure seems very promising, however is costly and is not covered by insurance.
- **Oral antibiotics** (pills or tablets) are commonly prescribed for posterior blepharitis. It is important to make the patient aware that oral antibiotics can cause photosensitivity (become more sensitive to sunburn), so patients must be warned to avoid prolonged sun exposure and tanning salons. Diarrhea and vomiting are common side effects of oral antibiotics, as well as yeast infections in women.
  - Tetracycline class of antibiotic, including tetracycline, doxycycline and minocycline. These should not be prescribed for children under the age of 12 or patients who are pregnant. Usually prescribed in different dosages; one or more times a day for several days and often for several months.
  - Erythromycin is usually prescribed when there is a contraindication to the tetracyclines.

- Antibiotic Prescription Kits are available containing oral antibiotics, as well as other elements utilized in the management of blepharitis.
  - Alodox Convenience Kit (Ocusoft, Inc., Rosenberg, Texas) contains doxycycline tablets, OcuSoft Lid Scrub Plus, Extra Strength Pre-Moistened Pads, OcuSoft Lid Scrub Original Formula Foaming Eyelid Cleanser and Tranquileyes Moist Heat Therapy Goggles.
  - Ocudox Convenience Kit (Ocusoft, Inc., Rosenberg, Texas) contains doxycycline tablets, OcuSoft Lid Scrub Plus, Extra Strength Pre-Moistened Pads, and Tears Again advanced Liposome Spray.
  - NutriDox kit (Akorn) contains doxycycline tablets, TheraTears Nutrition (omega-3 supplements with vitamin E) and iHeat Warm Compress System.
  
- **Nutritional and Lifestyle recommendations**
  - Smoking cessation is essential
  - There is evidence to suggest that a proper diet rich in Omega-3 fatty acids can be beneficial in improving both dry eye and MGD. Omega-3 fatty acids are found in fish, predominantly in salmon, mackerel and sardines. Flax seed and walnuts are also of nutritional benefit.
  
- **Dietary supplements**
  - Multiple studies suggest the benefits of oral supplements, such as Omega-3 fish oil and flax seed oil, are helpful.
  - There are many supplements specifically formulated for Ocular Surface Disease, which contain Omega-3 fatty acids, flax seed oil and other components. These are available as OTC, as well as in prescription form.
  - Lovaza (GlaxoSmithKline) is prescription form of Omega-3.
  
- **Environmental recommendations:** Patients must be counseled with regards to:
  - Improving ambient humidity, particularly when heaters are used; avoiding fans, and turning the car vents away from the face.
  - Practicing conscious blinking.
  - Adjusting the computer workstation. The monitor should be placed below eye level to avoid a wide eyelid aperture.

Long-term blepharitis must be managed by maintaining a daily regimen of warm compresses and gentle lid scrubs indefinitely.

It is convenient to provide the patient with a take-home, blepharitis-specific brochure, informational sheet or video that can facilitate and reinforce patient education and compliance.

The tear film is the first refractive surface of the eye. Any disease that interferes with the tear film can cause damage to the corneal epithelium and result in blurred vision. It is imperative to control blepharitis prior to contact lens wear and especially prior to any eye surgery, including refractive surgery and surgery for cataracts, to prevent poor outcomes and avoid serious infections such as endophthalmitis (infection inside the eye).

Treating blepharitis effectively can help ameliorate patients' symptoms and prevent the development of blepharoconjunctivitis, corneal scarring, hordeolum, chalazion, and other related complications.

Ensuring patient adherence to the prescribed therapy is a significant challenge in managing blepharitis. It is vital that the paraoptometric understand the disease process and management of blepharitis, as well as to be able to properly educate patients in its treatment. When patients understand the basics of blepharitis and how treatment can alleviate the symptoms and help control the disease process, they are more likely to comply with the therapy.

There is no cure for blepharitis; paraoptometrics play a key role in obtaining a proper medical history, educating patients and ensuring their compliance with the prescribed treatment and in scheduling and procuring recommended follow-up appointments.

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