Stop the Rub: The Treatment of Dry Eyes

EDUCATIONAL OBJECTIVES

Upon completion of this activity, participants will be better able to:

1. Describe risk factors for dry eye disease (DED);
2. Identify patients with dry eye symptoms who should be referred to an eye specialist;
3. List systemic medications that may cause or exacerbate dry eye symptoms;
4. Describe differences among nonprescription artificial tear products;
5. Explain the rationale behind the use of omega-3 fatty acids for dry eye symptoms;
6. Discuss prescription medications that are used to manage DED; and
7. Explain how to properly administer topical dry eye treatments.

Post-test/Rationale

1. Which of the following autoimmune disorders is characterized by inflammatory changes in the lacrimal and salivary glands?

   A. Rheumatoid arthritis
   B. Scleroderma
   C. Sjogren syndrome***
   D. Systemic lupus erythematosus

   Correct answer: C

   Rationale (Objective 1): Several autoimmune disorders are associated with decreased aqueous flow, which leads to dry eye disease. Sjogren syndrome (SS) is characterized by inflammatory changes in the lacrimal and salivary glands that cause hyposecretion of tears and saliva. SS can occur on its own or in association with inflammatory connective tissue disorders such as rheumatoid arthritis, systemic lupus erythematosus, scleroderma, and polyarteritis nodosa.

2. Which of the following is a serious adverse effect associated with the chronic use of topical corticosteroid medications?

   A. Exophthalmos
   B. Glaucoma***
   C. Myopia
   D. Nystagmus

   Correct answer: B
Rationale (Objective 6): Short-term use (i.e., several weeks) of ophthalmic steroid use is associated with side effects such as visual impairment, exacerbation of infections, and ocular burning or stinging. Used chronically, corticosteroids cause serious side effects, including elevated intraocular pressure, glaucoma, and cataracts.

3. Which mechanism of action of omega-3 fatty acids explains the rationale for recommending their consumption in dry eye disease?

   A. Antibiotic
   B. Anticholinergic
   C. Anti-inflammatory***
   D. Cholinergic

   Correct answer: C

Rationale (Objective 5): Consumption of fish-derived omega-3 fatty acids is reported to confer anti-inflammatory benefits in vitro and in vivo.

4. The most common source of evaporative dry eye disease is:

   A. Cigarette smoking
   B. Extended time working at a computer
   C. Grave’s disease
   D. Meibomian gland dysfunction***

   Correct answer: D

Rationale (Objective 1): All of the options listed are associated with the risk of dry eye disease, but meibomian gland dysfunction is the most common cause of the evaporative form of the disease.

5. Which of the following hormone replacement therapy regimens has the highest correlation with dry eye disease in women?

   A. Estrogen therapy alone***
   B. Estrogen and progesterone therapy
   C. Anti-androgen therapy
   D. Progesterone therapy alone

   Correct answer: A

Rationale (Objective 3): Elevated estrogen levels and post-menopausal estrogen therapy are risk factors for dry eye disease (DED). In a large cohort study, a higher prevalence of DED was
linked to women who used hormone replacement therapy (HRT), especially estrogen alone, compared to women who did not use HRT.

6. Deleterious effects on the tear film, cornea, and conjunctiva are most strongly correlated with which of the following preservatives used in artificial tear substitutes?

A. Benzalkonium chloride***
B. Edetate disodium
C. Sodium chlorite
D. Sodium perborate

Correct answer: A  
Rationale (Objective 4): Benzalkonium chloride (BAK) is a common preservative in ocular formulations that exerts broad spectrum germicidal action. However, BAK has demonstrated deleterious effects on the tear film, cornea, and conjunctiva, leading to pathologies consistent with those observed in dry eye disease.

7. Hyaluronic acid is present in artificial tear substitute formulations marketed in the United States as a(n):

A. Electrolyte
B. Osmolarity agent
C. Preservative
D. Viscosity agent***

Correct answer: D  
Rationale (Objective 4): Hyaluronic acid is available as an active ingredient in many artificial tear substitute formulations overseas, but it is used only as an excipient to increase viscosity in products in the United States.

8. The most common adverse effects associated with lifitegrast ophthalmic solution include ocular irritation, reduced visual acuity, and:

A. Altered taste sensation***
B. Headache
C. Increased lacrimation
D. Pruritus

Correct answer: A
Rationale (Objective 6): The most common adverse effects associated with lifitegrast include instillation site irritation, dysgeusia (altered taste sensation), and reduced visual acuity (5% - 25%). Minor side effects (1% - 5%) include blurred vision, conjunctival hyperemia, headache, increased lacrimation, sinusitis and ocular discharge, discomfort, pruritus, and irritation.

9. What is the proper order of administration if a patient is using both ocular drops and gel or ointment?

A. Drops followed immediately by ointment or gel
B. Drops followed by ointment or gel 10 minutes later***
C. Ointment or gel immediately followed by drops
D. Ointment or gel followed by drops 10 minutes later

Correct answer: B

Rationale (Objective 7): If a patient is using both ocular drops and an ointment or gel, the drops should be administered at least 10 minutes prior to the ointment or gel. This order of application minimizes washout of the ointment or gel and avoids interference with drop absorption.

10. Which of the following factors should prompt a pharmacist to refer a patient to an eye care specialist?

A. Moderate to severe ocular pain***
B. Questions about how to administer an ocular drug
C. Questions about insurance coverage for medications
D. Transient itching or burning

Correct answer: A

Rationale (Objective 2): Patients should be promptly referred to an eye care specialist for any of the following reasons: moderate to severe ocular pain; lack of response to treatment measures; vision loss; presence of an associated disease, such as Sjogren’s syndrome or rheumatoid arthritis; and the need to change a systemic or topical ocular medication that promotes or exacerbates dry eye disease.