Demodex: Reflections, Connections and Misconceptions

Alan G. Kabat, OD, FAAO
Southern College of Optometry
1245 Madison Avenue
Memphis, Tennessee 38104
☎ alan.kabat@alankabat.com

COURSE DESCRIPTION: For 175 years, the scientific community has recognized the human facial mite, Demodex. Yet only in the last 5-10 years has optometry really begun to acknowledge its significance. This lecture provides evidence-based information on the life habits of Demodex and its role in ocular surface disease, clarifying a multitude of misconceptions and establishing a clinical rationale for detection and management.

LEARNING OBJECTIVES: At the conclusion of this lecture, the attendee will be able to:

1. Understand the nature, prevalence, and unique characteristics of the Demodex mite;

2. Recognize the clinical manifestations associated with or attributed to Demodex infestation, particularly those affecting the eyelids and ocular surface;

3. Differentiate the suppositions, misconceptions and fallacies regarding Demodex from true, evidence-based scientific and clinical information, including effective treatment modalities.

TALL TALES of tiny mites... COMMON MISCONCEPTIONS REGARDING DEMODEX

1. Demodex infestation is only encountered in older adults, and is generally not a consideration in those under 50 years of age.

2. Demodex are commensal organisms in humans, found in nearly 100% of the population over age 70. The identification of Demodex in blepharitis does not implicate a unique disease state.

3. Bacterial biofilm on the lid margins provides the perfect food source for Demodex.

4. The collarettes and greasy eyelash scales associated with Demodex represent accumulated mite droppings.

5. Confirmatory diagnosis of Demodex infestation requires microscopic evaluation of lash samples.
6. It’s best to “downplay” Demodex infestation when discussing it with patients, so as not to cause undue alarm or over-reaction.

7. Demodex infestation is a direct result of poor personal hygiene. Simply washing the face regularly with soap and water eliminates Demodex.

8. Appropriate therapy for demodicosis can thoroughly eliminate all mites from the host.

9. Demodex mites are passed casually from one individual to another; this includes optometrists who are actively treating patients for Demodex-associated blepharitis.

10. Tea tree oil is the only truly effective therapy for demodicosis.

11. Avenova® (0.01% hypochlorous acid) kills Demodex.

THE DEMODEX MITE: ANATOMY, PHYSIOLOGY AND LIFE CYCLE
- Historical perspectives on Demodex
- *Demodex folliculorum* vs. *Demodex brevis*
- Physical habits and life cycle of Demodex
  - Natural habitat
  - Food sources & digestion
  - Reproduction

INHABITANCE IN THE HUMAN HOST
- Commensal, mutualistic organism or opportunistic parasite?
- Influential factors
  - Older age
  - Healthcare worker / medical student
  - Oily/mixed skin type
  - Skin disease (e.g. rosacea, acne vulgaris)
  - Contact lens wear
- Prevalence

INHABITANCE VS. INFESTATION: DEMODICOSIS
- Definition: ≥5 mites/cm²
- Associated disease states
  - Rosacea, esp. papulopustular form
  - *Demodex* dermatitis
  - Perioral dermatitis
  - Acne vulgaris
Pathophysiology:
- Direct, mechanical damage by mites; epithelial hyperplasia and reactive keratinization
- Vector for additional pathogens (bacteria)
- Hypersensitivity response to mite waste and excretions

SIGNS & SYMPTOMS OF OCULAR DEMODICOSIS
- Key diagnostic indicators
  - Eyelid itching which increases with inactivity (sleep)
  - “Cylindrical dandruff”
- Clinical picture and case examples
- Microscopy

MANAGEMENT STRATEGIES FOR DEMODICOSIS
- Mechanical therapies
  - “Lid scrubs”
  - Microblepharoexfoliation
- Topical therapies
  - Tea tree oil and its derivatives
    - Cliradex®
  - Pilocarpine 4% ointment (Pilopine HS®)
  - Ivermectin 1% cream (Soolantra®)
  - Hypochlorous solution (?)
- Systemic therapies
- Long-term considerations

RECOMMENDED READING:


Tighe S, Gao YY, Tseng SC. Terpinen-4-ol is the Most Active Ingredient of Tea Tree Oil to Kill Demodex Mites. Transl Vis Sci Technol. 2013 Nov;2(7):2.


SPEAKER DISCLOSURE
(current as of 08.18.17)

Dr. Kabat is a consultant for Bio-Tissue, Lacrivera and Vmax Vision.

Dr. Kabat serves as an advisory board member for Bruder, OCuSOFT and Shire.

Dr. Kabat is a promotional speaker for OCuSOFT and Shire.

Dr. Kabat is a clinical investigator for Bio-Tissue, Shire and Vmax Vision.