Dry eye diagnosis and treatments: The Elevator speeches
COPE #

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Disclosures

Last 12 months:
- Allergan
- AMI
- Bausch+Valeant
- Alcon
- Cooper
- Shire
Do you prescribe omegas for dry eyes?

A. Not at all
B. Seldom
C. Sometimes
D. Frequently
E. Always

6 clinical trials 2005 to 2009
12 clinical trials 2010 to 2015

Horn MM, Asbell PA, Barry B. Omegas and dry eye: more knowledge, more questions. In press.
ω6 ω3

790 participants in 7 independent studies
Meta-analysis 5 studies
ω3
TBUT significantly greater by 1.58 s


ω6 ω3

ω3
Significantly improve the Schirmer's test
Did not significantly improve the OSDI test results

Eicosanoids Omega-6

- Increase blood pressure
- Inflammatory
- Platelet aggregation
- Thrombosis
- Vasospasm
- Allergic reactions
- Cell proliferation

Eicosanoids Omega-3

- Increase blood pressure-opposite
- Inflammatory-opposite
- Platelet aggregation-opposite
- Thrombosis-opposite
- Vasospasm-opposite
- Allergic reactions-opposite
- Cell proliferation-opposite
The ideal $\omega_6: \omega_3$ ratio in the diet is approximately 4:1

Current Western diets that ratio is closer to 15:1


Greater bleeding with $\omega_3$
Not recommended for surgery

“This case reveals a significant rise in INR after the dose of concomitant fish oil was doubled”


High blood concentrations $\omega_3$
Linked to increase prostate cancer risk

Hydro-Eye
Hydrate Essential
TheraTears Nutrition
BioTears
Dry Eye Formula
EyePromise EZ Tears
PRN
Nordic Naturals


ω6 ω3

Supplement ω6 ω3 Dose
PRN Dry eye Omega ω3 EPA 4 gels/day
Dry Eye Formula ω3 EPA/DHA 3 gels/day
TheraTears Nutrition ω3 EPA/DHA/ALA Flaxseed oil 3 gels
Hydro-Eye ω6 GLA ω3 EPA/DHA 4 gels
BioTears ω6 GLA ω3 EPA/DHA 4 gels/day
EyePromise EZ Tears ω6 GLA ω3 EPA/DHA 2 gels
Nordic Naturals Complete Omegas ω6 GLA ω3 EPA/DHA 2 gels

ω6 ω3

Supplement ω6 ω3 MSRP Per gel/cap
PRN Dry eye Omega ω3 120 $46.00 0.38
Dry Eye Formula ω3 90 $24.95 0.27
TheraTears Nutrition ω3 Flaxseed 90 $14.99 0.16
Hydro-Eye ω6 ω3 120 $32.95 0.27
BioTears ω6 ω3 120 $34.95 0.29
EyePromise EZ Tears ω6 ω3 60 $44.95 0.74
Nordic Naturals Complete Omegas ω6 ω3 120 $33.95 0.28
DREAM study

Dream Study
Dry eye assessment and management study (DREAM)
First NIH sponsored dry eye study

Dream Study
Multi-site
579 patients
2 years
ω3 2000mg EPA, 1000mg DHA/day
Placebo
"the direction of response of a body function to any agent depends to a large degree on the initial level of that function"

Wilder's law of initial value


Meat cuts 18 cattle
Grain vs grass fed
Trimmed of visible fat & connective tissue and then minced
7 g were used for fatty acid (FA) analysis.


"significantly higher level of total omega-3 (ω-3)…in grass-fed beef (P< 0.0001) than the grain-fed groups regardless of cut types."

“When cattle are taken off grass and shipped to a feedlot to be fattened on grain, they lose their valuable store of LNA as well as two other types of omega-3 fatty acids, EPA and DHA.”


“Each day that an animal spends in the feedlot, its supply of omega-3s is diminished”


What percentage of your patients have blepharitis?
A. Less than 10%
B. 10% to 25%
C. 25% to 35%
D. 35% to 50%
E. Over 50%

Demodex

Prevalence
Demodex
Ectoparasites-most common in man
100% in patients 70 years old plus
Mite density rises in the sixth decade of life
Level until the eighth decade of life.
1. Clinical history: blepharitis, dry eyes or ocular allergy
2. Slit-lamp examination: cylindrical dandruff


1. Clinical history

Symptoms:
Itch, burning, foreign body sensation, crusting, redness, blurry vision

Demodex mite infestation
85% also have MGD


Demodex mite infestation
85% also have MGD


Blepharitis & demodex
Meta-analysis of 11 studies
Statistically significant association


Lid Debris – Grade 4 (Very Severe)
50 year-old

- ≥3 clumps/strands
- >40 collarettes
2. Slit lamp evaluation

Cylindrical dandruff

12.9 mites per patient with cylindrical dandruff (CD)
0.35 mites without CD

30 times higher when cylindrical dandruff is present.


Cylindrical dandruff

“Cylindrical dandruff was pathognomonic for the presence of demodex infestation.”

Blepharitis with demodex
62.9% Sumer et. al.
88% Alejo et.al.
97% De Venecia and Siong


Distention caused by waste products
half of mites are follicle opening are dead

Demodex have no anus, and stores its waste in large cells within its gut.
When the mite dies, its body disintegrates and an explosion of waste can be released.

3. Epilate and microscope
Celestron 44341 LCD Digital Microscope II (Black)

Celestron 5 MP LCD Deluxe

Amazon
$200 approx
Have not tried

http://waynesword.palomar.edu/redmite7a.htm
What percentage of your patients have rocasea?
A. Less than 10%
B. 10% to 25%
C. 25% to 35%
D. 35% to 50%
E. Over 50%
Rosacea and demodex
Meta-analysis of 48 studies
10 different countries
28,527 subjects
Rosacea patients 7-8x chance have Demodex


Demodex is highly photophobic and avoids light

“hundreds of mites appear in severely infested lids but has never seen a mite emerge completely.”

Demodex

http://www.youtube.com/watch?v=f4d3kljad_8

Tea Tree Oil

Tea Tree oil
Ocusoft
Cliradex
Australian generic brand (Target)

Tea Tree Oil

Oust
Ocusoft
Blephadex
Macular Health
1. Clean lids with lid scrub (Ocusoft, etc)
2. Instill proparacaine/tetravisc/NSAID as drop in eyes and along lid margins with cotton swab.
3. Apply TTO (Ocusoft or mix) with cotton swab along lid margins. Use a fresh swab for each lid margin.

Modified from Cliff Silverman, OD

4. Clean lashes with the short “Bleph” brush (Ocusoft demodex kit) removing all collarettes and debris that remain. Optional: cotton swab
5. After 5 or more minutes, irrigate. I prefer CL solution with PHMB (“acaricide”)
6. Clean again with lid cleaning pads.
7. Repeat TTO, irrigate and scrub again

8. Send home with Cliradex 2x day if moderate/severe, 1x day if mild/moderate
9. Return in about 2 weeks for 2nd treatment
Tip sheet
If you see rosacea and see no demodex, you are missing it
Everyone has it, normal 1000-2000 mites; like bacteria
Q: infestation or not
In-office will not get rid all of them
We only try to control the numbers
Add Tea tree oil shampoo
Add Tea tree oil soaps

Tip sheet
Space 1-2 weeks apart, lifecycle of the mite
Minimum 2 treatments, sometimes more is needed
Use Cliradex pads
2 x day or 1x day evenings
Squeeze pads before opening to spread TTO, sometimes pads are dry
Use pads on eyebrows and rest of face

Tip sheet
“Squeeze and fan”
Lay pads on lids without scrubbing for most sensitive patients
Q: Do your own mix or not? Use at own risk
TTO: Macadamian nut oil; 50:50 mix
Be careful of too much TTO with Bleph brush
Caraway oil can be used, but $$
Emulsion drops with oil activates the mites
Tip sheet
Mites in children - Poster Friday Scott Schachter
Mites mistaken for allergy
Look for lots of cuff dandruff to epilate.
Go for “juicy” or “sick” lashes (short, discolored, mis-directed, etc)

Tip sheet
Drop cover slip first, then add emulsion drop at the side
Show and tell
Give patients cell phone number

82 female patients with perioral dermatitis
70 control female subjects.
Mite density increased significantly with length of treatment with topical steroids
\( p<0.001 \)

Strong link to rosacea
Strong link to MGD (85%)

Under-diagnosis = increasing mite counts?


1. Steroids
2. Emulsion drops
3. Restasis
4. Prostaglandins
5. Latisse
6. Antibiotics (waste of time)

e-cigarettes
How many vape/e-cig shops/kiosks are in your area?
A. None
B. 1
C. 2
D. 3-5
E. More than 5

Battery operated
Vaporizes nicotine
Projected to surpass cigarettes in 10 years

Foggs MB. ACAAI News. American College of Allergy, Asthma and Immunology. 2013
Dyethylene glycol-antifreeze toxin
Cartridges leak-toxic exposure nicotine
Smoking five minutes-pulmonary function effects

Foggs MB. ACAAI News. American College of Allergy, Asthma and Immunology. 2013

Available to minors online and shopping malls in some states
Flavors to appeal

Foggs MB. ACAAI News. American College of Allergy, Asthma and Immunology. 2013

E-cigarettes…are typically solutions of propylene glycol, glycerol, or both, plus nicotine and flavorant chemicals.

Formaldehyde is a known degradation product of propylene glycol that reacts with propylene glycol and glycerol during vaporization.


Inhaling gaseous formaldehyde...long-term vaping is associated with an incremental lifetime cancer risk of 4.2×10^−3.


Risk is 5 times as high...or even 15 times as high as the risk associated with long-term smoking.

What percentage of your patients have allergy?

A. Less than 10%
B. 10% to 25%
C. 25% to 35%
D. 35% to 50%
E. Over 50%

King Edward I

Banned coal burning
England, 1306
Death penalty or torture

Fel d-I glycoprotein:
Secreted by sebaceous glands
Found in fur, urine, saliva
Can remain airborne for months
10x smaller than pollen
**Cat allergies**

- Approximately 17% are allergic to cats.
- One third ignore medical advice.

**Cat allergies**

- Males castrated much lower (5.46 to 1.28)
- Washing/baths only effective for 3 hours.
- HEPA vacuum + HEPA room filtration works, each alone has diminished effect.

**Air fresheners**

- Plug-ins have 20 Volatile organic compounds (VOC).
- 1/3 classified as toxic or hazardous.
- Scented candles produce:
  - Soot, lead, organic compounds and VOCs.
PataDay HD

PataDay HD olopatadine (0.77%)
Legacy versions PataDay (0.2%);
Patanol (0.1%)
Ocular itch significantly reduced at 24-hours
McLaurin, Eugene, Narvekar, Abhijit, Gomes, Paul J. Phase 3 Study of Efficacy and Safety of Once-daily Olopatadine Hydrochloride, 0.77% Ophthalmic Formulation in Patients With Allergic Conjunctivitis Using the Ora Conjunctival Allergen Challenge Model (Ora-CAC™) ARVO 2014

Caruncle

285 consecutive patients were seen in two clinics.

Caruncle scores were consistently higher (mean 1.76 SD 0.82) than palpebral conjunctiva scores (mean 1.34 SD 0.74).

Significant differences were found between the caruncle and palpebral surfaces scores (p<.0001).

Pearson correlation was 0.3 (p<.0001).

"strong relationship exists between altitude and variations in pollen...despite some floristic differences between the two areas"
