Allergy, dry eye or both?
COPE #34713-AS

Allergy, dry eye or both?
Allergy vs dry eye
Connections
TOSS
Treatments

Prevalence
54.3% of the population had positive test responses to one or more allergens.


Understanding allergy
"Ocular allergy is underdiagnosed and has a significant impact on the life of the patient."

Allergy vs. dry eye

“There is a wide overlap between the two diseases.”
Ehud I. Assia, MD

“At Issue: Distinguishing ocular allergy from dry eye. OCULAR SURGERY NEWS EUROPE/ASIA-PACIFIC EDITION August 1, 2005

“Differentiate pure dry eye versus dry eye with an allergy component”

“In one of our dry eye studies, the number-two symptom was itching”

“In one of our dry eye studies, the number-two symptom was itching”

“Ocular allergies are over-diagnosed, dry eye is very under-diagnosed”
194 patients with itchiness
57.7% (112/194) had clinically significant dryness.


"...there are a segment of...patients concomitantly suffer from allergic conjunctivitis and dry eye syndrome."


Allergic rhinitis (AR) and allergic conjunctivitis (AC) connection approximately 70%

Tipping point:
One airway, one disease philosophy

Respiratory epithelium:
Nose to most peripheral bronchi
Includes ocular surface.
Cannot avoid one area by concentrating too much on another


Nasolacrimal duct
Pterygoid plexus and Superior ophthalmic veins
Pterygopalatine ganglion and parasympathetic system

“Nasal allergy treatments applied to the nose may also positively affect ocular allergy symptoms.”


“Parasympathetic nasal-ocular neural reflex pathway may be involved in the stimulation of allergic responses in the eye.”


Tear secretion from the lacrimal gland & tear glands are governed by the parasympathetic system. Most of the parasympathetic innervation governing secretion between the nose and the eye intersects in the pterygopalatine ganglion.


“Parasympathetic nasal-ocular neural reflex pathway may be involved in the stimulation of allergic responses in the eye.”


PataDay HD olopatadine (0.77%)
Legacy versions PataDay (0.2%); Patanol (0.1%)
Ocular itch significantly reduced at 24-hours

**Allergy dry eye**

**Treatment**

1. Topical allergy drops qD or bid
2. Add nasal spray
3. Steroid
4. Antihistamine
5. Nasal-crom OTC

**Inhaled corticosteroids**

**OSDI TOSS**

**Nasal sprays**

- Antihistamines/mast cell stabilizers
- Corticosteroids
- Topical decongestants

**Corticosteroid nasal sprays**

- Triamcinolone (Nasacort)
- Mometasone furoate (Nasonex)
- Fluticasone (Flonase, Flounce)
- Flunisolide (Nasalide)
- Budesonide (Rhino cort)
- Ciclesonide (Omnaris)

**Treatment**

**Predominant allergy:**

- Think itch

**Rhinitis connection is probably present**

**Nasal sprays**

- Topical decongestants
  - Oxymetazoline hydrochloride
  - Afrin and Vicks Sinex
  - Phenylephrine hydrochloride
  - Neo Sympheine and Dristan

**Inhaled corticosteroids**

- *The change in total ocular symptom score: 19.8% with nasal spray (Nasonex) vs. 5.6% with placebo (P < .001)*

Inhaled corticosteroids

Improvements...significantly better with nasal spray...days 2 (tearing) and 4 (itching and redness).

“Higher doses...longer duration of...inhaled corticosteroids are associated with an increased risk of cataract.”

Greater reduction was seen with nasal spray treatment in the evening than in the morning.


The use of intranasal corticosteroids was not associated with an increased risk of cataracts in this study population.

15,479 controls were matched for age, sex, practice, and observation period.

Cromolyn sodium
BAK and EDTA
0.88 oz $16.49
200 metered sprays

Treatment

Stage 1:
Add Neti-Pot
Use Neti-Pot as a lavage, then follow with nasal spray increases efficacy.
Neti Pot

- $15.00
- Pot and 50 packets
- Nasal irrigation/Saline rinse

**Pharmacotherapy**

Stage 1:
- Add Non-sedating antihistamines
- Claritin
- Zyrtec
- Allegra

**Effects of Claritin® on Tear Flow and Volume**

- n=4
- 4 days of Claritin
- Fluorespheroscopy measured tear flow and volume
- Tear flow and volume were decreased

**Oral antihistamines**

Adverse reactions
- Altered lacrimation
- Reported as side effect in less than 5% of patients

**Risks of Non-Topical Treatment**

- Corneal staining showed a mean increase of 1.8 (76%)
- Conjunctival staining showed a mean increase of 1.4 (24%)

**Tear meniscus**

- 34 patients
- Itch questionnaire
- Tear meniscus height (OCT)

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Horn MM. 8upple JL, Bielory L. Tear meniscus height by optical coherence tomography (OCT) and ocular itch. Acadamy of Asthma Allergy and Immunology 2010. Poster #405; Session 6120
As the eye becomes drier, itch severity goes up. Do eyes itch when watery? Or do eyes itch when dry? Our study shows eyes more likely to itch when dry.

Moderate negative correlation
Frequency of itch scores & tear meniscus height
(Pearson -0.412; p=0.014)

"Concentration of inflammatory factors in the tear film may increase as the tear volume decreases."

"Dry eyes may be a trigger for ocular itch."

Smog particles accumulate on the surface and change the shape of pollen. Polluted grains more effective inducing allergic symptoms.

"Air pollutants...cause allergic symptoms, but when associated with allergen pollen grains, their allergenicity power is increased."

Add Non-sedating antihistamines
Drying effect on ocular surface
Claritin is weak against Ragweed
Rotate meds
Drowsiness
Pollutants damage the integrity of the primary airways...cause alteration of the mucociliary system."

Distance from main avenue
725 patients
725 patients
Distance from main avenue
Asthma and allergy
Lauren M. Baumann, Colin L. Robinson, Juan M. Combe, et al. Effects of distance from a heavily traveled avenue on asthma and allergy in a population sample in Lima, Peru. The Journal of Allergy and Clinical Immunology Volume 127, Issue 4, Pages 875-882, April 2011

Breathing capacity decreased living closer to roadway (females, p=.01)
Lauren M. Baumann, Colin L. Robinson, Juan M. Combe, et al. Effects of distance from a heavily traveled avenue on asthma and allergy in a population sample in Lima, Peru. The Journal of Allergy and Clinical Immunology Volume 127, Issue 4, Pages 875-882, April 2011

Living within 100m roadway increased symptoms by a factor of 2
Lauren M. Baumann, Colin L. Robinson, Juan M. Combe, et al. Effects of distance from a heavily traveled avenue on asthma and allergy in a population sample in Lima, Peru. The Journal of Allergy and Clinical Immunology Volume 127, Issue 4, Pages 875-882, April 2011

Fel d-1 glycoprotein:
Secreted by sebaceous glands
Found in fur, urine, saliva
Can remain airborne for months
10x smaller than pollen

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Lauren M. Baumann, Colin L. Robinson, Juan M. Combe, et al. Effects of distance from a heavily traveled avenue on asthma and allergy in a population sample in Lima, Peru. The Journal of Allergy and Clinical Immunology Volume 127, Issue 4, Pages 875-882, April 2011

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

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.

Pollen

Size matters

Indoor:
- Tobacco 1 micron
- Smog 2 microns
- Cat allergens 2.5 microns
- Dust mite droppings 4 to 40 microns
- Molds 2 to 10 microns

Outdoor:
- Ragweed 20 microns
- Grass 30 microns

Hair

Weed

Philly July to October

Stage 2:
Add steroid
Lotemax/Alrex

Connection

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


Treatment

Consult with allergist
Immunotherapy
Skin prick test
RAST

Treatment

Consult with allergist
Immunotherapy
Skin prick test
RAST
Consult with allergist
Immunotherapy
Allergy shots
Rush Immunotherapy
Sublingual Immunotherapy (SLIT) not FDA approved
Maintenance

Predominant dry eye
Determine if aqueous or evaporative
Aqueous
Stage 1: Artificial tears, nutritional support if desired
Stage 2: Restasis
Stage 3: Add steroid

“literature reveals that our unwavering focus on inflammation as the driving force behind dry eye, in retrospect, has been a distraction for some time.”

“we will never fully understand dry eye if we remain fixated on treating inflammation alone.”

“dry eye can be...classified as ADDE or evaporative dry eye (EDE)...both forms become virtually indistinguishable as the disease progresses, rendering attempts to make the distinction fairly meaningless”
Predominant dry eye
Determine if aqueous or evaporative
Aqueous
Stage 1: Artificial tears, nutritional support if desired
Stage 2: Restasis
Stage 3: Add steroid

Evaporative
Stage 1: Lid hygiene and emulsion
Stage 2: AzaSite/Zylet

Both allergic conjunctivitis and dryness
Stage 1: Topical allergy medication & Restasis/loteprednol
If evaporative: add lid hygiene/emulsions
Use polypharmacy: Restasis/lid hygiene and topical allergy meds
Rhinitis present: Nasal spray and Neti-Pot
Avoidance

Philosophy: Assume both conditions can be present at the same time and treat accordingly.

About half are purely dry, 40-50% are purely allergic conjunctivitis and 40-60% have both

Thank you!
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