

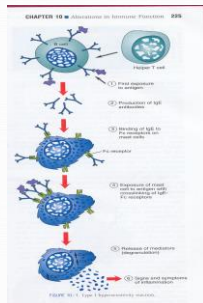
Sneezes and Wheezes: An Allergy Review

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Let's go back.... Way back to 2nd Year Optometry School

- Type I Allergic Reaction
- Immediate, within 15-30 minutes
- Allergen comes in, starts production of IgE, binds to mast cell, Ca²⁺ increases, mast cell degranulates
- Reaction by the body ranges in severity: hives, wheezing, tightening of throat, hypotension
- Examples: hay fever, asthma, bee stings, allergic conjunctivitis

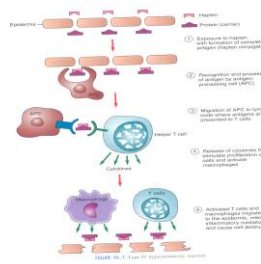


Memory Lane continued...

- Type II Allergic Rxn
- Immediate reaction, within 15-30 minutes
- Cytotoxic event
- Antibody-antigen complex starts the complement cascade which eventually leads to lysis of affected cells
- Situation of the body attacking itself
- Examples: blood transfusions, myasthenia gravis, early graft rejections
- Type III Allergic Rxn
- Longer reaction, taking several hours usually peaking around 6 hours
- Immune complexes build up in tissue—body fails to get rid of these complexes
- Reaction is mediated by the complement cascade
- Examples: Lupus, rheumatoid arthritis, Wegener granulomatosis

Again, memory lane....

- Type IV Allergic Rxn
- Delayed reaction with the peak being somewhere between 24 hours to 14 days
- Cell mediated reaction
- Cytotoxic T cells do most of the work, no antibody is involved
- The T cells release cytokines which notify the macrophages, these, along with the T cells release inflammatory cells and cause cell damage
- Examples: contact dermatitis, graft vs. host disease, Alshagan allergy



What's it mean to us?

- Type I and IV are the types we will deal with most of the time....
- We deal with types II and III indirectly...(myasthenia gravis, rheumatoid arthritis)

Systemic Signs/Symptoms of Allergies

- Congestion
- Runny nose
- Itchy, watery eyes
- Feeling of fluid in the ears
- Sneezing
- Can cause wheezing/coughing if congestion is bad enough or history of asthma

Symptoms of Ocular Allergy

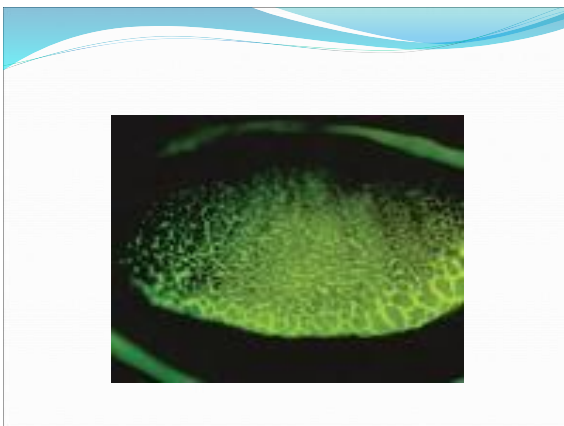
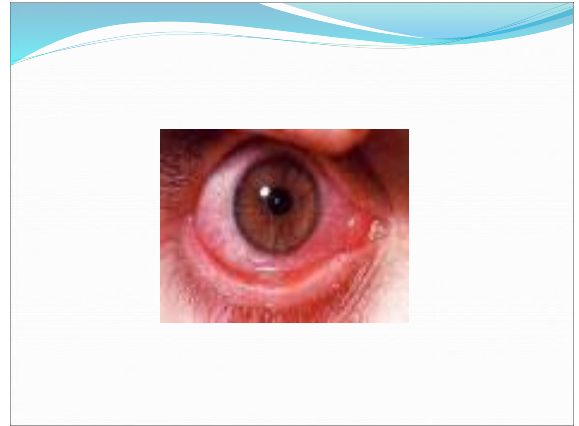
- ITCHY eyes!!!!
- Watering
- Burning
- Redness
- The "glassy stare"

Eye Signs of Allergy

- Usually bilateral
- Chemosis
- Injection of eyelids
- Swelling of eyelids
- Papillae
- No prearcular node

Remember....

- It is important to keep in mind the roll dry eye can play on an allergy patient.....
- The less tears available to the front surface of the eye the more allergen that is exposed to it
- Also the less tears you have, the less fluid you have to wash away the allergen



Treatment Overview

- Palliative measures
 - Cold compresses
 - Artificial tears
- Oral medications
 - Decongestants
 - Antihistamines
 - Allergy medications
- Ocular medications
 - NSAIDs
 - Vasoconstrictors
 - Antihistamines
 - Mast cell stabilizers
 - Mast cell stabilizers/antihistamines
 - Corticosteroids

Palliative measures

- Cold compresses
 - Help alleviate itch
 - Reduce swelling of lid
- Artificial tears
 - Dilute allergen
 - Refresh the eye briefly
 - Refrigeration helps cut down on itch
 - Helps keep front surface lubricated (in case of any dry eye situation)
 - Use in mild allergy situations

NSAIDS

- First real treatment for seasonal ocular allergies
- 1 gtt QID
- Category C for Pregnancy
- Don't use in children younger than 3 years old
- Important b/c Medicaid (at least in IN) will ask if pt has been on NSAID or MCS.
- Acular, Voltaren, Nevanac

Vasoconstrictors/Antihistamine

- Use in mild allergies
- Mode of action
 - Adrenergic agonist-- acts like epinephrine
- Side effects:
 - Stinging on insertion
 - Pupillary dilation
 - Rebound congestion
 - Follicular reaction
 - Contraindicated in cardiovascular diseases and occludable angles

Naphcon-A

Active Ingredient:
Naphazoline HCL 0.025%,
Pheniramine Maleate 0.3%

Preservative: BAK
Bottle Size: 15 mL

Cost: ave: \$10.00

- Use 1-2 gtts QID
- Don't use in Children younger than 6 years old
- Don't use longer than 3-4 days at a time
- Don't apply over CL
- Consult Doctor before using while pregnant/breast feeding



Opcon-A

Active Ingredient:
Naphazoline HCL 0.03%
Pheniramine Maleate 0.32%

Preservative: BAK
Bottle Size: 15 mL

Cost: ave: \$7.00

- Use 1-2 gtt QID
- Don't use in children younger than 6 years old
- Don't use longer than 3-4 days at a time
- Don't use over CL
- Consult Doctor before using while pregnant/breast feeding



Brief Review of Histamine

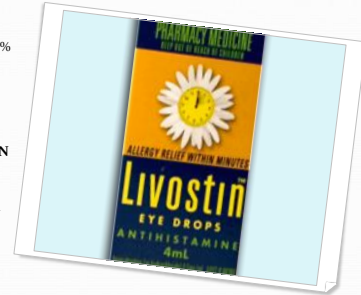
- Found in almost all tissues of the body
- There are 3 different kinds H₁, H₂, H₃, we are most concerned with H₁ (causes itching)
- New histamine discover: H₄
- What histamine does to the body:
 - Swelling of the blood vessels
 - Redness of face, neck
 - Can cause hives
 - In eye: itch, redness, chemosis, watering and swelling of the eye lid
 - If severe can cause anaphylactic shock

Antihistamines

- Used in mild allergies
- Mode of action
 - Blocks histamine and its "evil" actions
- Side effects
 - Burning
 - Stinging
 - Headache

Livostin

Active Ingredient:
Levocabastine HCL 0.05%
Preservative: BAK
Bottle Size: 2.5-10 mL
Cost: \$40-70.00
Available by RX only
•Use 1-2 gtt QID
•IT IS A SUSPENSION
•Category C for pregnancy
•Don't use in children below 12 years old
•Don't use over CL
•May be affective in myokymia



Emadine

Active Ingredient:
Emedastine Difumarate 0.05%
Preservative: BAK
Bottle Size: 5-30 mL
Cost: \$37.95-\$75
•Available by RX only
•Use 1 gtt QID
•Category B for pregnancy
•Causes headaches in 11% of patients
•Don't use in kids below 3 years old
•Don't use over CL



Mast Cell Stabilizers

- Used in moderate forms of allergy
- Better for preventative and maintenance care
- Not good for acute allergy situations
- Must be started about 7-14 days before "allergy season"
- Good choice for perennial allergies (ex: dogs, cats)
- Mode of Action
 - Prevents degranulation of mast cell
 - Stops the release of allergy causing agents
- Side effects
 - Stinging
 - Burning

Crolom

Active Ingredient:
Cromolyn Sodium 4%
Preservative: BAK
Bottle Size: 10 mL
Cost: \$40.00
•Available by RX only
•Use 1-2 gtt 4-6x/day
•Category B for pregnancy
•Don't wear CL during treatment
•Don't use in children below the age of 4 years old
•FDA approved for vernal keratoconjunctivitis



Alomide

Active Ingredient:
Lodoxamide 0.1%
Preservative: BAK
Bottle Size: 10 mL
Cost: \$165.00
•Available by RX only
•Use 1-2 gtt QID for up to 3 months
•Category B for pregnancy
•Don't wear CL during treatment
•Don't use in children below 2 years old
•Approved for vernal keratoconjunctivitis



Alamast

Active Ingredient:
Pemirolast Potassium 0.1%

Preservative:
Laurakonium chloride

Bottle Size: 10 mL

Cost: \$116.00

- Available by RX only
- Use 1-2 gtt QID
- Category C for pregnancy
- Don't use in children below 3 years old
- Headaches in 10-25% of patients
- Treatment for allergic conjunctivitis

**Alocril**

Active Ingredient:
Nedocromil Sodium 2%

Preservative: BAK

Bottle Size: 5 mL

Cost: \$190.00

- Available by RX only
- Use 1-2 gtt BID
- Category B for pregnancy
- Don't wear CL during treatment
- Don't use in children below 3 years old
- Only MCS to have immediate action by inhibiting histamine
- Headaches in 40% of patients
- Unpleasant taste in the mouth
- Used for allergic con.



Mast Cell Stabilizer/Antihistamine

- Used in moderate to severe allergies
- Mode of action
 - Prevents degranulation of mast cell
 - Blocks histamine
- Side effects:
 - Blurred vision
 - Burning
 - Stinging
 - Foreign body sensation

Patanol

Active Ingredient:
Olopatadine Hydrochloride 0.1%

Preservative: BAK

Bottle Size: 5 mL

Cost: \$254.00

- Available by RX only
- Use 1 gtt BID
- Category C in pregnancy
- Put drops in and wait 10 minutes before wearing CL
- Don't use in children below 3 years old
- Headaches in 7% of patients

**Pataday**

Active Ingredient:
Olopatadine Hydrochloride 0.2%

Preservative: BAK

Bottle Size: 2.5 mL

Cost: \$203.00

- Available by RX only
- Use one drop QD
- Category C in pregnancy
- Put drops in and wait 10 minutes before wearing CL
- Don't use in children below 2 years old

**Pazeo**

Active Ingredient:
Olopatadine Hydrochloride 0.7%

Preservative: BAK

Bottle size: 2.5 mL

Cost: \$205.00

- Available by RX only
- Use one drop QD
- Category C in pregnancy
- Put drops in and wait 10 minutes before wearing CL
- Don't use in children below 2 years old



Optivar

Active Ingredient: Azelastine Hydrochloride 0.05%
Preservative: BAK
Bottle Size: 6 mL
Cost: \$100-138.00
 • Available by RX only
 • Now available in generic form
 • Use 1 gtt BID
 • Category C in pregnancy
 • Put drops in and wait 10 min before wearing CL
 • Don't use in kids below 3 years old
 • Burning in 30% of pt, headaches in 15%, bitter taste in 10% of patients

**Elestat**

Active Ingredient: Epinastine HCL 0.05%
Preservative: BAK
Bottle Size: 5 mL
Cost: \$90.00
 • Available by RX only
 • Now available in generic form
 • Use 1 gtt BID
 • Category C in pregnancy
 • Put drops in and wait 10 minutes before wearing CL
 • Don't use in children below 3 years old
 • Less likely to cause dry eye
 • Blocks both H₁ and H₂ histamines receptors

**Zaditor**

Active Ingredient: Ketotifen Fumarate 0.025%
Preservative: BAK
Bottle Size: 5 mL
Cost: \$10.33!!!!
 OTC
 • Use 1 gtt BID
 • Category C in pregnancy
 • Put drops in and wait 10 min before wearing CL
 • Don't use with children younger than 3 years old

**Alaway**

Active Ingredient: Ketotifen Fumarate 0.025%
Preservative: BAK
Bottle Size: 10 mL!!
Cost: \$10.99!!!
 OTC!!!!
 • Use 1 gtt BID
 • Category C in pregnancy
 • Put drops in and wait 10 min before wearing CL
 • Don't use in children younger than 3 years old

**Bepreve**

Active Ingredient: Bepotastine besilate 1.5%
Preservative: BAK
Bottle Size: 10 mL
Cost: \$200.00
 • Available by Rx only
 • Use 1 gtt BID
 • Category C in pregnancy
 • Put drops in and wait 10 minutes before wearing CL
 • Don't use in children below 2 years old
 • Mild eye irritation, stuffy nose, HA, unusual taste in mouth

**Lastacast**

Active Ingredient: 0.25% Alcaftadine
Preservative: BAK
Bottle Size: 3 mL
Cost: \$215.00
 • Available by Rx only
 • Use 1 gtt QD
 • Category B in pregnancy
 • Put in drops and wait 10 minutes before wearing CL
 • Do not use in children below 2 years old
 • Binds to H₁ and H₂ receptors, but also works on the H₄ receptor
 • It is thought it may work on conjunctival tight junctions
 • Eye irritation, sore throat, HA, influenza



Corticosteroids

- Use only in severe reactions
- Mode of action=suppresses ocular inflammation
- Side effects
 - Steroid induced glaucoma
 - Corneal/scleral thinning
 - Secondary infections (due to suppressed immune system)
 - Could cause herpes flare up

FML

Active Ingredient: Fluorometholone 0.1%, 0.25%, 0.5%
Preservative: BAK
Bottle Size: 5, 10, 15 mL
Cost: \$75.00 for 5 mL
 •Available by RX only
 •Use 1 gtt 2-4 times/day
 •Use ung 1-3x/day
 -SUSPENSION!!!
 -Category C for pregnancy
 •Don't use in children younger than 2 years old
 •Have to have patient back in 1 week for IOP check
 •Start next drop at that visit or start a drop concurrently with FML



Lotemax

Active Ingredient: Loteprednol Etabonate 0.5%
Preservative: BAK
Bottle Size: 2.5, 5, 10, 15 mL
Cost: \$ 240.00 for 5 mL
 -SUSPENSION
 •Use 1-2 gtt QID
 •Can use 1 gtt qh x 1 wk
 -NOT RECOMMENDED FOR CHILDREN
 •Category C for pregnancy
 •Don't wear CL during treatment
 •Have patient back in 1 week for IOP check



Alrex

Active Ingredient: Loteprednol Etabonate 0.2%
Preservative: BAK
Bottle Size: 5, 10 mL
Cost: \$220.00 for 5 mL
 •Made to treat Seasonal Allergic Conjunctivitis
 •Use 1 gtt QID
 -SUSPENSION!!!
 -NOT RECOMMENDED FOR CHILDREN
 •Category C in pregnancy
 •Put drops in and wait 10 min before wearing CL
 •Monitor patient closely with IOP checks



Oral Allergy Medications

- Allegra and Allegra-D
 - For allergic rhinitis (seasonal) & chronic idiopathic urticaria
 - 60mg BID or 180 mg QD
 - Don't use in children younger than 2 years old
 - 6-11 years old 30 mg BID
 - Category C for pregnancy
 - Allegra-D contraindicated in narrow angle glaucoma
 - Non-drowsy
 - OTC
 - Cost: \$17.99 for 24 hour relief, (180 mg), 30 count package---just one example, several different varieties including children syrup

Oral Allergy Medications

- Claritin, Claritin-D
 - Loratidine
 - For allergic rhinitis (seasonal)
 - 10 mg QD
 - Not for use in children younger than 2 years old (syrup can be used in 2 and younger with MD permission)
 - 2-5 years old use 5 mg BID
 - Pregnancy is a precaution, no category given
 - OTC
 - Available in every possibility imaginable
 - Cost: Claritin 24 hr=\$11.99, 30 count---available in a variety of options including children syrup

Oral Allergy Medication

- Zyrtec, Zyrtec-D
 - Citirizine
 - For allergic rhinitis
 - 10 mg BID
 - Category B for pregnancy
 - Not for use in children under 2 years old (syrup can be used in 2 and younger with MD permission)
 - Can cause mild drowsiness
 - OTC
 - Cost: \$18.99 for 30 tabs

Oral Allergy Medication

- Benadryl
 - Diphenhydramine
 - For upper respiratory allergies or rhinorrhea/sneezing from common cold
 - 25-50 mg every 4-6 hours
 - DROWSY!!!
 - Category B for pregnancy
 - Can be used by children with supervision of pediatrician
 - Cost: \$4.04 for 24 tabs

Intranasal Agents

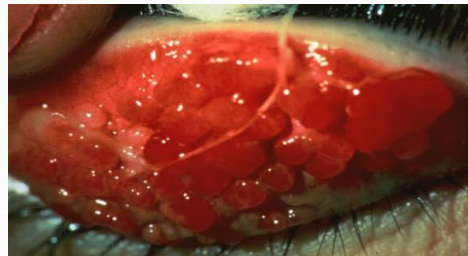
- Used for seasonal and perennial allergic and nonallergic rhinitis
- Most are Category C for pregnancy
- Ages of use vary from 2 years old to 6 years old
- Cost: ranges from \$90-\$85
- Nasalcrom is OTC, so it is cheaper

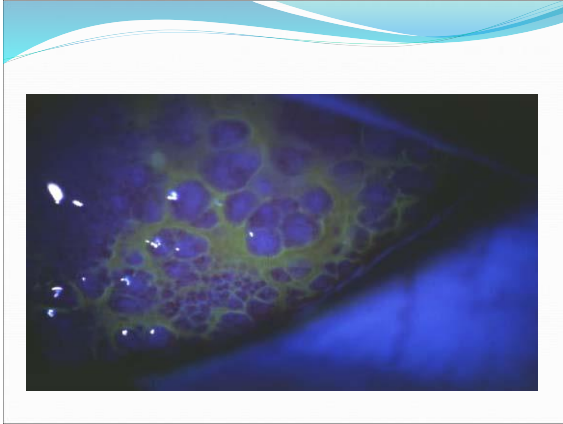
Interesting Points

- In comparison, Patanol was more effective than Alrex at controlling redness and itch in early phase allergy
- Studies have found that some ocular drops can reduce the rhinitis affects of allergy
- It has been found that oral medication does reach therapeutically effective concentrations on the front surface of the eye, but are not as effective at controlling ocular allergy symptoms as ocular therapy
- When comparing ocular therapy to intranasal therapy, intranasal is more effective at treating the nasal symptoms from seasonal allergies, but made no difference in relieving the ocular symptoms.

Other Allergic Issues...

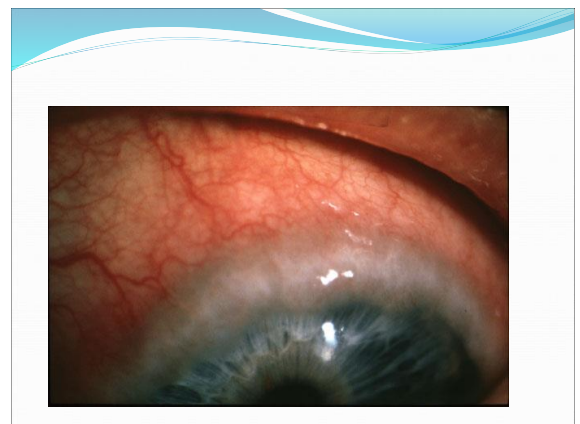
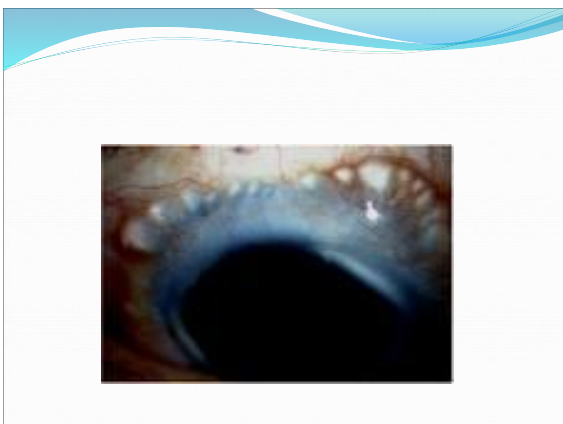
- GPC
 - Symptoms
 - lenses move a lot, itching, itch worsens when lenses are taken out, mucous
 - Signs
 - large papillae on the superior conjunctiva
 - Treatment
 - take patient out of lenses, depending on severity, consider refitting if necessary, reduce wear time. Start patient on Patanol BID OU to help reduce papillae. If it is severe, consider short course of steroid piggy backed with MCS or Patanol.





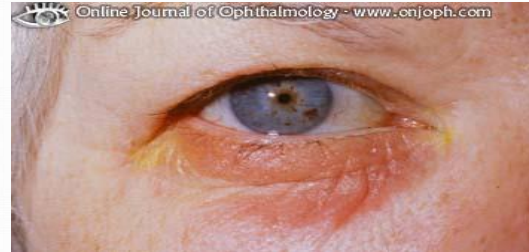
Other Allergy Issues

- Vernal Keratoconjunctivitis
 - Symptoms
 - very seasonal, recurrent, waxes and wanes, itching, very ropy discharge, generally found in young males
 - Signs
 - large papillae on superior conjunctiva, can be along the limbus
 - If severe can have shield ulcer along the upper cornea or Trantas' dots on the limbus
 - Treatment
 - MCS/Antihistamine, MCS about 2-3 weeks before patients season begins, if first time for patient can pulse with a steroid and piggy back with MCS to get under control
 - If there is an ulcer, treat with antibiotic, topical steroid and a cycloplegic



Other Allergic Issues....

- Contact Dermatitis
 - Symptoms
 - sudden rash around eye lid area, scaly looking, dry, watering
 - Signs
 - swelling around the eye, redness
- **Important to try to establish an etiology**
- Treatment
 - stop exposure to the allergen, cold compresses help with swelling and itching, AT; if it is bad around the eye lid you can use a steroid cream/ung, Benadryl/other allergy medication if moderate to severe, if it is very bad you can RX oral steroid



• THANK YOU!!!!!!

References

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