Allergic Rhinoconjunctivitis

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Objectives

• What is rhinitis and how is it classified?
  – Define rhinitis and mention its classification
• What diagnostic methods are available? Which one is the best? Which shouldn’t be used?
  – Mention approved and unproven dx methods
• What treatment strategies are commonly utilized?
  – List general approaches to treatment as well as specific drugs available

OUTLINE

• Review concepts
• Basic physiopathology
• Evaluation and diagnosis
• Therapeutic management
• Summary

Some Thoughts

One nose
One airway
One body

Definition

• Rhinitis is characterized by 1 or more of the following
  – Nasal Congestion
  – Rhinorrhea (anterior and/or posterior)
  – Sneezing
  – Itching
• Conjunctivitis often accompanies rhinitis, therefore allergic rhinoconjunctivitis is a term often used. Most treatments of allergic rhinitis will improve conjunctivitis.

Classification

Allergic

• Seasonal
  – IgE response to seasonal aeroallergens
• Perennial
  – IgE response to allergens such as dust mites, molds, animal allergens, perennial pollen, and occupational allergens

Non-Allergic

• Vasomotor rhinitis (idiopathic)
• Gustatory rhinitis
• Infectious rhinitis
• Occupational rhinitis
• Non-allergic rhinitis with eosinophilia syndrome (NARES)
• Hormonal rhinitis
• Drug-induced rhinitis
• Atrophic rhinitis
Mimicking Conditions

• Nasal polyposis
• Anatomical abnormalities
  – Nasal septal deviation, tumors, turbinate hypertrophy
  – Cleft palate, adenoidal hypertrophy, laryngopharyngeal reflux
• CSF rhinorrhea
• Primary Ciliary Dyskinesia

Allergic Rhinitis-Pathogenesis

• Allergen-driven mucosal inflammation
• Interplay between
  – Local and infiltrating inflammatory cells
  – Vasoactive and pro-inflammatory mediators
• Other contributors
  – Sensory nerve activation
  – Plasma leakage
  – Venous sinusoid congestion

Allergic Rhinitis-Pathogenesis

• Early-phase and late-phase response

• Both characterized by
  – Sneezing
  – Congestion (predominates in late-phase)
  – Rhinorrhea

Now, let’s look at an animated cartoon depicting the basic pathogenesis of this disorder

Evaluation

• Get a good history and rule out other causes of rhinitis as well as mimicking conditions
• Obtain the following details
  – Pattern
  – Chronicity
  – Seasonality
  – Triggers/precipitating factors
  – Response to medications
  – Coexisting conditions
• Remember: physical exam alone is NOT enough to establish a diagnosis

Specific IgE Testing

• Every test has its advantages and disadvantages
• Skin testing and blood immunocap IgE specific levels have pretty similar sensitivity and specificity (RAST not common anymore)
Specific IgE Testing

Skin Prick Testing
- Preferred method
- No age limitations
- Issues: Dermatographism, eczema, other.

In-Vitro testing
- Good enough, but some problems:
  - Potency of allergens bound to solid support systems
  - Cross-reactive proteins and glyco-epitopes
  - Specific IgG antibodies in the test serum
  - High total IgE

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<tr>
<td>Reimb</td>
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Price: Prof fee charge $8-12 (lis (each)
MO-Care reimburses ~10%
Texas Medicaid: ~$5 dollars (each)

In Vitro Testing

Skin Testing

Evaluation
- Fiber optic nasolaryngoscopy
  - Indicated for cases that fail to improve with initial therapy
  - Recommended/ideal for most cases with chronic rhinitis
  - Ideal: Visualize the condition one is treating

Evaluation
- Nasal smears looking for eosinophils are not necessary for routine diagnosis, but useful when the diagnosis is in question
- Other tests
  - Saccharin: mucociliary clearance
  - Nasal biopsy
  - Total IgE and IgG subclasses: limited value
  - β2 transferrin: very sensitive for CSF
Evaluation

• Comorbid conditions
  – Immunodeficiency
  – Cystic fibrosis
  – Chronic sinusitis and otitis
  – Sleep-disordered breathing
  – Asthma: Pulmonary function testing should be considered due to the high association between asthma and rhinitis. (one airway theory!)

Evaluation

• Tests with no diagnostic validity
  – Cytotoxic tests
  – Provocation-neutralization
  – Electrodermal testing
  – Applied kinesiology
  – Iridology
  – Hair analysis

Applied Kinesiology

“I am adequately hydrated.”
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Comments/questions?

NEXT SECTION: MANAGEMENT

Management

• Individualized

• Guided by
  – Age
  – Frequency, severity, and spectrum of symptoms
  – Allergen exposure pattern
  – Comorbidities
Management

• Other considerations
  – Response to previous treatments
  – Patient and family preference
  – Cost

• Keep in mind that the benefit obtained by substitution to other class of medicine may outweigh the cost of adding more drugs

Management Options

• Environmental Control
• Pharmacologic Therapy
• Immunotherapy
• Surgical
  • Rhinitis Action Plan

Environmental Management

• Difficult, but provides good benefits
• General rules
  – If highly allergic to pollen:
    • Avoid outdoors during high pollen counts
    • Stay in areas with AC and good filters (closed windows)
  – Highly allergic to dust, cockroach, mold, or pets:
    • Very clean and dry room
• Many web sites have info regarding how to “allergy-proof” a house

Pharmacologic Therapy

http://www.mayoclinic.com/health/allergy
Pharmacologic Therapy

**Oral/Systemic**
- Antihistamines
- Anti-leukotriene agents
- Decongestants
- Anticholinergics
- Corticosteroids
- Omalizumab/Xolair

**Intranasal**
- Antihistamines
- Decongestants
- Anticholinergics
- Nasal saline
- Corticosteroids

Oral Antihistamines

**First Generation**
- Brompheniramine (Dimetapp)
- Chlorpheniramine (Chlor-Trimeton)
- Clemastine (Tavist)
- Cefprozil (Periactin)
- Diphenhydramine (Benadryl)
- Hydroxyzine (Atarax)
- Promethazine (Phenergan)
- Triprolidine (Actifed)

**Second Generation**
- Acrivastine (Sempres-D)
- Cetirizine (Zyrtec)
- Levocetirizine (Xyzal)
- Loratadine (Claritin)
- Desloratadine (Clarinex)
- Fexofenadine (Allegra)

Oral Antihistamines 1st Gen

Potent Adverse Effects
- Depressive: ataxia, coma, delirium, diziness, drowsiness, fatigue, lassitude, narcolepsy, sedation, somnolence, weakness.
- Stimulatory: dyskinesia, dystonia, euphoria, headaches, hyperreflexia, hypertension, insomnia, irritability, muscle twitching, nervousness, seizures, tremor.
- Neuropsychiatric: anxiety, catatonia, confusion, delusion, depression, hallucination, hysteria, impaired judgment, psychosis.
- Peripheral nervous system: areflexia, blurred vision, dilated pupils, paralysis, paresthesias, toxic neuritis.

Oral Antihistamines 2nd Gen

Adverse Effects

Incidence density: Events divided by months of Rx per pt times 1000. Study with 43,363 patients.
Anti-leukotriene Agents

- No difference in efficacy compared to antihistamines but may provide additive effect
- Montelukast has an excellent safety profile and it is approved down to 6 mo of age

Decongestants

- Well tolerated in children > 6 years, but in younger individuals may produce:
  - Agitated psychosis, ataxia, hallucinations, death
- Careful consideration before prescribing to children
- Pseudoephedrine
- Phenylephrine:
  - alternative to pseudoephedrine due to concerns re. methamphetamine.
  - Extensive gut metabolism. Efficacy as an oral agent not well established

Anticholinergics

- Derivatives of scopolamine
  - Methscopolamine
  - Chlorpheniramine (H1 blocker 1st gen)
  - Pseudoephedrine (Decongestant)
  - Methscopolamine
- I do not use these combinations in children, but some adults respond very well (specially at bed time)
Oral Corticosteroids

- Oral steroids may be used, on an occasion, for a few days, for severe symptoms
- IV, IM, or intraturbinate injections not recommended
- I personally think one can provide good treatment without oral steroids in the vast majority of patients

Anti-IgE

Omalizumab (Xolair)

- Has a potential role in the management of allergic rhinoconjunctivitis
- Superiority to conventional treatment has not been demonstrated
- Due to its high cost it is difficult to justify in the treatment of allergic rhinitis only

Nasal Antihistamines

- Azelastine (Astelin, Astepro)
- Olopatadine (Patanase)
- Equal or superior to H1 2nd gen blockers,
- Similar to nasal steroids. Combined with them may produce better results than either drug alone
- Work in non-allergic rhinitis too
- May produce sedation!
- If symptoms of conjunctivitis are major, use of ocular antihistamines (olopatadine, azelastine, epinastine, ketotifen) or cromolyn may be advocated.
Nasal Decongestants

- Phenylephrine (Neo-Synephrine/Rhinall)
- Imidazoline derivatives (oxymetazoline-Afrin)
- No effect on antigen-provoked nasal response
- No effect on itching, sneezing, or rhinorrhea
- Caution: Rhinitis medicamentosa: may develop within 3 days or may take more than 6 weeks

Nasal Cromolyn

- Inhibitor of mast cell degranulation
- Less effective than nasal steroids
- Efficacy against other treatments not well established
- Onset of action of 4-7 days, but has a faster onset of action if used prophylactically against allergen exposure

Nasal Anticholinergics

- Nasal Atrovent (0.03% and 0.06%)
- Approved for children > 5 years of age
- Good for reducing rhinorrhea
- Low incidence of side effects

Nasal Saline
Nasal Saline

- The preferred method of delivery, volume, concentration, dose and frequency have not been established
- Many formulas and concentrations that range from 0.9% from 3% NaCl with some having bicarbonate
- Minimal side effects and well tolerated by individuals
- Many patients ‘love’ it!

Nasal Corticosteroids

- May be the effective single drug treatment
- All available are not significantly different
- Alcohol and BKC may cause irritation or ciliary dysfunction in some patients
- Growth suppression reported with beclomethasone at larger than recommended doses
- Fluticasone, mometasone, and budesonide have been shown not to affect growth

Immunotherapy
Immunotherapy

- Effective therapy with the potential of modifying the disease
- Sustained clinical benefits after discontinuing therapy
- No age limits, but caution is needed in young individuals due to lack of appropriate communication and identification of subtle anaphylaxis symptoms
- If no improvement after one year: review case with possible d/c of immunotherapy

Immunotherapy

- Said so, one needs to be very careful about immunotherapy
- Some academic centers* argue that allergic rhinitis can be very well controlled with environmental and pharmacological modifications and immunotherapy is reserved for very unique cases
  *These centers have had fatalities secondary to immunotherapy

Surgery

- Septoplasty
- Inferior turbinate hypertrophy reduction
- Adenoidectomy
- Functional endoscopic sinus surgery (FESS)
- Nasal Polypectomy
  
  • I will not expand on these but I will show you a video of turbinate ablation therapy

Turbinate Reduction Surgery

Rhinitis Action Plan
Rhinitis Action Plan

<table>
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<tr>
<th>Allergies (hayfever)</th>
<th>Q1</th>
<th>Q2</th>
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<tr>
<td>Challenges, fatigue</td>
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<td>Q2</td>
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<tr>
<td>Irritability</td>
<td>Q1</td>
<td>Q2</td>
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<tr>
<td>Rash</td>
<td>Q1</td>
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<tr>
<td>Eye swelling</td>
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<tr>
<td>Nasal congestion</td>
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<tr>
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<td>Headache</td>
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<th>What to do</th>
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<tr>
<td>Prolonged manifestations</td>
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<tr>
<td>Complications (OM, sinusitis, polyposis)</td>
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<tr>
<td>Comorbid conditions</td>
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<td>Symptoms/medication interference with activities</td>
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<tr>
<td>Severe symptoms</td>
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<td>More education</td>
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Summary

- During this presentation we have
  - Reviewed the concept of allergic rhinitis and its mechanism
  - Thought about other potential diagnoses and comorbid conditions
  - Talked about evaluation and use of tests
  - Looked at different management strategies, including environmental control, drugs, immunotherapy and surgery

Allergy Referral

- Ineffective response to RX
- Rhinitis medicamentosa
- Need to further ID triggers
- Family wants allergy testing
- Multiple/costly meds
- Immunotherapy is considered

Comments/Questions?
Thanks!