

Allergic Rhinitis

Allergic Rhinitis

- Definition
- Predisposing Factors
 - family history
 - » questionable genetic link
 - allergen exposure
 - » exposure to right allergen proteins will yield reactions
 - Co-existence with asthma
 - » One airway... one disease....
 - » Allergic rhinitis as a trigger for asthma attacks
 - socioeconomic class

Pathophysiology

- Nasal Physiology and Function
 - Air warming
 - Air humidifying
 - Air cleaning
- Movement of mucous via ciliary movement
- Vascular tissue
 - highly vascular
 - high concentration of mast cells and H₁ receptors

Symptoms

- Classic symptoms are a result the release of histamine within the mast cells.
 - nasal obstruction, sneezing, pruritus, rhinitis
- “late phase reactions” are caused by inflammatory cell accumulation at the site of the previous cellular reaction
 - nasal congestion, hyperirritability
- “priming effect”

Seasonal vs. Perennial Allergic Rhinitis

- Seasonal usually associated with vegetative allergens
 - tree pollens in the spring
 - grass pollens in the early to mid summer
 - weeds pollens in late summer and fall
- Mold spores act as allergens year-round
- Perennial rhinitis generally associated with environmental allergens
 - house dust, animal hair/dander, feathers, dust mites, tobacco, wood dust, newspaper, jute

Diagnosis

- Patient history
 - time, place, circumstances of reactions
- Skin testing
 - intradermal- injecting allergen between layers of skin
 - epicutaneous- scratch tests with dilute allergens
- RAST - in vitro testing for specific IgE antibodies

TREATMENT

- Avoidance
 - avoid or get rid of house animals
 - good house cleaning
 - covering mattresses and pillow with plastic
 - wash in very hot water (140°)
 - wear filter mask when mowing or working outside
 - house wide filter systems???
 - relocation to pollen free area (yeah right!)

Antihistamines

- Prevent the binding of internally released histamine for binding with receptor
- MORE EFFECTIVE AT PREVENTION THAN REVERSING EFFECTS
 - reversal of symptoms caused by anticholinergic effects (side effects) the agents
- reduces nasal, salivary and lacrimal hypersecretions
- antagonizes capillary permeability (wheal and flare) and itching.

Adverse Effects

- Drowsiness (generally chief complaint)
 - excitation/hyperactivity in children
- Anticholinergic effect
 - Watch for urinary retention in older males with BPH
- Precautions- BPH, glaucoma, heart disease
- Drug interactions- Terfenadine best documented

DECONGESTANTS

- Sympathomimetic Agents (mimic sympathetic nervous system)
 - act on adrenergic receptors in the nasal mucosa
- Shrink swollen mucosa and improve ventilation.

Appropriate use of Topical Nasal Preparations

- Clear nasal passages
 - Use of saline drops /sprays (Ocean Nasal Spray)
- Close of one nostril, inhale slowly and deeply while delivering single activation of med.
 - point applicator away from nasal septum
- Wait for 1-2 minutes before next inhalation
 - drops - keep head tipped back, breath through mouth, rock head side to side
- Repeat in other nostril

Oral Decongestants

- Not as rapidly acting as topical agents
- ADR's (more common with PPA, ephedrine)
 - CNS stimulation, headache, insomnia
 - CAUTION hypertension and heart disease
 - Drug interactions with Monoamine Oxidase Inhibitors
- Patient Counseling
 - Pertaining to ADR's and avoidance with other disease states
 - READ LABELS ON OTC's - AVOID DUPLICATION

COMBINATION PRODUCTS

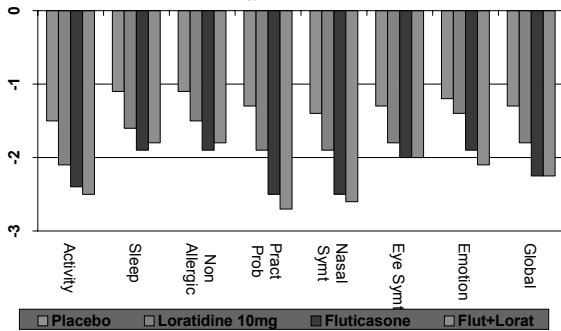
- Literally hundreds of combination agents.
 - both over the counter and Rx only
- Use medication only for symptoms present
 - Who needs NyQuil anyway?
- Will this new combination give anything older, less expensive agents don't?
- Watch for cost.....

Topical Steroids

- Advantages over systemic steroids
 - little effect on hypothalamic-pituitary-adrenal axis
- Inhibit early and late phase reactions
 - appear to decrease mast cell concentrations which increase during allergy exposure.
- Use in combination with symptomatic treatment

Mean Score in RQLQ

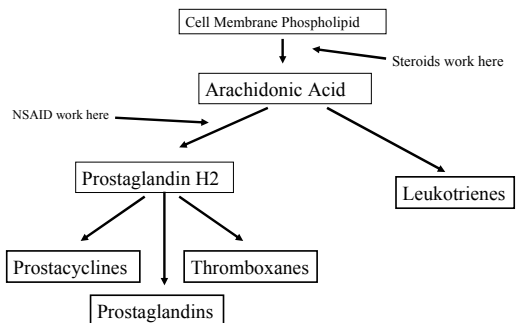
Baseline to Day 14
Ratner et al J Allergy Clin Immunol 1997;99:s439



Cromolyn Sodium

- Time to maximal effectiveness
 - up to 4 weeks
 - need to continue therapy throughout entire season
- Cromolyn needs to come into contact with entire mucosal area. (local effect)
- Must counsel patients about characteristic of therapy.

- Atrovent Nasal Spray
 - anticholinergic action, parasympathetic blocking agent
 - Treatment of rhinorrhea only
- Ophthalmic Preparations
 - additional treatment of symptoms or treatment of only symptoms



Leukotrienes

- Primary effect on the nasal vascular system (stiffness and vascular permeability)
 - Histamine responsible for itching and sneezing
- Many times more potent than histamine
- Significant contribution to allergic rhinitis symptoms

Leukotriene Receptor Inhibitor

- Primarily used in asthma patients
 - Asthma and allergic rhinitis co-existing
- Several well controlled studies have shown improvement in RQLQ scores in patients not fully responding to traditional treatment
 - One well controlled study did show no significant improvement

Leukotriene Inhibitor Use in AR

- Meltzer EO et al. *J Allergy Clin Immunol* 2000;105:917-22 N=12
Montelukast (Singular) in combination with a histamine blocker was superior to placebo and either agent alone for control of day/night symptoms and QOL
- Wilson AM et al. *Clin Exp Allergy* 2001;31:61-8 N=22
Montelukast (Singular) in combination with cetirizine was equally effective as nasal steroid (mometasone) in treatment of objective and subjective measurement of AR

Montelukast (Singular)

- FDA approved for treatment of allergic rhinitis in pediatric and adult patients. (same dose as to treat asthma)
 - Adults 15 year and older – 10mg orally daily
 - Pediatric 6-14 years – 5mg (chewable) daily
 - Pediatric 2-5 year – 4mg (chewable or granules) daily
 - Pediatric 6-23 months – 4mg oral granules daily

Immunotherapy

- Suppression of seasonal rise of IgE antibodies, decreased basophil reactivity and sensitivity to allergens
- Generation of antigen specific suppressor cells and production of IgG antibodies that block the IgE-allergen interaction
- Specific patient selection

Upper Respiratory Tract Infections (URTI)

- Common Cold
 - Epidemiology
 - Symptomatology
 - » differentiate from Group A Strep and Allergic Rhinitis
 - » more disseminated in symptomatology and usually self limiting.

Treatment

- Focused on symptoms
- Antihistamines
 - Classified by FDA as no proven benefit in common cold.
- Decongestants
 - topical
 - systemic
- Analgesics
 - Acetaminophen vs. ASA vs. Ibuprofen

Antitussives (cough suppressants)

- Suppression of a NON-PRODUCTIVE cough
 - codeine --hydrocodone
 - » Novahistine DH (C-V OTC)
 - dextromethorphan --noscapine
 - » Something-DM products
 - Benzonatate (Tessalon Pearls)
 - » acts as local anesthetic to depress the medullary cough reflex

Expectorants

- Used to “decrease mucous viscosity” to promote movement from upper airway
 - Guaifenesin (Robitussin) only Category I agent
 - Iodinated glycerol (Organidin products recently reformulated to contain guaifenesin, except very expensive)
- Proper hydration essential to effective expectorant activity.

Anticholinergic Agents

- Ipratropium (Atrovent Nasal Spray)
 - beneficial in reducing nasal secretions by blocking muscarinic receptors

Misc. Treatment Approaches

- Interferon
 - possibly protection from selected rhinoviruses
- Zinc Chloride, Zinc Gluconate
 - may prevent viral replication
- Vitamin C
 - possibly related to antioxidant properties

Antibiotics??

- No evidence to support antibiotics will alter the natural course of common cold
- Used for treatment of complications:
 - sinusitis
 - » changes in mucous secretions, temperature, ect.
 - pharyngitis
 - » culture for Group A beta-hemolytic Strept

Sinusitis

- “Infectious inflammation” of the sinus structures
 - 0.5% of URTI in children are complicated by sinusitis
 - 0.02% of the total population have chronic sinusitis

Pathophysiology

- Compromise of the normal physiology of the sinuses
 - viral infection, allergic rhinitis, rhinitis medicamentosa, polyps
- Leads to inflammation of the sinuses
 - excess secretions, compromise of the action of mucociliary cells and drainage
- Perfect environment for bacterial growth
 - additional impact from reactionary inflammatory cells (leukocytes, proteases)

Antimicrobial treatment guidelines for bacterial sinusitis

Otolaryngology-Head and Neck Surgery. 2000;123 (supplement);S1-S32

- Most common pathogens
 - *Streptococcus pneumoniae* - 42%
 - *Haemophilus influenzae* - 35%
 - *Moraxella catarrhalis* - 5%

Microbiology

- consider incidence of beta-lactamase producing pathogens
 - *H. influenzae* - 30%
 - *M. catarrhalis* - 92%
 - *S. aureus* - > 90%
- *Streptococcus pneumoniae* may be penicillin resistant > 40% in some areas

Treatment Considerations

- Resistance patterns
- Therapy Usually Empiric
- Efficacy, Safety and Cost of Therapy
 - consider often may be lengthy therapy
- Palliative drugs
 - analgesics, decongestants, antitussives, nasal toilet

Viral versus Bacterial (?)

- Fever, myalgia and pharyngitis associated with viral URI tend to resolve after 5 days
- Persistent fever at 5->10 days does not always suggest bacterial infection
- Cough nasal drainage for >2-3 weeks is not uncommon for viral rhinosinusitis

Symptoms of Bacterial Rhinosinusitis

Otolaryngology-Head and Neck Surgery. 2000:123 (supplement);S1-S32

- Nasal drainage
- Nasal congestion
- Facial pain/pressure, especially unilateral
- Postnasal drip
- Loss of sense of smell
- Fever
- Cough
- Fatigue
- Maxillary dental pain
- Ear fullness/pressure

A diagnosis of acute bacterial rhinosinusitis may be made with a viral URI that is no better after 10 days or worsens after 5-7 days and is accompanied by some or all of these symptoms.

Treatment Recommendations

Otolaryngology-Head and Neck Surgery. 2000:123 (supplement);S1-S32

- Mild disease, no antibiotics previous 4-6 weeks
 - Amoxicillin, Amoxicillin/clavulanate (Augmentin) 1.5 - 3.5 gram / day
 - Cefpodoxime (Vantin) 100-400mg BID
 - TMP/SMX, Doxycycline, Azithromycin (Zithromax), Clarithromycin (Biaxon), erythromycin are alternative and for use in patients with penicillin/beta-lactam allergies
- Consider switch therapy in patients without improvement or worsening symptoms in > 72 hrs

Practice Parameters Management of Sinusitis

J Allergy Clin Immunol 2005;116:S13-S47

- Initiate therapy with adequate dose of amoxicillin.
- If patient improves, continue therapy until the patient is well for 7 days (10-14 total days fo therapy)
- If symptoms do not begin to improve within 3-5 days, transition to high dose amoxicillin/clavulanate (Augmentin).

Treatment Recommendations

Otolaryngology-Head and Neck Surgery. 2000:123 (supplement);S1-S32

- Moderate disease, no antibiotics previous 4-6 weeks OR mild disease with previous antibiotics.
 - Amoxicillin, Amoxicillin/clavulanate (Augmentin) 1.5 - 3.5 gram / day
 - Cefpodoxime (Vantin) 100-400mg BID
 - Levofloxacin (Levaquin), moxifloxacin (Avelox) for patients intolerant/allergic to beta-lactams
- Consider switch therapy in patients without improvement or worsening symptoms in 72 hrs

Treatment Recommendations

Otolaryngology-Head and Neck Surgery. 2000:123 (supplement);S1-S32

- Initial therapy in patients with moderate disease and who have received antibiotics in the previous 4-6 weeks
 - Levofloxacin (Levaquin), moxifloxacin (Avelox)
 - Amoxicillin/clavulanate (Augmentin) 3-3.5gm/day
 - Combination therapy
- Consider switch therapy in patients without improvement or worsening symptoms in > 72 hrs

Pharyngitis

- Inflammation of the posterior oral cavity tissue
- Microbiology
 - rhinovirus - 20%
 - Group A beta-hemolytic streptococci (GABHS) - 15- 30 %
 - » rheumatic fever, glomerulonephritis, pyogenic abscesses
 - many other gram positive and negative anaerobes

Symptomatology

- All causes but GABHS are self limiting
- GABHS findings
 - Severe sore throat with high fever, abrupt onset, HA, tonsillar exudate, dysphagia
 - Rapid strept antigen screen
 - previous exposure

Treatment

- Viral pharyngitis
 - warm saline gargles, local anesthetics (Chloraseptic)
 - analgesics (avoid ASA, Reye's syndrome)
- GABHS pharyngitis
 - Penicillin V x 10 days
 - Benzathine Penicillin IM x 1
 - » compliance problems
 - Erythromycin, Sulfatrim, Tetracycline,
 - Treatment failures: Amoxicillin/Clavulanate or Cephalosporin
 - Tonsillectomy