Management and a Structured approach to Allergic Rhinitis in a clinical setting

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Objectives
- Epidemiology
- Making the right diagnosis
- Treatment guidelines on the basis of evidence

Definition
Symptomatic disorder of the nose induced after allergen exposure by an IgE mediated inflammation of the membranes lining the nose.

Prevalence
- 20% prevalence rate worldwide
- Asia – increased from 5% TO 45%
- All ages are affected.
- Onset mean age 8 – 11yrs. 80% develops by age 20 yrs.
- Children: 40% prevalence subsequently decreases with age.

Prevalence of seasonal and perennial allergic rhinitis

Impact

Impact

ARIA guidelines: classification of allergic rhinitis

- Intermittent symptoms
  - <4 days per week or
  - <4 weeks

- Persistent symptoms
  - >4 days per week and
  - >4 weeks

- Mild symptoms
  - Normal sleep
  - Normal daily activities
  - Normal work and school
  - No troublesome symptoms

- Moderate-severe symptoms
  - Abnormal sleep
  - Impairment of daily activities, sport, leisure
  - Problems caused at school or work
  - Troublesome symptoms

Comorbidities implications on treatment

- Treatment of allergic rhinitis may be important for its own sake and for its impact on other upper and lower airway diseases

AR and Comorbid airway disease

- History and Examination
- Skin prick test
- Allergy blood test – RAST, fluorescence enzyme labelled assays
- Nasal Provocation test
Making a diagnosis of allergic rhinitis (AR) - symptoms

- Sneezing, itchy nose, itchy palate (AR very likely)
  - Seasonal? (pollens or mould spores)
  - At home? (pets or house dust mite)
  - Improves on holiday?
- Rhinorrhea
  - Clear (AR likely)
  - Yellow (AR or infection)
  - Green, blood tinged or unilateral (other cause)

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- Nasal obstruction
  - Unilateral (AR unlikely) vs bilateral
- Nasal crusting
  - AR unlikely
- Eye symptoms
  - Often seen with AR, especially seasonal AR
- LRT symptoms
  - Cough may be caused by AR
- Other symptoms
  - Snoring, sleep disturbance, mouth breathing, "nasal voice" (not very specific for AR)

Examination

- Sneezers & runners
  - Intermittent
  - Atopy family history

- Blockers
  - Persistent
  - Sinusitis
  - Higher sensitization to fungi (62%) and house dust mite

- Allergic shiners
- Allergic salute

Ashok Shah & Ruby Pawankar
ASIAN PACIFIC JOURNAL OF ALLERGY AND IMMUNOLOGY (2009) 27: 71-77
Transverse nasal crease

Skin testing?

**NO**
- Hx suggestive for AR
- Trial of appropriate therapy successful
- Symptoms mild and easily managed
- Mechanical, anatomical, or infectious causes

**YES**
- Poor response to therapeutic trial
- Persistent &/or mod severe AR
- QOL affected
- Strong desire for immunotherapy

• In India commonest allergen on skin testing is pollens, fungi (A. flavus) and house dust mite (Dermatophagoides farinae)

Treatment guidelines

• Patient education
• Allergen avoidance
• Pharmacotherapy
• Immunotherapy

*Allergic rhinitis and its impact on asthma guidelines, 2001*

Treatment

• Education
  - Nature of disease
  - Symptoms
  - Complications (eg sinusitis, otitis media, later asthma)
  - Allergen avoidance
  - Realistic expectations of treatment
  - Drug treatment and potential side effects
  - Compliance and correct technique

Allergen avoidance

• Good evidence for pets (but takes time for cats), horses and certain occupational allergens
• Weak evidence for house dust mite avoidance, most benefit with multiple interventions
• Some evidence for pollen filters and nasal air filters
• Mite proof pillow covers and bedding
• Wash bedding once a week in hot water
• Dusting with a wet cloth
• Carpets to be vacuumed (HEPA filter)
• Wooden and leather furniture
• Pollen filters – window filta
• Nasal filters- activated carbon and cellulose

 Ethnic Nasal Filter

PHARMACOTHERAPY

Topical Nasal Treatments
• Corticosteroids
• Antihistamines
• Chromones
• Anticholinergics
• Decongestants

Oral Treatments
• Antihistamines
• Corticosteroids
• Antileukotrienes
• Decongestants

Treatment plan

• Duration and severity of symptoms.

• Type of symptoms

Intermittent mild
• Oral antihistamine OR intranasal H1 blocker

↓

Not better

↓

Intranasal CS

Intermittent mod severe
Persisted mild

Intranasal steroids

 Persist for 2 – 4 weeks

Not better

↓

Check use/compliance
Oral CS – One dose

Continued for 1 month

Nasal decongestants for congestion
Nasal antihistamines for rhinorrhea
Oral antihist for persistent nasal ocular symptoms
Persistent moderate-severe
Intranasal CS

Review after 2-4 weeks
Better
Not better
Step down dose. Continue for 1 mth
Increase INC
Itch/sneeze Antihist
Decongestant
Otic, cromolyn, decongestant
LTRA if asthmatic
Review history
Failure
Surgical issues


Nasal Sprays

- Nasal steroids
- Cromolyn - nasalcrom
- Oxymetazoline
- Ipratropium (anticholinergic)
- Nasal saline – jal neti

Nasal Steroids

- Mometasone
- Fluticasone
- Budesonide
- Beclomethasone

Fluticasone fluorate - < 0.5% bioavailability. Can be used in children more than 2 yrs of age.

Allergic rhinitis: Symptom related ARIA treatment guidelines

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Intranasal Steroids</th>
<th>Oral Antihistamines</th>
<th>Oral Decongestants</th>
<th>Nasal Sprays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestion</td>
<td>+++</td>
<td>+</td>
<td>++</td>
<td>+/++</td>
</tr>
<tr>
<td>Rhinorrhoea</td>
<td>+++</td>
<td>++</td>
<td>++/+</td>
<td>++/++</td>
</tr>
<tr>
<td>Itching/sneezing</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++/-</td>
</tr>
<tr>
<td>Duration</td>
<td>12-48 h</td>
<td>12-24 h</td>
<td>3-6 h</td>
<td></td>
</tr>
</tbody>
</table>

**Surgical issues**

- LTRA if asthmatic
- Increase INC
- Oral antihistamines
- Oral decongestants
- Nasal Sprays

**Bacterial issues**

- CS if indicated
- Review history

**Nonpharmacological treatment**

- Immunotherapy
- Avoid allergens
- Antisnoring devices

**Intranasal corticosteroid preparations**

<table>
<thead>
<tr>
<th>Steroid Preparation</th>
<th>Age Indicated Change (mg)</th>
<th>Steroid Bioavailability (%)</th>
<th>Average Biologic Potency</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-generation formulations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budesonide (AeroBid MDI)</td>
<td>&gt; 6</td>
<td>26</td>
<td>$7.56 (1-2 g)</td>
</tr>
<tr>
<td>Fluticasone (Flusone)</td>
<td>&gt; 6</td>
<td>20-50</td>
<td>$7.32 (1-2 g)</td>
</tr>
<tr>
<td>Flunisolide (Fluhalome)</td>
<td>&gt; 6</td>
<td>20-50</td>
<td>$7.32 (1-2 g)</td>
</tr>
<tr>
<td>Mometasone furoate (Puffhalome)</td>
<td>&gt; 6</td>
<td>22</td>
<td>$7.85 (1-2 g)</td>
</tr>
<tr>
<td>Mometasone furoate (Puffhalome)</td>
<td>&gt; 6</td>
<td>22</td>
<td>$7.85 (1-2 g)</td>
</tr>
<tr>
<td>Second-generation formulations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beclomethasone (Beclathalome)</td>
<td>&gt; 6</td>
<td>11</td>
<td>$7.13 (1-2 g)</td>
</tr>
<tr>
<td>Fluticasone propionate (Fluvan)</td>
<td>&gt; 6</td>
<td>22</td>
<td>$7.85 (1-2 g)</td>
</tr>
<tr>
<td>Fluticasone propionate (Fluvan)</td>
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*Prices from Self 2005

INS – is one better than the other

- No clear evidence to support the suggestion that one steroid spray is more effective than another.
- All the sprays have a similar side-effect profile, the commonest being epistaxis with a reported incidence between 17 and 23 per cent. The placebo spray had an appreciable rate of epistaxis of between 10 to 15 per cent.
- Fluticasone causes a reduction in endogenous cortisol secretion but no significant adrenal suppression was seen with triamcinolone, beclomethasone, budesonide or mometasone.
- There is little evidence that skeletal growth is restricted by the administration of topical nasal steroid sprays.


FAQ

- Effect on DM, HT – not reported. No study has addressed this issue.
- Effect on Glaucoma – no association
- Childrens growth – affected by beclomethasone dipropionate
- Effect on HPA axis – dexamethasone, betamethasone
- Adrenal suppression – not reported in children. In adults with budesonide and fluticasone propionate

Combination therapy

- Intranasal CS with antihistamines / antileukotrienes: no more effective than Intranasal CS alone
- Fluticasone with azelastine more effective than either agent alone
- Recommended to begin with single agent and use combination for severe or persistent symptoms

PAEDIATRIC ALLERGIC RHINITIS

- 4 years and older should be treated as for adults
- Children (>4) with AR and Asthma can be treated with combination of newer generation topical and inhaled corticosteroids with low risk of complications
- Diagnosis in smaller children is difficult as can have up to 6 to 8 colds per year
- Small children – oral antihistamines, saline sprays and corticosteroids if symptoms severe

AR RHINITIS IN PREGNANCY

- Nasal Saline
- Nasal corticosteroids – all Category C except Budesonide which was recently reassigned B – nasal steroid of choice
- Antihistamines – chlorpheniramine, loratadine and cetirizine are B
- Oral steroids - C
- Decongestants - C

Immunotherapy

- Rise in IgG “blocking” antibodies
- Reserved for patients who find it difficult to avoid allergens but do not respond adequately to pharmacologic therapy
- Children > 7 years old
Summary

• Allergic rhinitis is common, often persistent, but often overlooked
• Diagnosis is relatively straightforward if the right questions are asked
• Mainstays of treatment are allergen avoidance, oral antihistamines and intranasal corticosteroids
• Strong link with asthma

<table>
<thead>
<tr>
<th>Oral (H1) antihistamines</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Non-sedating</th>
<th>Sedating</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 6 months</td>
<td>Desloratidine</td>
<td>Trimeprazine</td>
</tr>
<tr>
<td>&gt; 1 year</td>
<td>Desloratidine</td>
<td>Hydroxyzine, Chlorphenamine</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>Cetirizine (SAR only)</td>
<td>Promethazine, Ketotifen</td>
</tr>
<tr>
<td>&gt; 6 years</td>
<td>Fexofenadine (SAR only)</td>
<td>Cetirizine</td>
</tr>
</tbody>
</table>

Oral antihistamines

• Effect mainly on itch, sneeze and rhinorrhoea, less on congestion
• Effects on other sites eg eyes, palate
• Acts within 2-4 hours
• Sedation, otherwise few adverse events
• Also available topically, azelastine, which has quick onset of action, but local irritation and taste disturbance a problem

Nasal corticosteroids

• Acts on all symptoms of AR
• Often improves eye symptoms
• Onset of action within 6-8h, maximal effect may not be seen for 2 weeks
• Once or twice daily dosing
• Systemic absorption least for mometasone and fluticasone with reassuring safety data
• Local irritation (worse with alcohol containing preparations), sore throat and epistaxis affect about 10%

Oral antileukotrienes

• Not as effective as intranasal CS and antihistamines
• To be considered for second/third line therapy

Other therapies

• Oral anti-leukotrienes
  – Montelukast licensed for SAR + asthma > 6 months, Zafirlukast > 12 y
• Topical cromones
  – Sodium cromoglicate (qds)
• Topical anti-cholinergics
  – Ipratropium given tds may help rhinorrhoea
• Nasal saline douches
• Intranasal decongestants
  – Short term only (useful at start of therapy), rebound symptoms
• Allergen immunotherapy
• Anti-IgE therapy
One airway, one disease?

Most patients with asthma have rhinitis

- Approximately 80% of patients with asthma have rhinitis

Leynaert et al, 2000

Allergic rhinitis is a risk factor for asthma

- Allergic rhinitis increases the risk of asthma 3-fold

Link between allergic rhinitis and asthma

- Some patients with allergic rhinitis report increased asthma symptoms during the pollen season
- Rhinitis and asthma involve a common respiratory mucosa
- Inflammation is involved in the pathogenesis of both allergic rhinitis and asthma
- Allergic reactions in the nasal mucosa can potentially worsen asthmatic inflammatory processes in the lower airways
- Allergen specific immunotherapy for rhinitis reduces development of asthma in children

How can rhinitis worsen asthma?

- Nasal blockage leads to mouth breathing and exposure to cold, dry air, and an increase in allergens in the lower respiratory tract
- Nasal challenge induces release of bone marrow eosinophils into the systemic circulation, which in turn can result in an inflammatory response within the entire respiratory tract
- Rhinitis causes bronchial hyperreactivity
- Neurogenic reflexes?
- Nitric oxide changes?

Treating allergic rhinitis cuts asthma costs

- 61% fewer hospitalisations in treated patients