

Allergic Rhinitis (AR)

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Outline

- Epidemiology
- Risk Factors
- Clinical Manifestations
- Diagnosis
- Treatment

Epidemiology

- Prevalence
 - 10-30% of kids and adults in USA
 - Increasing prevalence in industrialized areas
- Economic Burden
 - 2.5% of all clinician visits
 - 2 million lost school days per year
 - 6 million lost work days per year
 - 28 million restricted work days per year
 - Average number of annual Rx doubles that of pts w/o allergic rhinitis

Risk Factors

- Endogenous
 - Family history of atopy
 - Male sex
 - Firstborn status
 - Serum IgE >100 IU/mL before age 6
 - Presence of allergen-specific IgE
- Exogenous
 - Birth during pollen season
 - Early use of antibiotics
 - Maternal smoking exposure in 1st year of life
 - Exposure to indoor allergens, such as dust mite allergen

Each of these factors is associated with a positive likelihood ratio of 3 to 5 for the diagnosis of AR

Clinical Manifestations

- Signs and Symptoms:
 - Paroxysms of sneezing, rhinorrhea, and nasal obstruction and itching
 - Postnasal drip, cough, irritability, and fatigue also common
 - Those with AC also report b/l itching, tearing, and/or burning of eyes
- Young children:
 - Typically don't blow their noses
 - Snort, sniff, cough, and clear throats
 - Scratch palate w/ tongue producing clicking noise

Patterns of Symptoms

- Intermittent:
 - <4 days/week or for <4 weeks
- Persistent:
 - >4 days/week and for >4 weeks
- Mild: none of symptoms listed under "moderate-severe" below
- Moderate-severe: one or more of the following
 - Sleep disturbance
 - Impairment of school or work performance
 - Impairment of daily activities, leisure, and/or sport activities
 - Troublesome symptoms

Diagnosis:

- Can be made on clinical grounds based on presence of:
 - Characteristic symptoms
 - Suggestive clinical history (incl presence of risk factors)
 - Allergy skin testing confirms patient is sensitized to aeroallergens
 - Imaging not usually done
 - Positive response to either topical nasal glucocorticoids or topical antihistamines is not sufficient as also tx for nonallergic rhinitis

Physical Findings

- “Allergic shiners:” infraorbital edema and darkening d/t venodilation
- Dennie-Morgan lines: accentuated lines or folds below lower eyelids
- “Allergic salute:” transverse nasal crease caused by repeated rubbing and pushing tip of nose up w/ hand
- “Allergic facies:” highly arched palate, open mouth d/t mouth breathing and dental malocclusion
- Nasal mucosa have pale bluish hue or pallor along w/ turbinate edema
- Clear rhinorrhea

- “Cobblestoning:” hyperplastic lymphoid tissue lining posterior pharynx
- TMs may retract or serous fluid may accumulate behind TM

Lab Findings

- Routine lab usually normal
- Neither peripheral blood eosinophil count nor total serum IgE is sensitive enough to help diagnose AR

Treatment

- Children < 2 years of age:
 - Uncommon in this age group as requires repeated exposure to inhaled allergens
 - If other conditions ruled out (such as adenoidal hypertrophy or chronic rhinosinusitis), may consider:
 - Cromolyn sodium nasal spray (1-2 sprays 3-4 x/day): few side effects but not as effective as steroids and inconvenient dosing
 - 2nd generation antihistamines (cetirizine, loratadine, and fexofenadine): cetirizine and fexofenadine are approved for children 6 months and older
 - If not responding and symptoms severe, may use glucocorticoid (GC) nasal spray: mometasone furoate, fluticasone furoate, and triamcinolone acetonide are all approved for children age 2 years and older -- usually 1 spray in each nostril once day; may trial 2 sprays can be trialed for 2 weeks d/t concern for adrenal suppression in higher dosing
 - Avoid first generation antihistamines given risk for paradoxical agitation and may be dangerous in infants

Treatment (2)

- Older children (>2 years old): essentially same as adults and depends on severity:
 - Mild or episodic symptoms (or predictable triggers such as visit to home with pet if trigger):
 - 2nd generation oral antihistamine regularly or PRN, ideally 2-5 hours prior to exposure for **cetirizine** (6 months and older) and **fexofenadine**(2 years and older) while **loratadine**(2 years and older) peaks at 8 hours
 - Antihistamine nasal spray: azelastine (5 years or older) or olopatadine (12 years or old)
 - GC nasal spray regularly or PRN:
 - For predictable exposure, initiate tx 2 days before, during, and 2 days after exposure
 - Mometasone, fluticasone, and triamcinolone (all approved for 2 years and older)
 - Cromolyn nasal spray, regularly or PRN:
 - Ideally 30 minutes prior to exposure helpful for brief exposures ie minutes to hours
 - For prolonged exposure, recommended to begin 4-7 days in advance
 - Excellent safety profile

Each of these therapies is most effective when taken regularly, although PRN use may be sufficient for very mild symptoms

Treatment (3)

- Persistent or moderate-to-severe symptoms: GC nasal sprays are the most effective pharmacologic therapy for AR and are recommended as best single therapy for this group
 - Low bioavailability and once daily dosing, preferred for use in children
 - Mometasone and fluticasone furoate (2 years and older)
 - Fluticasone propionate (4 years and older)
 - Patients who fail single agent therapy, second agent may be added
 - Antihistamine nasal spray, oral antihistamines, cromolyn nasal spray, montelukast, and antihistamine/decongestant combo products
 - Combo sprays of GC + antihistamine may provide additional benefit over either alone
 - Combo of GC spray and oral antihistamine not shown to have clear advantage of GC alone
 - antihistamine/decongestant combo: better symptom relief than antihistamine alone but AEs of decongestant limit use in some patients

The most effective therapy for AR is nasal GC, but keep age of patient in mind and duration of therapy

Resources:

1. Settipane RA. Demographics and epidemiology of allergic and nonallergic rhinitis. *Allergy Asthma PRoc.* 2001;22(4):185-189
2. Meltzer EO, Blaiss MS, Derebery MJ, et al. Burden of allergic rhinitis: results from the Pediatric Allergies in America survey. *J Allergy Clin Immunol.* 2009; 124(3 Suppl): S43-S70. Doi: 10.1016/j.jaci.2009.05.013
3. Gendo K, Larson EB. Evidence-based diagnostic strategies for evaluating suspected allergic rhinitis. *Ann Intern Med.* 2004;140(4): 278-289. Doi: 10.736/0003-4819-140-4-200402170-00010
4. Wallace DV, Dykewicz MS, Bernstein DI, et al. The diagnosis and management of rhinitis: an updated practice parameter [published correction appears in *J Allergy Clin Immunol.* 2008 Dec; 122(6):1237]. *J Allergy Clin Immunol.* 2008;122(2 Suppl):S1-S84.doi:10.1016/j.jaci.2008.06.003