Managing Allergic Rhinitis
Associate Professor Rohan Ameratunga

Morbidity

- Fatigue
- Concentration
- Lethargy
- Insomnia
- Emotional well being
- Embarrassment
- Missing school/work
- Halitosis
- Difficulty studying
- Sniffing/snorting
- Blowing nose

Case presentation allergic rhinitis 1

- Mr CS 16 yrs
- Symptoms: sneezing, itchy nose, rhinorrhea, postnasal drip
- Blocked sensation, headaches and anosmia when particularly bad.
- Poor sleep, frequent waking, tired
- Perennial with a seasonal component
Case presentation allergic rhinitis 2

- Symptoms began at 5 yrs, worse each year
- Eye symptoms: red & itching, grittiness
- Uses Loratadine prn
- PMH: eczema in childhood, mild asthma
- FH: sister has asthma
- Environment: villa, old carpet, cat on bed

Case presentation allergic rhinitis 3

- Physical findings
- Allergic shiners, sneezing, swelling of the nasal mucosa
- Red eyes
- Chest: mild wheezing

Skin test results 4

- Saline  0 mm
- Histamine  5 mm
- Grass mix  12 mm
- HDM  10 mm
- Cat  1 mm
- Dog  1 mm
**Epidemiology of allergic rhinitis**

- Tecumseh MI 7.5% (M), 8.2% (F)
- Sweden 15% (M), 14% (F)
- Denmark 7%
- Overall 5-20%

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**Prevalence of allergic rhinitis by age group**

![Graph showing prevalence of allergic rhinitis by age group]

**Increase in Allergic rhinitis**

- 1955 5.1 per 100,000
- 1970 10.6 per 100,000
- 1981 19.7 per 100,000

Uk General Practice
Increase in atopy

- Hygiene (dirt) hypothesis
- Immunisations, antibiotics
- Diet
- Exercise
- Homes better insulated
- Pollution
- Pet ownership
- Occupational

Inheritance of atopy

- Neither parent atopic 10%
- One parent atopic 30%
- Both parents atopic 60%
- Both parents and one sib >80%
Response of URT to allergen
- Genetically determined IgE response
- Associated with other allergies
- Most children have an allergic trigger
- Natural history is to improve in later life

Pathogenesis

Nasal features of allergic rhinitis
- Symptoms: obstruction, rhinorrhea, sneezing, pruritus, hyposmia
- Signs: swelling, (polyps), twitching, salute

Pharyngeal features of allergic rhinitis
- Symptoms: soreness, pruritus
- Signs: postnasal drip, throat clearing, cough
**Sinus related features of allergic rhinitis**

- **Symptoms**: headache, fullness, lethargy
- **Signs**: tenderness

**Aural features of allergic rhinitis**

- **Symptoms**: pain, popping, pruritus
- **Signs**: bulging drums, fluid, hearing
- **Must be considered a cause of recurrent otitis media**

**Seasonal pattern**

- **Perennial allergic rhinitis**
- **Perennial with a seasonal component**
- **Non-allergic rhinitis**
- **Seasonal**
  - grass, weed and tree pollens
Clinical evaluation

• History: age of onset
  progress
  triggers specific
  irritant
  complications
  treatment topical
  oral
• Associated atopic conditions
• Surgery

Clinical evaluation

• Environmental hx carpeting, drapes
  lounge suite
  soft toys on bed
  pets, smokers, mould

• Work and school environment

Examination of the nose

• Nasal septum (deviation, colour, spurs, ulcers, perforations)
• Turbinates (size, swelling, colour)
• Secretions (colour)
• Sundry (polyps, cysts, foreign bodies, tumours)
Physical findings

- Exterior
  - Eczema
  - Nasal crease
- Intranasal
  - Swelling of mucosa, polyps
  - Septal deviation
  - Nasal ulceration
  - Crusting
  - Mucous discharge

Investigations

- FBC & diff
- Skin testing
- Sp IgE testing if appropriate
- Immunoglobulins
- CT sinuses

Skin testing
Skin testing

Differential diagnosis
- Non allergic rhinitis
- Viral, bacterial or fungal rhinitis/sinusitis
- Rhinitis medicamentosa
- Samter’s triad
- Foreign body
- Congential abnormality
- Immune disorder eg Wegeners
- Malignancy

Imaging
- Anatomical factors suspected
- Unilateral symptoms
- No response to medical management
- Suspected malignancy
- Pre-surgical
**Allergens**

- Indoor allergens: can be avoided
- Outdoor allergens: cannot be avoided

**Trigger factors**

- Indoor allergens: HDM, Cats, Dogs, Moulds
- Occupational factors

**Trigger factors**

- Outdoor allergens: Grass pollens, Tree pollens, Weed pollens, Moulds
Dust mites

Dust mite ecology

- Microscopic arthropods
- Feed off human scales
- Prefer high humidity and temperate climate
- Fecal pellets coated with digestive enzymes
- Allergens reside in fecal pellets
- HDM allergy is generally hay fever or asthma

Dust mite avoidance measures

- Pillow, mattress and duvet covers- most effective measure
- Wash bedding in a hot cycle
- Dehumidifier of HRV
- Dust mite sprays
- Soft toys: remove or freeze and wash
- HEPA vacuum cleaner
- Remove carpets if feasible
**Cat allergy**

- NZ has one of the highest cat ownership rates in the world
- Fel D1, mw 39 kD, dimeric, from pelts
- Synthesised in the skin
- More than 85% have IgE to Fel D1
- Large allergen, airborne
- Very “sticky”
- Lasts >2 yr after cat is removed
- High concentrations, in schools etc

**Dog allergy**

- Less common than cat allergy
- Major allergen Can F1
- Present in houses, schools etc

**Cockroach allergy**

- Major problem in the US and Africa
- Urban populations are heavily exposed
- Bla g1 (mw 30 kD) and Bla g2 (mw 36 kD)
- Strong correlation with asthma
- Role in AR is being investigated
- Probably not a major problem in NZ
Pollens

- Grasses: Rye, Cocksfoot, Timothy, Vernal
- Weeds: Plantain, Privet (irritant)
- Trees: Birch, Acacia, Pines, Olive, Plane
- Moulds: Alternaria, Aspergillus

Therapeutic options

- Allergen avoidance
- Anti-inflammatory therapy
- Immunotherapy
- Surgery
Drug treatment

- Antihistamines: oral or topical
- Cromoglycate
- Nasal steroids
- Decongestants: oral or topical
- Ipratropium
- Nasal steroids

Decongestants

- Oral or nasal
- Oral: tachyphylaxis
- Nasal: danger or rhinitis medicamentosa
- Use for 2-3 days as adjunctive therapy
- Side effects: aggravation of hypertension, glaucoma, urinary retention
Antihistamines

- May need twice daily treatment
- Larger doses may be needed
- Combinations of AH can be useful
- Combination with nasal steroids
- Some newer antihistamines can sedate
- Expense was a significant barrier for therapy
- Syrup is more expensive

Nasal steroids

- Useful for both AR and NAR
- Useful in combination eg antihistamines
- Helps reduce late phase reactions
- Adverse effects, crusting and epistaxis
- Fewer SE with aqueous preparations
- Inspect nasal mucosa every 3 months
- Adequate technique
- Will not work immediately

Nasal steroids: correct technique
Not recommended

- Yearly depot steroid injections
- Intranasal steroid injections
- Long term oral steroids

Avascular necrosis after depot steroid injections for hayfever

BMJ 2001 322:1589

Avascular necrosis after depot steroid injections for hayfever

BMJ 2001 322:1589
Immunotherapy

- Requires identification of specific allergens
- Administered in two phases
- Generally given for 3-5 years continuously
- Benefit for hay fever is well established
- Small risk of local and systemic reactions
**Non-allergic rhinitis**

* Prevalence up to 50%
* Pathogenesis not understood: vasomotor
* Aggravated by alcohol, irritants, spicy foods
* No response to allergen avoidance or to desensitization
* May respond to topical steroids, antihistamines or ipratropium

**Rhinitis medicamentosa**

* Common problem
* Occurs after 5-7 days of treatment
* Worse with topical decongestants
* Danger of septal perforation
* Treat underlying problem
* Use topical steroids or short course of oral steroids

**Occupational allergic rhinitis**

* Prevalence 5-15%
* Generally better on weekends, vacations
* Chemicals, latex, flour, animal products
### Indications for referral
- Use of topical steroids on a daily basis
- Complications from treatment
- Failure to respond to treatment
- Multiple allergies
- Allergen identification assistance required
- Advice on allergen avoidance measures

### Chronic sinusitis
- Symptoms present longer than 12 weeks in adults
- Eosinophilic inflammation or chronic infection
- Associated with abnormal sinus CT scans
- No response to oral antibiotics

### Classification of bacterial sinusitis
- Acute bacterial sinusitis- infection lasting 4 weeks but symptoms resolve completely
- Subacute bacterial sinusitis- infection lasting between 4 to 12 weeks, but resolves completely
- Chronic sinusitis- symptoms lasting more than 12 weeks
Conditions causing chronic sinusitis

- Allergic and nonallergic rhinitis
- Samter’s triad (AERD)
- Primary or secondary ciliary dyskinesia
- Cystic fibrosis - polyps
- Tumors - usually unilateral symptoms
- Immunodeficiency disorders
  - CVID, IgA deficiency etc
- Granulomatous diseases eg Wegener’s
- Fungal sinusitis - controversial

Pathogenesis of nasal obstruction

- Viral and bacterial upper respiratory infections
- Allergic and nonallergic rhinitis
- Immunodeficiency disorders
  - CVID etc
- Anatomic factors
  - Deviated septum, concha bullosa, polyps

Mechanical obstruction

- Deviated nasal septum
- Concha bullosa
- Foreign body
- Nasal polyps
- Congenital atresia
- Lymphoid hyperplasia
- Nasal structural changes found in Downs syndrome
Primary and secondary ciliary dysfunction

- Kartagener’s syndrome
- Tobacco smoke
- Viral URTIS
- Increased viscosity of mucus eg Cystic fibrosis
- Any cause of chronic sinus disease
- Drugs
  - Anticholinergics
  - Anesthetic agents
  - Benzodiazepines

Complications of chronic sinus disease

- Orbital- mechanical effects
  - Diplopia, proptosis
  - Periorbital erythema, swelling
- Bone erosions
  - Periosteal abscesses
- Brain invasion
  - Intracranial abscesses causing neurologic symptoms

Chronic sinus disease is associated with asthma

- Mechanism is not completely understood
- Failure to control upper airway inflammation leads to poor asthma control
- Post nasal drip is only one mechanism
- United airways disease ARIA
**Testing in chronic sinus disease**

- CT or MRI
  - Anatomic defects, tumors, fungi
- Skin testing or specific IgE testing
  - Inhalants
- Sinus aspiration for cultures
- Immunoglobulins
- Aspirin challenge - AERD

**Treatment of chronic sinus disease**

- Nasal steroid spray
- Decongestants - temporary
- Steam inhalation
- Nasal irrigation - Neilmed or equivalent
- Antibiotics with exacerbations
- Ad hoc course of Itraconazole - fungal sinusitis
- Surgery

**Samter’s triad**

- Nasal polyps
- Aspirin sensitivity
- Asthma
- May respond to Leukotriene antagonists or aspirin desensitisation
Case presentation Samter’s triad
(Aspirin exacerbated respiratory disease)

- Mr LW 36 yrs
- Symptoms: Blocked sensation, headaches and anosmia. Minimal sneezing.
- Poor sleep, frequent waking, tired
- Perennial

Case presentation Samter’s triad

- Asthma, frequent courses of prednisone
- Asthma worse with aspirin
- Reactions to Diclofenac also
- Skin testing negative
- CT scan pansinusitis and polyps
- Aspirin challenge not undertaken

Case presentation Samter’s triad

- Functional endoscopic sinus surgery and polypectomy
- Nasal steroids
- Low salicylate diet - temporary
- Monteleukast
- Aspirin desensitization
Indications for surgery in chronic sinus disease

• Anatomical problems eg polyps, foreign body
• Suspected malignancy
• Skeletal abnormalities eg deviated nasal septum
• Failure to respond to medical therapy
• Chronic sinus disease

Surgical procedures

• SMR
• Septoplasty
• Polypectomy
• Partial turbinectomy
• Vidian nerve section
• Rhinoplasty
• Cautery of inferior turbinates