Nasal and Laryngeal Examination

Michael Kaliner, MD
Fashionable Nose?
The End
Outline

• Nasal Anatomy
• Larynx
• Nasal Histology
• Primary Symptoms
  – Sneezing
  – Pruritus (please note spelling, not pruritis)
  – Congestion
  – Secretions
• Concepts of treatment
The Functions of the Nose

- Nasal airway
- Olfaction
- Taste
- Humidification of inspired air
- Filtration of inspired air
- Warming of inspired air
- Muco-ciliary clearance of trapped particulates
- Local host defenses
  - Antibody secretion (IgA)
  - Mucus secretion with anti-infective activities (lysozyme)
- Resonance
Nasal Septum
Inferior Turbinate
Middle Turbinate
Middle Turbinate

Middle Turbinate

Septum

Right

Middle Meatus
Olfactory Nerve
Olfactory epithelium
Normal Sinuses

Sinuses, turbinates and spaces, including the osteomeatal complex
Anatomy & physiology

RADIOGRAPHIC ANATOMY OF THE PARANASAL SINUSES

Coronal

Anterior

Frontal sinuses

Ethmoid sinus

Posterior

Sphenoid sinus

Maxillary sinus

Axial

Anterior ethmoid

Posterior ethmoid

Sphenoid sinus
Uvula ring
Eustachian Tube
Larynx

- Tongue
- Vocal cord
- Epiglottis
- Pyriform fossa
- Vestibular fold
- Trachea
- Esophagus
Laryngo-Pharyngeal Reflux
What’s Next?
# Symptoms and Triggers Associated With the Most Common Types of Rhinitis

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Triggers</th>
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<tbody>
<tr>
<td>• Seasonal allergic rhinitis</td>
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<tr>
<td>– Nasal congestion</td>
<td>– Pollen</td>
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<tr>
<td>– Watery rhinorrhea</td>
<td>– Perennial allergic rhinitis</td>
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<tr>
<td>– Repetitive sneezing</td>
<td>– Dust mites</td>
</tr>
<tr>
<td>– Pruritus- eyes, nose, throat</td>
<td>– Animal dander</td>
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<tr>
<td>– Watery eyes</td>
<td>– Mold</td>
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<tr>
<td>• Perennial allergic rhinitis</td>
<td>– Perennial nonallergic rhinitis</td>
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<tr>
<td>– Stuffiness/congestion</td>
<td>– Strong odors</td>
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<tr>
<td>– Postnasal drip</td>
<td>– Changes in temperature, humidity, barometric pressure</td>
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<tr>
<td>– Rhinorrhea</td>
<td>– Alcoholic beverages</td>
</tr>
<tr>
<td>• Perennial nonallergic rhinitis</td>
<td>– Emotional stress</td>
</tr>
<tr>
<td>– Stuffiness/congestion</td>
<td>– Air pollutants, smoke</td>
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<tr>
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“Normal” Nasal Congestion

• Nasal Cycle
  – Reciprocal obstruction of alternate nostrils
  – Occurs in 21%-80% of individuals

• Supine position
  – Increase in nasal airway resistance
  – Reduced ability of the nose to condition air
  – Lateral recumbent position may exaggerate response
Mechanism of Congestion

- Engorgement of capacitance vessels in nasal mucosa
- Inflammatory mucosal edema
- Mucus hypersecretion
A. Intact Vascular Bed

- Postcapillary Venule
- Capillaries
- Endothelium
- Basement Membrane
- Monastral Blue B Dye (300 - 500 Å)

B. Increased Vascular Permeability

- Exuded Plasma
- Monastral Blue B is Trapped in Basement Membrane
- Contracted Endothelial Cells
Rhinorrhea

• Increased glandular secretions
• Edema fluid from increased vascular permeability
The Epithelial Lining Fluid

2 layers:

- An aqueous periciliary fluid
  - Remains stationary for extended period of time
- A mucous layer that floats on top of the periciliary fluid
  - Replaced by ciliary action every 15 min
    - Saccharine time test = cilia move fluid 1 cm/min
Congestion in Rhinitis

• Increased vascular permeability
  – Mucosal edema
  – Vasodilation
  – Anatomical abnormality
Sneezing and Pruritus

• Stimulation of sensory nerves
• Trigeminal reflex
  – Bright lights
Allergic Cascade

**Degranulated Mast Cell**

- **Nerves**
- **Antigen**
- **IgE**
- **HISTAMINE**

- **Other Mediators:** Prostaglandins, Tryptase, Heparin

**Nerve Stimulation = ITCHING**
- 3-5 min

**Endothelial Gaping ✶ fluid leakage = SWELLING**

**Vasodilation = REDNESS**
- 5-10 min

**Blood Vessel**

**Blood Vessel**