

# Disorders of the Eyes, Ears, Nose, and Throat

# 4

## EYE DISORDERS

### BLEPHARITIS

- An acute or chronic inflammation of the eyelid margin, which may involve the eyelid skin and eyelashes (anterior) or the meibomian glands (posterior)

#### Etiology and demographics

- Bacterial—staphylococci
- Inflammatory—seborrhea, dermatitis, acne rosacea
- Meibomian gland dysfunction
- Common in the adult/elderly population

#### Risk factors

- History of seborrhea, acne rosacea, dermatitis disorders
- History of chronic illness
- Immunologic compromise
- Institutionalization

#### Signs and symptoms

- Burning, pruritic eyelids
- Crusting or drainage—increased with secondary bacterial infection
- Erythema of the lid margins
- Flaking, crusting, and scaling of the lid margins
- Thickening of the lid in chronic cases
- Physical exam of the cornea, sclera, and pupil normal
- No change in visual acuity
- No acute pain

#### Differential diagnosis

- Conjunctivitis
- Hordeolum
- Malignancy

#### Diagnostic studies

- None indicated

#### Treatment

- Warm, moist compresses qid for 15 minutes
- Clean lid using baby shampoo and cotton swabs
- Avoid use of contact lenses or eye cosmetics
- Antibiotics if purulent drainage or no response to conservative therapy

- Topical antistaph preparations such as erythromycin (Ilotycin) and Bacitracin
- Antibiotic therapy for 1 to 2 weeks
- Consult ophthalmology if no response to antibiotic therapy and/or conservative measures, or if pain or visual changes develop

## HORDEOLUM

- Bacterial/inflammatory disorder of the lubricating glands of the eyelids/eyelashes, which is commonly referred to as a “stye.”

### Etiology and demographics

- Staphylococcal infection
- Common among all populations

### Risk factors

- Increased risk with contact lenses and eye cosmetics
- Poor hygiene contributes to development

### Signs and symptoms

- Acute onset localized pain
- Localized inflammation
- Localized erythema
- May be fluctuant
- Conjunctiva may be injected
- Physical exam of the cornea, sclera, and pupil normal
- No change in visual acuity

### Differential diagnosis

- Trauma
- Chalazion
- Conjunctivitis
- Malignancy

### Diagnostic studies

- None indicated

### Treatment

- Warm compresses qid for 15 minutes
- Ophthalmic anti-staphylococcal preparations qid for 7 days. Options include Erythromycin (Ilotycin) and Bacitracin
- Avoid contact lenses or eye cosmetics
- Refer to ophthalmology for incision and drainage if there is: No resolution within 7 days; Increasing pain; Change in visual acuity; and/or Evidence of infectious corneal involvement.

## CHALAZION

- Chronic accumulation of granulomatous material in the upper or lower eyelids.

### Etiology and demographics

- Meibomian gland dysfunction
- Common among all populations

### Risk factors

- History of hordeolum
- History of meibomian gland dysfunction

### Signs and symptoms

- Painless
- Distinct, localized papules/nodules on inner and outer aspects of upper and lower lids
- May become so large as to distort vision
- Firm to palpation
- No erythema, edema, or other acute findings present
- Visual distortion may occur only secondary to mechanical obstruction by the chalazion

### Differential diagnosis

- Hordeolum
- Malignancy

### Diagnostic studies

- None indicated

### Treatment

- Surgical incision and curettage only curative option
- Treatment not typically necessary unless vision is distorted or patient has aesthetic concerns

## CONJUNCTIVITIS

- An acute inflammation of the palpebral and bulbar conjunctiva due to allergic, viral, or bacterial irritation. Inflammation may be bilateral or unilateral.

### Etiology and demographics

- Allergic response
- Viral—adenoviruses
- Bacterial—*Staphylococcus aureus*, *Haemophilus influenzae*, *Pseudomonas sp.*, *Moraxella sp.*, *Neisseria gonorrhoeae*
- Chlamydial infection rare but can occur
- Occurs in all populations

### Risk factors

- History of exposure
- Communal living or day care
- Exposure to allergens

### Signs and symptoms

#### *Common to all forms*

- Pruritic, “gritty” sensation in affected eye(s)
- Pain not typically present
- Blurred vision clears with blinking
- Erythema
- Injected conjunctiva

Table 4-1 Differentiation of Different Forms of Conjunctivitis

	Allergic	Viral	Bacterial
<b>Discharge</b>	Stringy	Watery	Purulent
<b>Presentation</b>	Usually bilateral	Begins as unilateral	Begins as unilateral
<b>Allergy Symptoms Present?</b>	Yes	No	No

- Gonococcal conjunctivitis, which is treated as ***a medical emergency***, presents with copious, purulent discharge and there is usually history of exposure to gonorrhea

#### **Differential diagnosis**

- Blepharitis
- Chemical irritation
- Hordeolum

#### **Diagnostic Studies**

- None typically indicated
- Suspected gonococcal conjunctivitis should be cultured

#### **Treatment**

- All forms should be treated for symptoms with warm compresses qid for 15 minutes

#### **Allergic**

- Manage with typical allergy preparations (e.g., antihistamines, leukotriene receptor antagonists, lubricating drops for comfort)

#### **Viral**

- In addition to conservative measures, may use ophthalmic antibiotics to reduce risk of secondary bacterial infection

#### **Bacterial**

- Topical anti-staphylococcal preparations, e.g., Erythromycin, Bacitracin

#### **Gonococcal**

- Treat as for gonorrhea, e.g., ceftriaxone (Rocephin), ciprofloxacin (Cipro), or azithromycin (Zithromax)
- Culture drainage
- Refer to ophthalmology

## **KERATITIS**

- A potential vision-threatening inflammation of the cornea.

#### **Etiology and demographics**

##### **Bacteria**

- *Pseudomonas aeruginosa*, *Streptococcus* sp. *Moraxella* sp.

##### **Viral**

- Herpes simplex

##### **Fungal**

- May occur following corneal injury in an agricultural setting or other environment rich in plant life

#### **Risk factors**

- Contact lens use (sleeping with lens in eye) increases risk for bacterial forms
- Conditions characterized by increased staring, e.g., psychosis
- Facial nerve palsy
- Occupations/hobbies with increased exposure to plant fungus

#### **Signs and symptoms**

- Pain
- Photophobia
- Tearing

- Sensation of foreign body
- Diplopia
- Ciliary injection
- Watery or mucoid discharge
- Hazy cornea

#### Differential diagnosis

- Foreign body
- Corneal abrasion
- Iritis

#### Diagnostic studies

- Gram stain and culture of the ulcer

#### Management

- Discontinue contact lens use
- Measures to lubricate the eye, e.g., drops, tape shut
- Should be referred to ophthalmology
- Antibiotic therapy every hour for the first 24 hours based upon culture. For Gram-positive bacteria, a first-generation cephalosporin; for Gram-negative bacteria, an aminoglycoside or fluoroquinolone

### UVEITIS

- Inflammation of the uveal tract including the iris, ciliary body, and choroids; may involve anterior or posterior chamber; may be acute or chronic.

#### Etiology and demographics

##### *Immunologic origin (HLA-B27 related disease)*

- Sacroiliitis
- Ankylosing spondylitis
- Psoriasis
- Sarcoidosis
- Syphilis

##### *Infectious origin (more common in those with immunocompromise)*

- Cytomegalovirus
- Herpes simplex and zoster
- *Candida*
- *Cryptococcus*
- Toxoplasmosis

#### Risk factors

- Immunosuppression
- HLA-B27 disease

#### Signs and symptoms

- Typically unilateral
- Pain
- Photophobia
- May be visual loss
- Anterior granulomatous types less acute
- Anterior nongranulomatous types are more acute and severe
- Posterior uveitis has noninflamed appearance

- Small pupils
- Eye may be injected and inflamed
- Corneal opacities
- Fundoscopic exam may reveal keratic precipitates (mutton fat) or macular changes (edema, lesions)

#### Differential diagnosis

- Intraocular tumors
- Retinal detachment
- CNS lymphoma

#### Diagnostic studies

- None indicated

#### Treatment

- Refer to ophthalmology
- Strategies include immunosuppression, chemotherapy, and/or antimicrobials
- Primary role for the nurse practitioner is assessment and referral

## GLAUCOMA

- A vision-threatening disease characterized by an increase in intraocular pressure. Glaucoma may be acute (< 10% all cases) or chronic (> 90% all cases).

#### Etiology and demographics

##### *Acute (angle-closure or narrow-angle)*

- Closure of a pre-existing narrow anterior chamber
- Most common in the elderly
- Asian population has small risk

##### *Chronic (open-angle or wide-angle)*

- Abnormal drainage of aqueous through trabecular meshwork
- May be linked to a genetic mutation
- More common in the African-American population
- One to two percent of total population over 40 years-old are affected

#### Risk factors

##### *Acute (angle-closure or narrow-angle)*

- History of long-standing uveitis
- Pupillary dilation

##### *Chronic (open-angle or wide-angle)*

- History of long-standing uveitis
- History of eye trauma
- Long-term steroid therapy

#### Signs and symptoms

##### *Acute (angle-closure or narrow-angle)*

- Acute, severe, unilateral eye pain
- Acute glaucoma rarely presents as painless
- Steamy, hazy cornea
- Tearing and discharge
- Blurred vision with halos
- Nausea and vomiting

- Mid-dilated, nonreactive, red pupil
- Shallow anterior chamber
- Intraocular pressure between 70–90 mm Hg

#### **Chronic (open-angle or wide-angle)**

- Painless
- Typically bilateral
- Normal pupil until very late in disease
- Gradual loss of peripheral vision
- Intraocular pressure between 40–60 mm Hg
- Will produce blindness if untreated
- Visual loss not reversible

#### **Differential diagnosis**

- Neurological disease (narrow angle)
- Eye trauma (narrow angle)

#### **Diagnostic studies**

- Tonometry for intraocular pressure (IOP) evaluation

#### **Treatment**

- Screen for diagnosis before visual loss
  - All individuals over 40 should have IOP screening every 3 to 5 years
  - Screen earlier/more often in high-risk populations, e.g., individuals with chronic illness, a history of long-term steroid use, or a first-degree family history

#### **Acute (angle-closure or narrow-angle)**

- Requires immediate lowering of pressure followed by peripheral laser iridotomy
- Acetazolamide (Diamox) 500 mg IV followed by 250 mg qid PO until pressure begins to fall
- May use osmotic diuretics if needed, e.g., mannitol (Osmitol)
- When pressure begins to fall, begin pilocarpine (Pilocar)
- Opposite eye should undergo prophylactic iridotomy

#### **Chronic (open-angle or wide-angle)**

- A variety of pharmacologic options are used topically to reduce intraocular pressure by either decreasing aqueous production or increasing outflow
- Topical beta adrenergic antagonists are most common
- Adrenergic agonists
- Carbonic anhydrase inhibitors
- Trabeculectomy when medical management not adequate

## **CATARACT**

- A progressive, painless clouding of the lens of the eye that results in localized or generalized visual loss and blindness.

#### **Etiology and demographics**

- Aging is the most common cause
- Secondary causes are much less common but include eye trauma, steroid use, systemic disease, infectious/inflammatory conditions, and radiation
- Occurs in 92% of individuals > 75 years-old
- More common in women than men

**Risk factors**

- Aging
- Tobacco use
- Excess alcohol use
- Steroid use
- Chronic illness

**Signs and symptoms**

- May be asymptomatic
- Cloudy vision
- Difficulty driving at night
- Halos around lights
- Gradual visual impairment
- Decreased/absent red reflex
- Fundoscopic exam reveals clouding of lens
- Pupil may appear white in late disease

**Differential diagnosis**

- Corneal scarring
- Lens opacities
- Tumor

**Diagnostic studies**

- None indicated

**Treatment**

- Definitive treatment is surgical removal with intraocular lens implant
- Magnifying type lenses for non-surgical candidates

**MACULAR DEGENERATION**

- An age-related progressive deterioration of central vision that may be classified as atrophic (dry) related to ischemia or exudative (wet) related to increased vessel permeability and leakage.

**Etiology and demographics**

- Cause unknown
- Occurs in 80% individuals > 75-years-old

**Risk factors**

- Aging
- History of cardiovascular disease
- Family history of macular degeneration

**Signs and symptoms**

- Patchy or blurry vision
- Distorted central visual field
- Sudden vision change or loss
- Loss of central vision evident on Amsler Grid
- Retinal drusen (pale yellow deposits)

**Differential diagnosis**

- Diabetic retinopathy
- Hypertensive retinopathy
- Histoplasmosis



**Diagnostic studies**

- None indicated

**Treatment**

- Immediate ophthalmology referral when visual loss is sudden
- No definitive treatment available
- Laser photocoagulation of soft drusen may delay/reduce visual loss
- Supportive therapy with low-vision aids

**CORNEAL ABRASION**

- An interruption in the epithelial layer of the cornea resulting in acute pain.

**Etiology and demographics**

- Traumatic event precedes pain by a few hours
- Typical trauma includes a child's fingernail, thorny protuberance, or paper edge

**Risk factors**

- Inadequate eye protection during high-risk activities

**Signs and symptoms**

- Acute onset, rapidly progressive eye pain
- Photophobia
- Watery eye
- Injected cornea
- Fundoscopic and papillary exam within normal limits

**Differential diagnosis**

- Keratitis
- Foreign body
- Corneal ulcer
- Narrow-angle glaucoma

**Diagnostic studies**

- Fluorescein staining to visualize epithelial disruption of cornea

**Treatment**

- Anesthetize the eye to examine for presence of foreign body
- Record visual acuity
- Irrigate with normal saline
- Polymyxin-bacitracin ophthalmic ointment qid for 7 days
- Pressure patching is controversial—no clear benefit in terms of accelerated healing and use may increase comfort and is appropriate in that circumstance
- Analgesia for pain
- Pain should resolve in 24–48 hours—worsening pain requires ophthalmic evaluation

**CONJUNCTIVAL OR CORNEAL FOREIGN BODY**

- Any substance that lodges in the conjunctival sac or on the cornea that produces pain or discomfort.

**Etiology and demographics**

- Accidental introduction of any foreign body, e.g., dust, pollen, sand, or wood splinter
- Increased risk in high winds, motorcycling, or other wind-generating sports without eye protection

**Risk factors**

- Inadequate eye protection during high-risk activities

**Signs and symptoms**

- Sensation of “something in eye” or “gritty eye”
- Tearing
- Injection
- Lid erythema
- Examination with oblique illumination may reveal foreign body

**Differential diagnosis**

- Corneal abrasion
- Keratitis
- Conjunctivitis

**Diagnostic studies**

- Document baseline visual acuity in the event of complications
- Sterile fluorescein examination to visualize foreign body

**Treatment**

- Obtain baseline visual acuity
- Anesthetize the affected eye
- Evert both lids and lift foreign body out with sterile cotton applicator or irrigation
- Apply polymyxin-bacitracin ophthalmic ointment
- Steel foreign bodies require excision of dust ring
- Reexamine in 24 hours—if white necrosis or exudates is visible at the site, refer to ophthalmology
- Patching controversial but generally indicated for larger foreign bodies

**OCULAR CHEMICAL BURN**

- Alkali or acidic injury to the cornea, conjunctiva, lid, and surrounding structures.

**Etiology and demographics**

- Accidental or occupational exposure to irritating agents, e.g., ammonia, lye, potassium hydroxide (KOH), lime, sulfuric acid, hydrochloric acid (HCl)

**Risk factors**

- Using chemicals without protective eyewear

**Signs and symptoms**

- Patient can identify exposure in recent history
- Symptoms variable
- Any degree of pain, photophobia, reduced vision, halos
- In mild to moderate burns—hyperemia, conjunctival chemosis, lid edema
- In severe burns—white eye secondary to ischemia, chemosis

**Differential diagnosis**

- None—diagnosis is apparent based upon history
- Important to identify specific agent

**Diagnostic studies**

- None indicated

**Treatment**

- Copious irrigation with normal saline solution (NSS)
- Litmus paper test—when pH 6–8, discontinue irrigation
- Evert lids and debride residual with antibiotic ointment on a cotton tipped applicator—include fornices

- Cycloplegic to relieve discomfort
- Broad-spectrum antibiotics
- Refer for IOP monitoring—pressure may rise due to edema around trabecular meshwork

## EAR DISORDERS

### HEARING LOSS

- Diminished hearing due to either mechanical obstruction of sound transmission, neurological impairment, or both. Presbycusis, a high-frequency hearing loss, is considered a nonpathologic, normal function of aging. Other hearing deficits are due to an abnormal mechanical or neurological process.

#### Etiology and demographics

##### *Conductive hearing loss*

- Outer and middle ear abnormalities interfere with the conduction of sound waves from the opening of the external auditory canal to the hair cells of the cochlea
- Causes include cerumen, foreign body, otitis media and externa, cholesteatoma, perforated tympanic membrane, otosclerosis, tympanosclerosis

##### *Sensorineural hearing loss*

- Dysfunction of either the sensory end-organ of the cochlea or in neural transmission to the central nervous system via the eighth cranial nerve
- Causes include inner ear infection, syphilis, Meniere disease, ototoxic drugs (aminoglycoside antibiotics, salicylates), prolonged exposure to loud noise

#### Risk factors

##### *Conductive hearing loss*

- Chronic otitis media
- Anatomical tendency to cerumen impaction
- High-risk activities for perforation, e.g., physical trauma, fighting

##### *Sensorineural hearing loss*

- Diabetes mellitus
- Multiple sclerosis
- Prolonged use of aminoglycosides, salicylates

#### Signs and symptoms

##### *Conductive hearing loss*

- Loss of low tone
- Typically unilateral
- Can produce 60–70 dB deficits
- May have physical findings consistent with the cause, e.g., cerumen, otitis media
- Weber tests demonstrates lateralization to the affected ear
- In losses > 20 dB, Rinne' test demonstrates bone conduction greater than air conduction

##### *Sensorineural hearing loss*

- Loss of high frequency and pitch
- May be associated with tinnitus
- Weber test lateralizes to the unaffected ear
- Rinne' test within normal limits
- May be sense of “fullness”
- Otoscopic examination is within normal limits
- May be bilateral

Table 4-2 Characteristics of Hearing Loss

	CONDUCTIVE	SENSORINEURAL	PRESBYCUSIS
<b>Etiology</b>	<ul style="list-style-type: none"> <li>Congenital</li> <li>Impaction with wax or foreign body</li> <li>Infection</li> <li>Perforated TM</li> <li>Trauma</li> <li>Tissue overgrowth: otosclerosis, cholesteatoma</li> <li>Tumor</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged exposure to loud noises</li> <li>Ototoxic substances</li> <li>Inner ear infections</li> <li>Ménière disease</li> <li>Metabolic diseases: diabetes, myxedema, thyroid</li> <li>Infectious: syphilis, viral</li> <li>Trauma: temporal bone injury or fx</li> <li>Autoimmune dx</li> </ul>	<ul style="list-style-type: none"> <li>Aging</li> <li>Associated with smoking</li> </ul>
<b>Pattern of loss</b>	<ul style="list-style-type: none"> <li>↓ low tones, vowels</li> </ul>	<ul style="list-style-type: none"> <li>↓ high frequency pitch, consonant discrimination, and background noise</li> </ul>	<ul style="list-style-type: none"> <li>Gradual loss of all tones begins with highs then progresses to lows</li> </ul>
<b>History</b>	Unilateral loss	<ul style="list-style-type: none"> <li>Unilateral or bilateral</li> <li>Hears better in quiet room</li> <li>Associated with tinnitus and dizziness</li> </ul>	<ul style="list-style-type: none"> <li>Develop tinnitus, sensitive to loud and high pitches</li> </ul>
<b>Exam</b>	<ul style="list-style-type: none"> <li>Speaks softly</li> <li>Variable findings:               <ul style="list-style-type: none"> <li>Normal, foreign body, wax impaction, edema, obstruction, fluid behind TM; stiff, retracted or bulging TM</li> <li>Rinné: BC&gt;AC in affected ear</li> <li>Weber lateralizes to poor ear</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Speaks loudly</li> <li>Exam normal</li> <li>Rinné: AC&gt;BC bilaterally</li> <li>Weber lateralizes to the better ear</li> </ul>	<ul style="list-style-type: none"> <li>Exam normal</li> <li>Non-specific Weber or Rinné findings</li> </ul>

Adopted from Edmunds MW, Horan Nancy M and Mayhew MS. Adult Nurse Practitioner Review Manual. American Nurses Credentialing Center, 2000.

**Differential diagnosis**

- Numerous—rule out underlying cause

**Diagnostic studies**

- Audiogram
- Conductive hearing loss—level of compliance can suggest cause
- Sensorineural hearing loss—both air and bone conduction lines are below normal threshold
- Sudden sensorineural hearing loss (SSNHL) requires diagnostic evaluation for acoustic neuroma

**Treatment****Conductive hearing loss**

- Treat underlying cause when able
- Remove impaction
- Treat infection
- Surgical repair of structural abnormalities, e.g., myringoplasty, stapedectomy, surgical marsupialization of cholesteatoma

**Sensorineural hearing loss**

- Treat underlying cause when able
- Corticosteroid therapy for SSNHL

**CERUMEN IMPACTION**

- Obstruction of the external auditory canal due to accumulation of cerumen.

**Etiology and demographics**

- Anatomical deviations that inhibit natural drainage
- Manipulation with cotton swabs and other instruments
- Most common in elderly and industrial workers
- Can occur among all age groups

**Risk factors**

- Use of instruments to “clean” inside of ear canal
- Age
- Ear surgery or trauma

**Signs and symptoms**

- Sense of “fullness”
- Decreased hearing
- Pruritus
- Pain
- Dark brown, dry cerumen visible during otoscopic exam

**Differential diagnosis**

- Foreign body

**Diagnostic tests**

- None indicated

**Treatment**

- Curette extraction
- Irrigation with NSS or equal parts water (H<sub>2</sub>O) and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)
- Prior to irrigation, cerumen may be softened with baby oil or over-the-counter solvents
- Current infection or perforation is a contraindication to irrigation

## OTITIS EXTERNA

- Inflammatory process of the external auditory canal or auricle.

### Etiology and demographics

- Local infected hair follicle
- Common organisms include *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Proteus* sp
- Less common causes include fungus, virus, and eczematous conditions
- Common among the general population
- Comprises up to 10% of ENT visits

### Risk factors

- Small ear canal
- Exposure to bacteria, e.g., swimming
- Immunocompromise
- Chronic illness (general predisposition to fungal infection)

### Signs and symptoms

- Pain upon manipulation of auricle
- Auricle may appear normal or may appear erythematous, scaly, and edematous
- Purulent otorrhea
- Tympanic membrane unaffected
- Pneumatic otoscopy demonstrates normal mobility

### Differential diagnosis

- Chronic otitis media
- Foreign body
- Neoplasm
- Bullous myringitis

### Diagnostic studies

- None indicated

### Treatment

- Topical antibiotics—polymyxin for pseudomonas, neomycin for staph and proteus (Cortisporin contains combination of both)
- Removal of excess debris
- Oral antibiotics only indicated for severe or infiltrative infection
- Advise use of ear plugs while swimming

## OTITIS MEDIA

- An acute or chronic inflammatory process of the middle ear space. Chronic otitis media with effusion is also known as serous otitis media.

### Etiology and demographics

- Viruses isolated in approximately 4% of effusions
- Most common in children, but can occur at any point in the life span
- Occurs more often in males than females
- Native American, Caucasian, and Eskimo patients at increased risk

### Acute otitis media

- Usually bacterial in origin, e.g., *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*

**Chronic otitis media with effusion**

- Gram-negative bacilli more common, e.g., *Pseudomonas aeruginosa*, *Proteus* sp. *Escherichia coli*

**Risk factors**

- Anatomical predisposition, e.g., eustachian tube on a horizontal plane
- Recent upper respiratory infection
- Allergies

**Signs and symptoms****Acute otitis media**

- Decreased hearing
- Otolgia
- Fever
- Aural pressure
- Vertigo
- Nausea/vomiting
- Erythematous tympanic membrane
- Occasional bullae on tympanic membrane
- Tympanic membrane rarely bulges
- Impaired mobility with pneumatic otoscopy
- Blunted light response
- Distorted landmarks

**Chronic otitis media with effusion**

- Hearing loss
- Popping sensation when pressure altered
- Fullness in the ear
- Air bubbles behind the tympanic membrane
- Decreased membrane mobility
- Weber and Rinne' tests suggestive of conductive hearing loss

**Differential diagnosis**

- Furuncle
- Mastoiditis
- Otitis externa
- Anatomic abnormalities
- Trauma

**Diagnostic studies**

- None routinely indicated
- Tympanometry demonstrates decreased compliance
- Tympanocentesis and culture only in very specific circumstances, e.g., refractory infection, immunocompromise

**Management**

- A variety of antibiotic agents are recommended—must include broad spectrum and should be taken for 10–14 days
- Options include—
  - Amoxicillin (Amoxil), 500 mg, bid
  - Amoxicillin and clavulanate potassium (Augmentin), 500 mg, bid **\*\*Should be reserved for treatment failure**

- Cefaclor (Ceclor), 500 mg, bid, although any second- or third-generation cephalosporin is adequate
- Trimethoprim/sulfamethoxazole DS (Bactrim DS), bid
- Erythromycin, 500 mg bid
- Decongestants may relieve associated nasal symptoms
- Antihistamines only indicated if allergies present
- Otitis media with effusion (OME) does not routinely require antibiotics

## CHOLESTEATOMA

- A type of chronic otitis media in which chronic negative middle ear pressure draws the upper flaccid portion of the tympanic membrane inward. A squamous epithelium-lined sac is created, becomes filled with desquamated keratin, and becomes chronically infected. Cholesteatomas typically erode bone and, with time, may erode the inner ear or facial nerve.

### Etiology and demographics

- Prolonged auditory tube dysfunction
- History of recurrent otitis media
- May be congenital or acquired

### Risk factors

- History of perforation

### Signs and symptoms

- Conductive hearing loss
- Other signs and symptoms dependent upon the degree of bone erosion
- Epitympanic retraction pocket
- Marginal tympanic membrane perforation
- May be malodorous discharge if infection present

### Differential diagnosis

- Foreign body

### Diagnostic studies

- None indicated—refer to otologist

### Treatment

- Surgical marsupialization of the sac or complete removal

## DISORDERS OF THE NOSE AND SINUSES

### RHINITIS

- Hyperfunction and tissue inflammation of the nasal mucosa leading to congestion, clear rhinorrhea, obstruction, and sneezing. Typically categorized as allergic or nonallergic.

### Etiology and demographics

#### *Allergic (may be seasonal or perennial)*

- IgE mediated hypersensitivity to a variety of inhalant, food, or chemical irritants
- Occurs most commonly in patients with a tendency toward allergic manifestations

#### *Nonallergic*

- Chronic noninfectious causes—Hormonal, atrophic, structural, substance abuse, exercise, recumbency, foreign bodies, systemic disease



- Acute infectious causes—Viral, a self-limiting response to compensatory vasodilation of nasal vasculature and increased capillary permeability

### Risk factors

#### *Allergic*

- Exposure to irritants

#### *Nonallergic*

- Exposure to triggers noted above or to acutely infectious individuals

### Signs and symptoms

- Nasal congestion—sensation of “blocked” nares
- Profuse, clear rhinorrhea
- Sneezing
- Pale nasal turbinates
- May be other signs and symptoms of allergies in allergic forms, e.g., watery eyes, headache, dermatitis-type skin eruption, pruritus

### Differential diagnosis

- Foreign body
- Bacterial upper respiratory infection
- Nasal polyps

### Diagnostic testing

- Typically not indicated
- Nasal smears will reveal eosinophils in allergic cases
- Skin testing is the mainstay of allergic rhinitis that may require identification of cause for desensitization
- Testing as indicated for suspected underlying disease

### Treatment

#### *Allergic*

- Avoidance of irritating factors
- Inhaled nasal steroids are first-line option
- Inhaled antihistamines, e.g., azelastine (Astelin)
- Oral antihistamines for other allergy symptoms—little impact on rhinitis
- Oral or topical decongestants will relieve sensation of nasal blockage
- Leukotriene receptor antagonists newest addition to allergic rhinitis pharmacologic options

#### *Nonallergic rhinitis*

- Avoidance or removal/reduction of triggers if able
- Pharmacologic options less well defined—generally the same progression as recommended for allergic rhinitis
- Acute viral rhinitis should not be inhibited pharmacologically because it is a self-limiting compensatory mechanism responding to viral infection.

#### *Rhinitis medicamentosa (drug induced)*

- Rebound nasal congestion associated with long-term topical decongestant use that may lead to nasal atony
- Discontinue decongestants
- Nasal saline for symptom relief
- Address underlying cause of rhinitis

## EPISTAXIS

- Hemorrhage from one or both nostrils, nasopharynx, or nasal cavity.

### Etiology and demographics

- Etiology may not be identified
- Aggressive manual cleaning of the nasal passages
- Trauma
- Infection
- Foreign body
- Chemical irritants
- Neoplasm
- Arteriosclerotic disease
- Coagulopathies
- ASA or Coumadin use
- Sudden pressure changes
- Dry, friable membranes

### Risk factors

- Liver disease
- Excessive use of instruments/fingers to clean nose
- Uncontrolled hypertension
- Structural abnormalities/septal deviation
- Rhinitis or upper respiratory infection

### Signs and symptoms

- Nasal bleeding
- May be spitting blood
- Orthostasis or hypovolemia if significant volume loss (serious bleeding can deplete 40% total circulating volume)
- Assess whether unilateral or bilateral
- Assess whether venous (anterior) or arterial (posterior)
- Typically painless
- May be hypertensive

### Differential diagnosis

- Foreign body
- Acute trauma

### Diagnostic studies

- Coagulation studies as indicated
- Head x-ray or computed tomography (CT) if acute trauma—evaluate fractures before packing

### Treatment

#### *Initial measures*

- Ascertain hemodynamic stability
- Sit patient with head slightly forward
- Remove clots with suction and bayonet forceps
- Apply topical vasoconstrictive agents, e.g., 0.25% phenylephrine HCl (Neo-Synephrine)

#### *Definitive measures*

- Simple bleeds may respond to sitting forward with bridge of nose pinched for 10–15 minutes
- Other bleeds may require more extensive intervention

- Apply local anesthetic—2% lidocaine
- If anterior, cauterize with silver nitrate
- Place anterior packing if site can't be visualized
  - Use antibiotic coated 4-in. gauze strips
  - Grip edge with bayonet forceps—slide along nasal floor until end is reached
  - Continue to layer 4-in. strips until nose tightly packed
  - Sufficient tamponade pressure will cause some discomfort
- Refer to ENT when bleeding is into the throat, anterior pack cannot be placed, or posterior bleed is visualized
- Identify and correct underlying cause—coagulopathy, foreign body

## SINUSITIS

- Inflammation of the paranasal sinuses—may be infectious or allergic, acute (< 4 weeks), subacute (4 weeks to 3 months), or chronic (> 3 months).

### Etiology and demographics

- Three major factors contribute to development of sinusitis—
  - Patency of sinus ostia
  - Failure of normal mucosa to drain bacteria
  - Change in quality of sinus secretions
- When these conditions occur, causative agents can produce symptoms—Bacteria (acute sinusitis same as those for acute otitis media); Fungus in immunocompromised patients; Mucosal edema associated with pregnancy
- Affects > 30 million individuals annually

### Risk factors

- Recent bacterial upper respiratory infection
- History of allergies
- Foreign body
- Anatomic abnormalities

### Signs and symptoms

- Pain and pressure over the affected sinus
- Headache
- Discolored nasal discharge
- Postnasal drip and cough
- Dull, throbbing pain worsening when head is dependent
- Halitosis
- Anosmia
- Tenderness to palpation over the affected sinus

### Differential diagnosis

- Rhinitis
- Dental disease
- Migraine
- Increased intracranial pressure
- Tension
- Temporal arteritis
- Malignancy

### Diagnostic studies

- Transillumination of the sinuses has been abandoned due to questionable significance
- Nasal culture not routinely recommended
- Maxillary sinus aspiration for immunocompromised or refractory patients
- CT scan indicated for refractory cases or when complications suspected. This is the study of choice when a diagnostic study is indicated.
- Magnetic resonance imaging (MRI) indicated in limited circumstances to rule out:
  - Fungal disease
  - Neoplasia
  - Intracranial extension

### Management

#### Acute sinusitis

- Antibiotic therapy for 14 days
- Options include:
  - Amoxicillin (Amoxil), 250 mg, tid for 14 days
  - Trimethoprim/sulfamethoxazole DS (Bactrim DS), bid for 14 days
  - First-generation macrolide for patients with penicillin allergies
- If no response to first line agents:
  - Second-generation cephalosporin in appropriate doses
  - Amoxicillin/clavulanic acid (Augmentin), 250 mg, tid, for 14 days
  - Ciprofloxacin (Cipro), 500 mg, bid, for 14 days
- Chronic sinusitis/no response to above regimens, refer to ENT

## DISORDERS OF THE MOUTH AND THROAT

### PHARYNGITIS

- Acute inflammation of the pharynx and/or tonsils most commonly due to viral or bacterial infection. The treatment priority includes ruling out infection with group A  $\beta$ -hemolytic streptococci, which can lead to rheumatic fever if untreated.

#### Etiology and demographics

- Viral infection—accounts for 90% of infectious pharyngitis
- Bacterial infection—*Group A beta-hemolytic streptococcus*; *Neisseria gonorrhoeae*; *Chlamydia trachomatis*; *Corynebacterium haemolyticum*; *Mycoplasma*
- Other causes of throat pain (nonacute)—gastroesophageal reflux disease, cigarette smoking, allergies
- Pharyngitis accounts for 10% of all outpatient visits and 50% of antibiotic prescriptions

#### Risk factors

- Cigarette smoking
- Chronic systemic disease
- Chronic sinus infection
- Postnasal drip
- Immunosuppression
- Alcoholism

#### Exposure to bacteria

- Sharing oral implements with infected individual
- Intimate/sexual exposure to bacteria

**Exposure to virus**

- Close living conditions
- Fall/winter months
- Casual/intimate contact with infected individual

**Signs and symptoms****Viral**

- Acute onset
- Cough
- Odynophagia
- Pharyngeal erythema
- Pharyngeal/tonsillar edema
- Cervical lymphadenopathy
- Low-grade fever
- May be other symptoms of viral upper respiratory infection, e.g., rhinitis, rhinorrhea
- Pharyngeal exudates may be present, but typically not as pronounced as in bacterial infection

**Bacterial**

- Odynophagia
- Cervical lymphadenopathy
- Pharyngeal exudates
- Tonsillar exudates/edema
- Fever > 100.4°F (38°C)
- Cough and pronounced erythema not typically present

**Noninfectious causes of throat discomfort**

- Signs and symptoms vary according to underlying problem
- No other signs or symptoms may be present

**Differential diagnosis**

- Mononucleosis
- Noninfectious causes
- Malignancy

**Diagnostic studies**

- None typically indicated in viral infection
- Rapid strep test
- Throat culture
- As indicated to rule out systemic causes
- When other indicators of mononucleosis present—Monospot, Heterophil agglutination test, Anti-EBV titer

**Treatment****Viral**

- Salt water gargle (1 tsp to 8 oz water) qid
- OTC analgesics
- Avoid cigarette smoke
- Throat lozenges
- Cool mist humidifiers

**Bacterial**

- Streptococcal infection—penicillin V potassium (Pen Vee K), 500 mg, bid for 10 days
- PCN allergic streptococcal infection—erythromycin, 500 mg, bid for 10 days
- Chlamydia or mycoplasma—erythromycin, 500 mg, bid for 10 days
- Gonococcal infection—any regimen approved for the treatment of gonorrhea
- A variety of other options including cephalosporins and macrolides have been successful
- Symptomatic treatment as described under viral treatment are also indicated for symptom relief
- Peritonsillar abscesses require immediate referral for drainage

**EPIGLOTTITIS**

- Cellulitis and associated inflammation of the epi/supraglottal region of acute onset and rapid progression. ***This condition can quickly lead to airway obstruction.***

**Etiology and demographics**

- Typically bacterial—*H influenzae*; *Group A beta-hemolytic streptococcus*; *Pneumococci*; *Staphylococci*
- Viral etiologies less common
- Occurs most commonly in children, but can occur at any age

**Risk Factors**

- Recent untreated bacterial pharyngitis
- Chronic bacterial pharyngeal infection

**Signs and symptoms**

- All symptoms are of sudden onset
- Odynophagia disproportionate to physical findings
- Soft stridor
- Soft, muffled voice
- Appears acutely distressed
- Indirect laryngoscopy reveals edematous, erythematous epiglottis

**Differential diagnosis**

- Peritonsillar abscess
- Foreign body aspiration
- Angioedema
- Bacterial pharyngitis
- Diphtheria in unimmunized patients

**Diagnostic studies**

- If diagnosis is uncertain
- Lateral neck x-ray shows classic “thumb-print” sign:
  - Swollen epiglottis
  - Arytenoid prominence
  - Aryepiglottic fold
- *All diagnostic evaluation should be performed by someone equipped to intubate in the event of rapid decompensation*

**Treatment**

- Hospitalization
- Ensuring airway is primary goal of treatment
- Intubation equipment and personnel should be available during initial evaluation and treatment activities

**When airway is secured**

- Begin second-generation cephalosporin, e.g., Ceftriaxone (Ceftriaxone), 1–2 g, IV every 8 hours; Cefuroxime (Ceftin), 750–1500, mg IV every 8 hours
- Steroid to reduce airway inflammation, e.g., Dexamethasone (Decadron), 4–10 mg IV bolus followed by 4 mg, IV every 6 hours
- Rapid progression or pain indicates need to intubate

**HERPES SIMPLEX VIRUS (HSV)**

- A cutaneous viral infection of the skin or mucous membranes that, following initial infection, lies dormant in the dorsal root ganglia and may be reactivated periodically over the lifespan. It is generally believed that HSV type 1 (HSV-1) is present in 85% of the population and affects the oral region. HSV type 2 (HSV-2) is present in 25% of the population and affects the genital/anal region.

**Etiology and demographics**

- In HSV-1, activation can occur spontaneously or in response to a variety of physiologic triggers, e.g., trauma, sunlight, menses, fatigue, systemic viral or bacterial infection, immunocompromise

**Risk factors**

- Kissing an infected individual during viral shedding for HSV-1
- Medical or dental exposure
- Sexual contact during viral shedding for HSV-2

**Signs and symptoms**

- Pain may precede eruptions
- Pain or tingling of a localized area
- Grouped vesicles on an erythematous base
- Discrete groups
- Vesicles rupture and dry spontaneously
- Regional lymphadenopathy
- Vermilion border, penile shaft, labia, perianal skin, and buttocks most affected

**Differential diagnosis**

- Aphthous stomatitis
- Impetigo
- Pemphigus
- Syphilitic chancre
- Cellulitis

**Diagnostic studies**

- Direct, immunofluorescent antibody slide is most sensitive
- Tzanck smear shows multinucleated cells is least sensitive
- HSV serology to establish infection, but not diagnose acute ulcer

**Treatment**

- No treatment is required in the immunocompetent host
- Treatment may reduce discomfort and accelerate resolution of symptoms
  - Antiviral cream, e.g., penciclovir 1% (Denavir), for oral lesions every 2 hours while awake
  - Acyclovir (Zovirax) for genital lesions, 800 mg, tid or 200 mg five times daily for 7 to 10 days
  - Valacyclovir (Valtrex), 1000 mg, bid and famciclovir (Famvir), 250 mg, tid are alternatives to acyclovir

- Topical therapy not indicated for genital lesions
- Suppressive therapy for those with outbreaks > six times per year. Continue for 5–7 years.
  - Acyclovir (Zovirax), 400 mg, bid
  - Valacyclovir (Valtrex), 500 mg, qd
  - Famciclovir (Famvir), 125–250 mg, bid
- Immunosuppressed clients should always be treated and may require intravenous antiviral therapy

## APHTHOUS STOMATITIS

- A benign, painful lesion of the nonkeratinized mucosa—buccal and labial mucosa.

### Etiology and demographics

- Etiology is unclear—several are proposed
- Viral
- Bacterial
- Hormonal
- Stress
- Nutritional deficiencies—folate, iron, or B12
- Immunologic abnormalities
- Food allergies
- Occurs in all populations
- Peak onset 10–20 years of age

### Risk factors

- History of aphthous eruption

### Signs and symptoms

- Prodrome of burning/tingling
- Ulcerations ranging from < 1.0 cm (minor) to 1–3 cm (major) in diameter
- Multiple ulcers may be present
- Herpetiform type presents with 10 to 100 ulcers 1–3 mm in diameter
- White to yellow-gray center with red border ulceration
- In herpetiform, ulcers may coalesce
- May be localized lymphadenopathy

### Differential diagnosis

- Candida
- HSV-1
- Stomatitis

### Diagnostic studies

- None indicated—clinical diagnosis
- As indicated to rule out suspected causes

### Treatment

- Avoidance of irritants
- Topical steroids for symptomatic relief—Amlexanox 5% oral paste qid; Viscous lidocaine 2% gargle; Prednisone (Deltasone), 40–60 mg, qd for 1 week, taper for severe cases
- Antibiotics when bacterial infection suspected



## CASE STUDIES

**Case 1:** A 35-year-old male with complaints of irritation in the left eye.

**HPI:** C/o a sore, 'scratchy' sensation in eyes like there is something in his left eye, along with sticky matting on his eyelashes when he awakens over the past 3 days. His vision has not changed. He usually wears contact lens, switched to eyeglasses when this began. Wears protective goggles at work as a carpenter some of the time. He denies sensitivity to light, pain with eye movement. When questioned about recent illnesses, he describes a recent cold with a runny nose, scratchy throat and dry cough all of last week. His 'cold' cleared up, however the irritation of the eye then began and now is worsening. Has not tried any self treatments. He denies fever, arthralgia, rashes, g/u symptoms.

**PMH:** Is in general good health, single and sexually active with multiple partners. He denies medical or previous ophthalmic problems. Denies food, drug or environment allergies

**Medications:** Takes a daily vitamin, but takes no OTC or Rx medications.

1. What are the most likely differential diagnosis?
2. Rate differential diagnosis in order of the most likely to least likely
3. What information in the history is the most significant?
4. What physical examination components are especially useful for this presentation?
5. What is your most likely diagnosis based on information reviewed?
6. What treatment plan should the NP carry out?
7. What follow-up is required?

**Case 2:** A 19-year-old female college student with sore throat and runny nose.

**HPI:** Over past 4 days has had runny nose, sore throat, dry cough, 'feverish' [100.5°F (38.1°C)] with chills on the first day only, and overall feeling tired. Lives in the dormitory and 'everyone' seems to have had this in the past 2 weeks. Denies problems with SOB, pain in chest, with breathing or swallowing, rashes, joint pains, nausea, vomiting or diarrhea.

**PMH:** Healthy, denies any pre-existing medical problems, had tonsils and adenoids removed at age 10 due to recurrent strep throat during childhood.

**Medications:** OCP, Centrum vitamin daily

**PHYSICAL EXAM FINDINGS:** Temp 100.6°F (38.1°C), sinuses nontender, nasal mucosa erythematous with clear watery drainage. Throat erythematous on posterior wall, without exudate. Neck negative for lymphadenopathy. Chest with bronchovesicular sounds throughout, no adventitious sounds.

1. What are the most likely possibilities for a Differential Dx?
2. Rate differential diagnosis in order of most likely to least likely.
3. What information in the history is the most significant?
4. What physical examination components are especially useful for this presentation?
5. Are the findings from the history and physical adequate to make the diagnosis and what diagnostic studies will rule in or out any of the possibilities?
6. What treatment plan will you carry out?
7. What follow-up is required?

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## SUPPLEMENT TO CHAPTER 4

### MEDICATIONS FOR DISORDERS OF THE EYES, EARS, NOSE AND THROAT

#### Antiglaucoma Agents

##### *Beta Adrenergic Antagonists*

1. Timolol 0.25% and 0.5%
2. Betoptic 0.25% and 0.5%
3. Carteolol 1%
4. Betagan 0.25% and 0.5%
5. Ocupress 1%

##### *Miotics*

1. Pilocarpine (1% to 10% preparations available)
2. Carbachol
3. Physostigmine

##### *Sympathomimetics*

1. Lopidine 0.5% and 1%
2. Alphagan 0.2%
3. Dipivefrin 0.2%
4. Epinephrine 0.25% to 2%
5. Iopidine 0.5%

##### *Carbonic Anhydrase Inhibitors*

1. Azopt 1%
2. Cosopt 2%
3. Diamox (oral agent 125 mg, 250 mg)
4. Trusopt 2%

**Prostaglandin Analogs**

1. Lumigan 0.003%
2. Xalatan 0.005%
3. Travatan 0.004%
4. Rescula 0.15%

**Antihistamines**

1. Levocabastine 0.05% (topical)
2. Zaditor 0.25%
3. Opticrom 0.05%
4. \*For oral agents, see chapter 6—pulmonary disorders

**Ceruminolytics**

1. Cerumenex 10%
2. Debrox 6.5%

**Cycloplegics**

1. Atropine
2. Cyclopentolate
3. Phenylephrine

**Decongestants****Pseudoephedrine/Phenylephrine preparations**

1. Deconsal
2. Entex
3. Neo-Synephrine
4. Prolex
5. Aquatab
6. Duratuss (with expectorant)
7. Sudafed
8. Prolex

**Inhaled Nasal Steroids**

1. Flonase
2. Nasalide
3. Nasacort AQ
4. Beconase AQ
5. Nasarel
6. Nasonex
7. Rhinocort

**Leukotriene Receptor Antagonists**

\*\* See chapter 6—Pulmonary Disorders

**Lubricating Ophthalmic Drops**

1. Muro 128
2. Lacrilube
3. Hypotears
4. Genteal mild
5. Duratears naturale
6. Bion tears

**Topical Antibiotics (ophthalmic)*****Anti-staphylococcal***

1. Bacitracin 500 u/g
2. Erythromycin 0.5% ointment

***Broad Spectrum***

1. Chloramphenicol 0.5%, 1%
2. Gentamicin 0.3%
3. Norfloxacin 0.3%
4. Polymyxin B sulfate
5. Tobramycin 0.3%
6. Sulfacetamide sodium 10%
7. Quixin 0.5%
8. Vigamox 0.5%
9. Zymar 0.3%
10. Ocuflax 0.3%
11. Neosporin

**Topical Antibiotics (Otic)**

1. Cipro HC otic 1mg/mL
2. Cortane-B aqueous
3. Cortisporin-TC otic
4. Floxin otic 0.3%
5. Zoto-HC