Pediatric Assessment: Recognizing Common and Emergent Problems in the School Aged Child

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Objectives

1. Identify signs and symptoms of eye, ear, nose, and throat illnesses of the school-aged child.
2. Recognize common and life-threatening rashes and skin lesions.
3. Evaluate acute and chronic abdominal complaints.
4. Understand possible causes and treatment of chest pain in the child and adolescent.
Eye Disorders

- Conjunctivitis
- Hordeolums and Chalazions
- Corneal Abrasion
- Foreign Body
- Ocular Trauma
- Periorbital Cellulitis
- Bell's Palsy
Viral Conjunctivitis

- Usually develops during or after URI
- Leading cause in children—highly contagious
- Conjunctival hyperemia, edema, watery discharge—vision unaffected
- Treatment with topical antibiotic shortens course and prevents bacterial super-infect.
Viral Conjunctivitis
Bacterial Conjunctivitis

- Acute onset ocular irritation and tearing
- Develops in one eye, then spreads to the other within 48 hours with mucopurulent/purulent discharge
- Eyelids edematous with matting of eyelids upon awakening
- Diffuse hyperemia of bulbar and tarsal conjunctiva
- Treated with broad spectrum topical antibiotic for 7-10 days
Bacterial Conjunctivitis
Hyperacute Bacterial Conjunctivitis

- Severe, rapidly progressing, sight threatening
- Most often affecting sexually active young adults
- Transmitted from genitals to hands, then eyes
- Abrupt onset of copious, yellow-green purulent discharge; bilateral, lid edema, erythema, and chemosis
- Because of rapid onset, progression, and severity treatment often sought before spread to both eyes
- Immediate referral to ophthalmologist for aggressive treatment to prevent complications (topical and systemic antibiotics)
Hyperacute Bacterial Conjunctivitis
Allergic Conjunctivitis

- Seasonal- (grass, tree, and ragweed) itchy, watery eyes; often with rhinitis or allergic pharyngitis, mild lid edema, papillary edema, and bulbar conjunctival hyperemia

- Perennial-(animal dander, mold, and dust mites) itchy, burning, tearing in normal appearing eyes
Allergic Conjunctivitis
Hordeolums

- Etiology: Staph. aureus
- Internal: painful, large, erythematous, tender mound on one eyelid, with mild conjunctival hyperemia; usu. without pustule
- External: smaller, painful and tender eyelid with superficial pustule and mild conjunctival hyperemia
- Treatment: warm compresses/ may need antibiotic ointment
Chalazion

- Etiology: Granulomatous inflammation
- Hard mass in upper or lower lid
- Not red or pustular
- Chronic appearance
- Treatment: most subside without treatment
- Surgical intervention, if vision distorted
FIGURE 12-1 External hordeolum (black arrow) and chalazion (white arrow), which developed from an internal hordeolum. (Courtesy of Richard P. Usatine, MD.)
Corneal Abrasion

- Partial or complete removal of a focal area of epithelium on the cornea
- Etiology: usu. due to accidental contact with object (fingernail, branches, bushes, paper, contact lens over wear)
- Pain, excessive tearing, photophobia, and decreased vision
- Examine eyes: may see uneven light reflection or cloudiness of cornea, may see scratch or foreign body. Check visual acuity. Refer to health care provider (pediatric ophthalmologist if blunt or sharp trauma)
- Patching not recommended
Corneal Abrasion
Ocular Foreign Body

- Foreign body of conjunctiva—particles become entrapped under upper lid or in cul-de-sacs (blowing dirt or sand)
- Foreign body of cornea—substances become embedded in the corneal epithelium—most due to traumatic event (metal or rusty particles)
- Symptoms: excessive tearing, photophobia, and sensation that something is in eye
- History: ask— which eye involved, how, when, and where eye injured, if has pain, or vision loss, if eye protection was used, were there witnesses to injury, contact lens use
- Check immunization status
- If corneal F.B. suspected (due to explosion, blunt or sharp trauma)—place eye shield over eye or plastic cup to prevent rubbing
- Transport to pedi opthamologist
Foreign Body

FIGURE 14-1  Wood chip is visible over the cornea on close inspection of the eye. (Courtesy of Paul D. Comeau.)
Ocular Trauma

- Hyphema - collection of blood to anterior chamber (blow from projectile object-ball, air pellet, BB, rock, or fist)
- Check extraocular movements - if orbit fractured will not be able to move eye in all directions
- Needs referral for evaluation of intraocular pressure
- Immediate surgical evaluation and repair are needed for perforation of cornea, conjunctiva, or sclera, distorted ocular architecture, exposed/distorted uveal tissue (peaked pupil)
Ocular Trauma
Periorbital Cellulitis

- Inflammation of tissues surrounding involved eye-trauma or focal infection near eye, bacteremia, or sinusitis
- Also occurs with infected lacerations, abrasions, insect stings or bites, impetigo, or a foreign body
- Most common cause Strep pneumoniae; other causes S. Aureus, Strep. Pyogenes, and H. Flu type b also causes
-Usu. unilateral (90-95%), bilateral 5%
- Clinical findings: acute onset, swelling and erythema of tissues surrounding the eye, discomfort, temp. higher than 39 C, deep red color of eyelid and purple blue with H. flu. symptoms of bacteremia or sinusitis
- Refer to health care provider—may need IM antibiotics if mild case or hospital admission for more severe cases
Periorbital Cellulitis

Figure 23–61. Periorbital cellulitis caused by spread of an adjacent facial infection. This child developed fever and erythematous, tender periorbital swelling a few days after incurring an abrasion as a result of a fall.
Bell's Palsy

- Acute, unilateral paresis of facial muscles due to inflammation and compression of 7th cranial nerve
- Viral cause believed to be HSV type 1
- Rapid onset of facial weakness, usu. no worsening past 48-72 hrs.-loss of facial expression, loss of voluntary movement of face and scalp muscles on affected side, altered ability to close one eye, numbness of face
- May have loss of taste, hypersensitivity to sound, and excessive tearing
- Question about: onset, facial pain, neurological symptoms on other areas of face and body, prior history of facial weakness, predisposing factors-infection, trauma, recent outdoor activities in wooded areas (Lyme disease)
- Refer to health care provider
Bell's Palsy

Possible symptoms of Bell's Palsy:

- Droopy eyelid, dry eye, or excessive tears
- Facial paralysis, twitching, or weakness
- Drooping corner of mouth, dry mouth, impaired taste
Ear Disorders

Hearing Loss: Conductive, Sensorineural

Otitis Externa

Acute Otitis Media (AOM)

Otitis Media with Effusion (OME)

Mastoiditis

Traumatic Perforation

Foreign Body
Hearing Loss

- Conductive - sound inadequately conducted through the external or middle ear to the sensorineural apparatus of the inner ear
- Sensorineural - occurs when sound is normally carried through the external and middle ear but there is a defect within the inner ear or eighth cranial nerve-sound distortion
Causes of Conductive Hearing Loss

- Impacted cerumen
- Foreign bodies
- Otitis externa
- Benign tumors of middle ear
- Carcinoma of external auditory canal/middle ear
- Eustachian tube dysfunction
- Otitis media
- Perforation of TM
- Serous OM with effusion
- Otosclerosis
- Cholesteoma
- TB of temporal bone
Causes of Sensorineural Hearing Loss

- Hereditary or caused by maternal rubella, prematurity, traumatic delivery, other perinatal infections
- Noise exposure
- Meniere's disease
- Acoustic tumor-8th C.N.
- Infections of temporal bone with AIDS
- Syphilis, Paget's disease, Collagen diseases, Diabetes or Hypothyroidism, Bact. Meningitis, TB of temporal bone
- Basilar Migraines
- Mumps, CMV, Herpes Zoster
- MS
- Drug ototoxicities
- Trauma-skull fx. Or TM perforation
External Otitis Media

- Pinna
- Ear canal
- Auditory nerve
- Cochlea
- Ossicles (middle ear bones)
- Eardrum
Normal Right T.M.

- pars flaccida
- lateral process of malleus
- pars tensa
- manubrium of malleus
- round window
- light reflex
FIGURE 25-1 AOM in the left ear of a 15-month-old child with marked erythema and bulging of the TM. The malleus and light reflex are not visible. (Courtesy of William Clark, MD.)
FIGURE 25-4  Early AOM, stage of eustachian tube obstruction. Note the slight retraction of the TM, the more horizontal position of the malleus, and the prominence of the lateral process. (Courtesy of William Clark, MD.)
FIGURE 25-5 AOM, stage of suppuration. Note the presence of purulent exudate behind the TM, the outward bulging of the TM, prominence of the posterosuperior portion of the drum, and generalized TM edema. The white area is tympanosclerosis from a previous infection. (Courtesy of William Clark, MD.)
FIGURE 25-9 Bullous myringitis can be differentiated from OME by identifying serous-filled bulla on the surface of the TM. (Courtesy of Vladimir Zlinsky, MD in Roy F. Sullivan, PhD: Audiology Forum: Video Otoscopy, www.rcsullivan.com)
FIGURE 25-11 Traumatic perforation of the left TM. (Courtesy of William Clark, MD.)
FIGURE 25-12  (A) Left TM of a 9-year-old girl with recurrent AOM and chronic TM retractions prior to PE tube placement. The circular area near the center of the TM is owing to the TM being retracted against the promontory of the medial wall of the middle ear. (B) A fluoroplastic PE tube is placed in the anteroinferior quadrant of the TM of a 9-year-old girl with recurrent AOM. It is black because it is impregnated with silver oxide to retard the growth of bacterial microfilms. (Courtesy of William Clark, MD.)
FIGURE 25-2 OME in the right ear. Note multiple air–fluid levels in this slightly retracted, translucent, nonerythematous TM. (Courtesy of Frank Miller, MD.)
FIGURE 27-1 Foreign body (bead) in the ear canal of a 3 year-old girl with reactive tissue around it. (Courtesy of William Clark, MD.)
FIGURE 27-2 Piece of a crayon in the ear canal of a 4 year-old boy.
(Courtesy of William Clark, MD.)
FIGURE 27-4  Ant in the ear canal. (Courtesy of Vladimir Zlinsky, MD in Roy F. Sullivan, PhD: Audiology Forum: Video Otoscopy. www.rcsullivan.com)
Sinus, Nose, Mouth, Throat, and Neck Disorders

- Allergic Rhinitis
- Sinusitis
- Herpangina
- Pharyngitis
- Strep Pharyngitis
- Infectious Mononucleosis
- Cervical Lymphadenitis
- Cat Scratch Disease
Allergic Rhinitis

- Nasal congestion, sneezing, clear rhinorrhea
- Nasal itching, nasal obstruction, nasal pain, post-nasal drip, coughing, sore throat, itching and puffiness of eyes
- Signs include: pale, boggy mucosa with clear secretions, enlarged nasal turbinates, dark discoloration beneath both eyes, cobblestone appearance of conjunctiva, extra wrinkles below lower eye lids, transverse nasal crease, nasal salute, mouth breathing, short upper lip, and enlarged tonsils and adenoids
Allergic Rhinitis

Normal anatomy

Allergic rhinitis

Inflammation of the nasal mucus layer with exudate in the airway.
Boggy Inferior Turbinate in Allergic Patient
Sinusitis

- Main factor is obstruction of sinus ostia (small opening in which maxillary, frontal, ethmoid, and sphenoid sinuses all drain into nasal cavity) leads to lower levels of O2 within sinuses, decreased clearance of foreign material, and mucus stasis which creates a good environment for pathogens to grow

- Most common symptoms in children are cough and nasal discharge, usu. < 5 years do not complain of H/A and facial pain
Figure 23–54. This child with sinusitis had prominent erythematous periorbital edema and signs of purulent conjunctivitis. The redness raised concerns of periorbital cellulitis, but the area was nontender and not indurated. Presence of periorbital swelling is a helpful clue in diagnosing sinusitis in children with other suggestive signs and symptoms. (Courtesy of Ellen Wald, MD, Children’s Hospital of Pittsburgh.)
Sinusitis

Sinuses are hollow areas within the body.

Sinusitis means the sinuses are inflamed or infected.
Sinusitis

- Major predictors of bacterial sinusitis: facial pain or pressure, facial congestion or fullness, nasal obstruction, nasal purulence, hyposmia, fever (if acute sinusitis)

- Minor predictors: H/A, halitosis, fatigue, dental pain, cough, ear pain, pressure or fullness, fever (nonacute sinusitis)

- Other clinical features: sore throat, early morning periorbital swelling, toothache, malaise, increased pain with coughing, bending over, or sudden head movement, and lack of response to decongestants,

- Signs and symptoms prolonged for at least 10 days
Herpangina

Illness due to Coxsackie virus and Echo virus

Small oral vesicles or ulcers may be on tonsils, pharynx, or posterior buccal mucosa

Fever, H/A and malaise often accompany sore throat
Pharyngitis

- Inflammation of pharynx and tonsils
- Viruses most common pathogens: adeno-virus, influenza, para influenza, and respiratory syncytial virus (RSV)
- Sore throat accompanied by conjunctivitis, coryza, cough, and diarrhea
- Typically afebrile and has gradual onset of symptoms
- Non-infectious causes: allergic rhinitis, post-nasal drip, mouth breathing, oral trauma- heat, alcohol, irritants, or sharp objects
Strep Pharyngitis

- Group A Beta hemolytic streptococcus
- Transmitted via direct projection of large droplets or physical transfer of respiratory secretions
- Incubation 2-5 days
- Period of communicability during incubation and clinical illness or approximately 10 days
- After 24 hours of antibiotics no longer infectious
Strep Pharyngitis

- Sudden onset of fever >101°F, H/A, sore throat with dysphagia and without cold-type symptoms such as nasal congestion
- Erythema of tonsils and pharynx with white or yellow exudate
- Strawberry tongue thick white coat with hypertrophied red papillae
- Tender and enlarged anterior cervical lymph nodes
- Abdominal pain, vomiting, and H/A may occur
- Without proper antimicrobial treatment strep throat can lead to serious infections: suppurative adenitis, peritonsillar abscess, glomerulonephritis, or rheumatic fever
Scarlet Fever Exanthem
Scarlet Fever

- “Sandpaper” rash due to vascular response to bacterial endotoxins
- Exanthem appears 24-48 hours after infection and lasts 4-10 days
- Presents as fine, pin-head sized eruption, often confluent on erythematous base, blanches on pressure
- Rash becomes generalized, face has flushed appearance with circumoral pallor
- Petechiae may present in linear pattern along major skin folds in axilla and antecubital fossa (Pastia's signs)
- Rash fades 3-4 days after onset
- Desquamation of skin usu. occurs at end of first week and disappears by 3 weeks
Infectious Mononucleosis

- Illnesses in children and young adults caused by Epstein-Barr virus (EBV)
- Transmission by kissing, sharing eating utensils, transfusions, or transplantations
- Incubation 30-50 days
- Characterized by fatigue, pharyngitis, lymphadenopathy, splenomegaly, atypical lymphocytosis
- Prodrome: 3-5 days with fatigue, malaise, anorexia, H/A, sweats and chills, some may have photophobia and edema of eyelids and periorbital tissues
Mono (cont.)

- Acute phase: fever with wide daily fluctuations
- Pharyngitis and cervical lymph node enlargement
- Severe sore throat and dysphagia for several days
- Tonsillar and adenoidal enlargement mild to marked, mild redness to severe exudative inflammation with palatal and uvular edema
- Anterior and posterior lymph node swelling noted end of first week
- Splenomegaly develops in 50% of patients in 2nd to 3rd week, hepatomegaly in 10% of patients
Mono (cont.)

- Exantheme seen in 3-5%, increased if Ampicillin is used to treat pharyngitis
- Can have complications: pneumonia, hematologic abnormalities, neurologic disorders
- Younger children have upper airway obstruction with significant tonsillar and adenoidal enlargement—may suffer recurrent bouts of otitis media, tonsillitis and sinusitis due to persistent tonsillar and adenoidal hypertrophy
Mononucleosis causes:

- Fever
- Fatigue
- Sore throat
- Swollen lymph glands
Care for Mononucleosis

- Symptomatic therapy for uncomplicated mono
- Steroid therapy for obstructive tonsillar enlargement, massive hepatosplenomegaly, or anemias
- May have concurrent Strep (no Penicillin)
- Patient Education:

  Increased rest, modified school and extracurricular activities, increased fluid intake, immediately report any LUQ or L shoulder pain (sign of splenic rupture), good hand washing, no sharing of drinks or eating utensils, no Kissing!

  Avoid contact sports, heavy lifting, strenuous activity for one month or until resolution of splenomegaly

  Recovery: 2-4 weeks, occasionally 2-3 months
Etiology Cervical Lymphadenitis

- Enlargement of lymph glands of neck to greater than 1 cm. usu. due to: infection which causes proliferation and invasion of inflammatory cells

- Viruses-URI: respiratory syncytial virus (RSV), adenoviruses, influenza, para influenza, rhinoviruses- EBV, CMV, rubella, roseola, rubeola, varicella zoster, HSV, coxsackie, HIV

- Bacteria: Staph. aureus and GABS-40-80% of cases, Corynebacterium diptheriae, Bartonella henselae, H. influenza pseudomonas, salmonellae, shigellae, tularemia

- Mycobacterium, Spirochetes, Rickettsiae, Fungi, Protozoa

- Other: Neoplasms, JRA, Lupus, Kawasaki Disease, post-vaccination-DTaP, polio, typhoid
Cervical Lymphadenitis

- Nodes may be warm, mobile, fixed, fluctuant, solid, smooth
- Generalized lymphadenopathy: associated with leukemia, lymphoma, collagen vascular disease
- Nodes bilateral and soft (not fixed): viral infection
- Tender nodes, possibly fluctuant, not fixed: bacterial infection
- Redness and warmth: acute pyogenic process
- Fluctuant: abscess formation
Cervical Lymphadenitis

- Acute bilateral cervical lymphadenopathy - URI or strep pharyngitis
- Acute unilateral cervical lymphadenitis assoc. with fever and suppuration-most often Staph and Group A strep
- Subacute and chronic lymphadenitis- cat scratch disease, toxoplasmosis, and mycobacterial infections-nodes fluctuant and nontender
- Painless, possibly matted nodes especially in supraclavicular area more likely malignant
- Associated symptoms: URI-fever, sore throat, cough; Lymphoma, TB-fever, night sweats, weight loss; Collagen vascular disease or serum sickness-fever, fatigue, arthralgias
Lymph Nodes
Cat Scratch Disease

- Low grade fever in approx. 25%
- Bartonella Henselae rickettsial bacterium
- 90% antecedal scratch by cat or contact with kittens, also may be caused by splinters, puncture wounds, fleas, and dog scratches
- Red papule or series of papules at site of inoculation, one or more regional nodes enlarge and are mildly painful, tender, firm, and may become warm and mildly red within a few days
- Discomfort subsides in 4-6 weeks, node may remain enlarged for months
- Suppuration occurs in 1/3 of patients, may need aspiration
- Antibiotic treatment: Erythromycin, Zithromax or Biaxin
- Not caused by human to human contact, no need to destroy animal-control fleas
Cat Scratch Disease

- Local lymph nodes affected
- Original wound (papule)
- Enlarged spleen
Skin Rashes and Lesions

- Fifth Disease
- Impetigo
- Scabies
- Scarlet Fever
- Ecthyma
- Pityriasis Alba
- Meningococcal Meningitis
- Meningococcemia
- Henoch-Schonlein Purpura
- Kawasaki Syndrome
- MRSA Lesions
Fifth Disease (Erythema Infectiosum)

- **Pathogenesis:**
- Causal agent Human Parvovirus B 19
- Contact with infected respiratory secretions
- Incubation period 4-14 days
- Period of communicability: greatest before onset of rash
Clinical Presentation of Fifth Disease

- Occurs as community outbreak or sporadically in winter or early spring
- Younger children usu. susceptible--50% of 15 y/o have serologic evidence of past infection
- Rash usu. w/o fever or other symptoms, may have mild prodrome with fever, H/A, conjunctivitis, coryza, and pharyngitis- 20% asymptomatic
- Rash is characteristic-may be pruritic: first erupts as bright erythematous rash on cheeks and forehead with circumoral pallor; next maculopapular rash on trunk and extremities, gradually spreads as lacelike rash as it clears over 2-4 days
- Rash may reappear transiently up to 5 weeks when skin is exposed to sun, hot or cold temps., or when pressure applied to skin
Impetigo

- Bacterial skin infection caused by invasion of Staph aureus or Strep pyogenes or both
- Break in skin - superficial, begins as small (1-2 mm) vesicles, vesicles rupture leaving erosions covered by moist honey-colored crusts
- Multiple lesions usually present - face and extremities most common
- Treatment - topical antibiotic if only few lesions - oral and topical antibiotics for multiple lesions
- Gentle washing to remove crusts if using (Mupirocin)
- Highly contagious - may return to school after 24 hours of antibiotic treatment
Impetigo