AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
SCIENTIFIC ASSEMBLY
1999

Visual Diagnosis of Childhood Disorders

In this course, the participants will be able to enhance their visual diagnostic skills through specific slide and case presentations of children with various childhood disorders. Differential diagnosis and treatment of these orders will also be discussed.

- Describe the visual manifestations of systemic diseases in children.
- Discuss the management of these cases.

TU-67
Tuesday, October 12, 1999
8:00 AM - 9:55 AM
Room # N219
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FACULTY

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I. INTRODUCTION

A. Objectives
1. The intention is to heighten the clinician's recognition of a plethora of pediatric presentations.
2. The participant will be given an opportunity to enhance visual diagnostic skills.
3. Differential diagnoses and treatments will be detailed.
4. References will be provided.

II HEAD TO TOE ENCOUNTERS

A. Penetrated Scalp. Diagnosis_____
1. The tip of a dart has penetrated the scalp.
2. What depth do you project the penetration has occurred and how do you manage this patient?

Hannigan: Lawn Dart Injury. Pediatr Emerg Care 247, 1986.

B. Dented Skull Diagnosis_____
1. Neonatal skull is a thin undermineralized bone, composed of a single, pliable layer.
2. Skull may be molded prebirth and can even be congenitally depressed.

Hartman: Arch Pediatr Adol Med 148:425, 1994.

C. Black Dots Diagnosis_____
1. Alopecia with hair broken off at base of shaft.
2. Remnant hair leaves black dot appearance.
3. May have scaley eruption on scalp or regional lymphadenopathy that is retroauricular.

Krowchuk: Tinea Capitis Pediatr 73:625, 1983.

D. Scalp Swelling Diagnosis_____
1. Large, localized, single or multiple, inflammatory, boggy lesions of the scalp with superficial pustules.
2. Represents an exaggerated immune reaction of the host; alopecia may be permanent.
3. Treatment: oral griseofulvin 15 mg/k/day.

Hones: Kerions. J Pediatr 123:422, 1993.

E. Retroauricular Mass Diagnosis_____
1. Most common mass is immobile, nontender lymph node that is secondary to folliculitis or other scalp afflictions such as tinea capitis.
2. Within the posterior triangle an isolated mass may be the first manifestation of malignancies, such as sarcoma or lymphoma.

Gorenstein: Suppurative Lymphadenitis. Ped Inf Dis J 13:669, 1994.
Ginsberg: Non-Tuberculosis Mycobacterial Infections. Ped Inf Dis J 11:875, 1992.

F. Delayed Soft Tissue Swelling Diagnosis _____
1. Parents typically report an insignificant traumatic event to the scalp 2-9 days prior to seeking medical attention.
2. Mechanism is an tangential force from scalp trauma, hair pulling, or hair combing.

Hamlin: Subgaleal Hematoma with Hair Pulling. JAMA 204:129, 1968.

G. Bilateral Red-eyes Diagnosis_____
1. Subconjunctival hemorrhage results from increased pressure from a valsalva maneuver.
2. Concurrent racoon eyes suggests basilar skull fracture.
3. Differential: Thrombocytopenia, adenoviral conjuctivitis.
Wack: Hemorrhagic Conjunctivitis. Ped Inf Dis J 13:230, 1994.

H. Eye Discharge Diagnosis_____
1. Purulent yellowish to white, bilateral discharge often associated with periorbital edema.
2. Absence of constitutional events and lack of dissemination.
3. Treatment: Varies from inpatient with prolonged administration of intravenous penicillin to ambulatory following singular injection of Rocephin.
Fransen: Ophthalmia Neonatorum. Ped Inf Dis J 153:862, 1986.
Giggliotti: Conjunctivitis of Childhood. Pediatr Ann 22:353, 1993.

I. Palmer Papules Diagnosis_____
1. Associated with arthralgia and low grade temp.
2. Usually quiescent pelvic disease.
3. *Neisseria gonorrhea* can be recovered from pustules or joint space
Kerr: Genitourinary Gonorrhea Presenting as Arthritis. Clin Pediatr 30:388, 1991.

J. White Pupil Diagnosis_____
1. Leukocoria is typically unilateral and noted in early infancy.
2. The lesion arises from the neuronal tissue of the retina.
3. Alternate presentation particularly in those older than age 1 is strabismus.
Altaman: Cancer in Infancy. Contemp Ped 12:39, 1995.

K. Lid with Ptosis Diagnosis_____
1. Nodular, non-tender kernel-sized mass unresponsive to heat, opthalmic preps.
2. Acquired ptosis - differential includes neurofibroma, hemangioma, dermoid, metastatic neuroblastoma, or rhabdomyosarcoma.
Tanenbaum: Ptosis. Intl Peds 5:244, 1990.
MacArthur: Pediatric HENT Rhabdo. Clin Pediatr, February, 1992, page 66.

L. Periorbital Mass Diagnosis _____
1. Minimally painful progressive enlargement at the inferior and medial aspect of the periorbital region.
2. Pathogenesis is obstruction of the nasolacrimal duct with a secondary infection with common pathogens (*Streptococcus pneumoniae*, *Haemophilus influenzae*).
3. Lack of constitutional events permits ambulatory management.

M. Preauricular Erythema Diagnosis_____
1. Unilateral or occasionally bilateral, painful pre-auricular area.
2. Edema, localized to the masseter muscles.
3. Differential: parotid node, preauricular node, cat scratch, or Hodgkins.
Van Lierde: Chewer's Cheeks. Pediatr Emerg Care 1:136, 1985.

N. Preauricular Mass plus "zit" Diagnosis_____
1. Primary inoculation papule develops on the skin or mucous membranes three

to four days post-event. *Bartonella henselae* or *Afipia felis* are responsible organisms.

2. Within one to two weeks fatigue, headache, anorexia, vomiting, splenomegaly, conjunctivitis, regional lymph node involvement, and on occasion, a morbilliform eruption.
3. If disseminated disease, such as encephalitis, pneumonia with empyema then ciprofloxin, azithromycin or trimethoprim sulfa may ameliorate symptoms.

Bass. Evaluation of Azithromycin for Cat Scratch. Pediatr Imf Dis J 17:447, 1998.

O. Down and Out Ear Diagnosis_____

1. In contrast to parotitis, where ear may be pushed up and out, this affliction causes the ear to be pushed down and out.
2. Condition is usually a result of ignored otitis media or otitis mediaunresponsive to treatment.
3. Pus initially leads to redness and swelling behind the ear; there can be extension into the petrous bone causing palsy of the sixth or seventh cranial nerves.
4. Parenteral antibiotics preferred method of therapy in an attempt to prevent thrombophlebitis of the lateral sinus, brain abscess, or bacterial meningitis; operative management variable.

Myer: Mastoiditis. Pediatr Ann 20:622, 1991

P. Retroauricular Erythema Diagnosis_____

1. Ear pain that goes untreated is followed by erythematous streaking in retroauricular region.
2. Lack of constitutional events and lack of mastoid tenderness are discriminating findings.

Q. Is Something Missing? Diagnosis_____

1. Objects that penetrate the helix may cause perichondritis, keloid, or nickel dermatitis.
2. When a portion of the stud or earring has vanished it is typically embedded, not displaced.

Cowen: Embedded Earrings. Cutis 53:82, 1994.
Lazaro: Vanishing Earrings. Arch Dis Child 61:606, 1986.
Hendricks: Complications of Ear Piercing Cutis 48:386, 1991.

R. Inflamed Nasal Bridge. Complication_____

1. Pathogenesis is squeezing a pimple.
2. Venous drainage is directly to the dural sinuses.
3. Complication can be disastrous

S. Circumferential Oral Ring Diagnosis_____

1. Painless, persistent over winter season.
2. Absence of systemic illness or evidence of coagulopathy.

Shelly: Purple Chin. Cutis 60:147, 1997

T. Coated Tongue Diagnosis_____

1. Exaggerated papillae with sugar coating.
2. May be seen in absence of, concomitantly with scarletiniform eruption.
3. Differential of undenuded: Kawasakai's disease; differential of denuded: geographic tongue.
4. Frosting about the mouth (milk sign) secures diagnosis of GABHS.

U. Denuded Tongue Diagnosis_____

1. Cyclical loss of papillae that may be associated with unusual changes.

2. Some individuals have this constantly, others only with viral illness.

V. Black Tongue Diagnosis_____
1. Bismuth salicylate creates the brown to black discoloration of the tongue.

W. Bilateral Buccal Induration Diagnosis_____
1. Symmetrical, erythematous, painless lesions noted on a hot summer day.
2. High lipid solubility of infantile fat.

Day: Popsicle Panniculitis. Ped Emerg Care 8: 91, 1992.
Giusti: Chilblaines (Pernio) Arch Pediatr Adoles Med 151:1055, 1997.

X. Slapped Cheeks Diagnosis_____
1. First clinical sign from parvo B19 infection is the exanthem which may be accompanied by headache, nausea, vomiting, malaise, coryza, sore throat, and low grade fever.
2. Exanthem first is the slapped cheek plaques on the face followed by a reticulate exanthem on the trunk, extremities, and buttock.
3. Lesions are evanescent over a period of several weeks.
4. Ultimate outcome is benign.
5. Individuals may have transient aplasia of the bone marrow or develop a chronic arthropathy.

Carrascosa: Parvovirus B19 Infection Cutis 61:215, 1998.

Y. Knife in situ Diagnosis_____
1. Impalement of central palate.
2. Lateral neck shows no retropharyngeal air.

Singer: Management of Oropharyngeal Injuries. Pediatr Emerg Care 5:250, 1989.

Z. Swollen Cheek Diagnosis_____
1. Dental pain and soft tissue swelling progresses in an indolent fashion cephalad towards the eye.
2. Rarely, the patient may have evidence of systemic invasion.
3. Organisms that cause this infection are generally responsive to penicillin.

AA. Indurated Cheek Diagnosis_____
1. Hematogenous seeding of the cheek can be caused by any agent.
2. Predominantly *Haemophilus influenza*, particularly in those patients who have not received vaccination.
3. Violacious discoloration common to all organisms.
4. Systemic illness obvious and there may be meningeal invasion in 7-10% of patients.

McKinzie. Fever and Facial Swelling. Acad Emerg Med 5:347, 1998.

BB. Cystic Gingival Lesion Diagnosis_____
1. Febrile without focus of infection.
2. Boggy, cystic gingival lesion at the soft to hard palate interface.
3. Lesion becomes necrotic, then spontaneously resolves.
4. Differential: eruption cyst over canine or molar which is typically blue tinged due to blood.

Burech: Gingival Lesion. Amer J Dis Child 129:1283, 1975.
Alessandriani: Gingival Lesion. Pediatr Emerg Care 8:211, 1992.

CC. Gum Boil Diagnosis_____

1. Painful gingival cyst one to two weeks status post intraoral injury.
2. If ignored, may lead to facial fistula.

Unkel: Pediatric Facial Fistula. Pediatr Emerg Care 13:21, 1997.

DD. Submental Swelling Diagnosis_____

1. Soft tissue swelling first at the posterior border of the mandible that extends retroauricularly and superiorly up to zygoma.
2. Soft tissue swelling may maximize within several hours, although the peak is reached one to three days after onset. The swollen tissues push the earlobe up and out.
3. Swelling on face can on occasion be associated with overlying erythema. Some patients may present with presternal edema (Gellis sign).
4. Associated manifestations include myalgia, fever, headache and malaise.
5. In addition to parotid involvement, there may be sublingual gland involvement, oophoritis, orchitis, epididymitis, pancreatitis, thyroiditis, myocarditis, arthritis or hydrocephalus.
6. Differential: Suppurative parotitis, recurrent parotitis, salivary calculus, parotid tumor, such as lymphosarcoma.

Viola: Mumps meningoencephalitis. Pediatr Emerg Care 14:212, 1998.
Gellis: Mumps with Presternal Edema. Bull Johns Hopkins Hosp 75:241, 1944.

EE. Submental Mass. Diagnosis_____

1. Most commonly occurs in older individuals following dental manipulation; in infants and children may occur de novo.
2. Neck mass and edema of the supraglottic area may be responsible for airway embarrassment.

Choi: Orofacial Odontogenic Infections. Intern Med 88:392, 1978.
Gridley: Ludwig's Angina and Pneumococcal Sepsis. J Emerg Med 4:201, 1986.
Shaw: Ludwig's Angina Caused by *Haemophilus influenzae* Type b. Pediatr Inf Dis J 7:203, 1988.

FF. Sublingual Mass Diagnosis_____

1. Rapidly progressive cellulitis involving the sublingual space characterized by hyperpyrexia, pain, impaired speech, and drooling.
2. The edema may create retrusion of the tongue and potentially upper airway obstruction.
3. The process may rarely dissect inferiorly and produce suppurative mediastinitis.

GG. Jugulodigastric Mass Diagnosis_____

1. Red, tender, warm, deep to skin, negative transillumination represents either an infected first branchial cleft cyst or inflammatory lymphadenitis.
2. When a solitary mass develops and becomes fluctuant, oral antibiotic therapy may fail to reduce the course of the infection, which is generally caused by Group A **$**eta hemolytic strep or *Staphylococcus aureus*.
3. Failure to improve may also indicate unusual infectious agents, such as cat scratch, Mycobacterial strains, or actinomycosis.

Brodsky: Needle Aspiration of Neck Abscesses. Clin Pediatr February 1992, page 71.

HH. Bull Neck Diagnosis_____

1. Mental confusion, orthopnea, dysphasia, dysphonia, stridor and jugular

venous distention as a result of obstruction of venous return.
Yellin: Superior Vena Cava Syndrome. Amer J Dis Child 146:1060, 1992.

II. Midline, Hyoid Mass Diagnosis_____
1. A superficial midline swelling below the hyoid bone; painless and progressively enlarges.
2. The cyst moves upward when the tongue is protruded or during swallowing since the cyst arises from the thyroid anlage that descends from the foramen cecum at the base of the tongue.
Howard: Congenital Midline Lesions. Pediatric Annals 27:150, 1998

JJ. Lateral Neck Mass Diagnosis_____
1. This lateral cervical cyst is located anterior to the sternocleidomastoid muscle; the first branchial cleft cyst is found in the upper neck at or above the level of the hyoid, while the other clefts appear in the mid or lower neck.
2. Cysts may increase in size, growing slowly as an oval-shaped, non-tender mass.
3. The branchial cleft remnant may occur only as a sinus from which small amounts of mucous may be expressed.
4. The cyst may not be recognized until adolescence, or until such time that the cyst becomes infected.
5. Differential: Thymic cyst, malignant lymphoma, cervical neuroblastoma, cartilaginous rests, rhabdomyosarcoma, or adenoma of the thyroid.
Beard: Picture of the Month. Arch Pediatr Adolesc Med 148:211, 1994

KK. Supraclavicular Mass Diagnosis_____
1. When an isolated finding, indicative of occult tumor.
2. When associated with a regional pustule, this is pathognomonic of cat scratch disease.

LL. Vascular Lesion Diagnosis_____
1. Lesion may be superficial or in deep tissues and may be manifest at birth or not until later childhood.
2. Within the posterior triangle an isolated mass may be the first manifestation of malignancies, such as sarcoma or lymphoma.

MM. Submental Mass Diagnosis_____
1. Non-tender multiloculated mobile with positive transillumination.
2. Present in 50% of individuals at birth.
3. Diffuse lymphangiomas represent vestigial lymphatics; the tumors occur most commonly in skin, mucous membranes or muscles. They are most common encountered in the neck (hygroma coli) and in the axillae, but they may also occur in the inguinal and retroperitoneal regions.
4. Periodic fluctuations in the size of the mass are common; rapid increase in size is often associated with hemorrhage into the cystic spaces.

NN. Acute Torticollis Diagnosis_____
1. Abrupt onset of a sudden head tilting without preceeding upper respiratory tract infection, trauma.
2. Differential: Transient muscle spasm, adenitis, rotary displacement of the atlas on the axis (subluxation), retropharyngeal abscess, cervical tumor.

OO. Infantile Wryneck Diagnosis_____
1. Consequence of a hematoma of the sternocleidomastoid muscle due to

perinatal injuries (breech deliveries, difficulties in delivering of the shoulders), or the result of intrauterine stress.
2. The head is tilted towards the involved sternocleidomastoid muscle, and the face is rotated towards the opposite side.
3. A firm rubbery mass is found within the body of the muscle.
4. If uncorrected, leads to permanent migration of facial structures.

Visudhipham: Torticollis. Clin Peds 21:71, 1982.

PP. Febrile Torticollis Diagnosis_____

1. Sore throat preceeds drooling, dysphagia, toxicity, and brauny induration of the neck causing torticollis.
2. Intraorally the exam reveals laterally pharyngeal wall medially bulged.
3. The nondistensible boundaries of the infected space extend from the base of the skull to the hyoid bone, medially bounded by the supraconstrictors of the pharynx, laterally by the mandible; space is traversed by carotid artery, jugular vein, sympathetic chain, cranial nerve IX-XII.

Zitelli: Neck Masses. Ped Clin N Amer 4:813, 1981.

QQ. Breast Erythema Diagnosis_____

1. May be localized infection in adipose tissue in the first month of life. May be associated with subpectoral abscess.
2. Rarely, systemic invasion may occur including necrotizing fasciitis, myonecrosis or sepsis.

Rathore: Subpectoral Abscess. Pediatrics 87:734, 1991.

RR. Benign Appearing Halo Diagnosis_____

1. Be concerned when there is a cutaneous abscess or the presence of a violacious halo or bullae overlying a superficial cellulitis. This suggests penetration into the fascial or muscle plane.
2. Invasive management may be needed which includes surgical debridement.

SS. Smelly Belly Button Diagnosis_____

1. Discharge which may be malodorous preceeds erythema.
2. Erythema may ascend towards the liver.
3. Systemic invasion common and requires inpatient management.

Goldberg: Umbilical Inflammatory Conditions. J Emerg Med 10:151, 1992.

TT. Mass in Groin Diagnosis_____

1. Both a superficial and deep nodal chain exists.
2. Adenopathy may follow distal limb infection.
3. Frank adenitis leads to gait disturbance, abdominal complaints which may simulate appendicitis or torsed ovary.

Gorenstein: Suppurative Lymphadenitis. Ped Inf Dis J 13:669,1994.

UU. Abdominal Coin Lesion Diagnosis_____

1. The acute injury typically overshadowed by more common superficial skin, head and neck or extremity injuries.
2. With this mechanism of injury, patients present 24 hours post injury; similar events can cause delayed presentation for duodenal hematoma.

VV. Three Nuts Diagnosis_____

1. Persistent soft tissue swelling of variable size that typically increases with a

prolonged upright position.

WW. Penile Injury: Are These Abusive? Yes_____ No_____

1. Injury of distal glans penis.
2. Superficial laceration at the base of the penis.
3. Mechanism is controllable if toilet seats are kept down at all times.

Singer: Small Slam Revisited. Pediatr Emerg Care 5:298, 1989.

XX. Deep Sacral Dimple Diagnosis_____

1. The skin and nervous system are derivatives of embryonal ectoderm. Abnormalities of these structures may occur together.
2. An abnormality of vertebra, muscle, or cord, may be seen with a deep sacral dimple. The cutaneous "marker" is found in about 50% of cases and include a dimple, sinus, hairy patch, hyperpigmentation.
3. Other midline locations include occipital scalp and rarely nasal region.

Waler. Occult Spinal Dysraphism. Amer Jour Dis Child 146:835,1992

YY. Perianal Bump Diagnosis_____

1. Painless development of perianal pustular to cystic lesion.
2. Absence of constitutional manifestations.
3. Local drainage typically provides permanent relief. Recurrences should precipitate thoughts of perirectal malformation, fistula or infantile inflammatory bowel disease.

Bryk: Infantile Crohns Disease. Arch Ped Adol Med 149:198, 1995.

ZZ. Per Rectum Diagnosis_____

1. By definition is an abnormal dissent of the mucous membranes with protrusion through the anal orifice; the protruding mass varies from bright red to dark red. It may be as much as six inches in length.
2. The pathogenesis is a suddenly increased intraabdominal pressure. The condition is most common from three to five years of age.
3. Precipitating conditions may be any acute infectious diarrheal state, cystic fibrosis or juvenile polyps.
4. Treatment is reduction of the protrusion which is aided by continuous pressure of a single finger covered with a piece of toilet paper; the latter adheres to the mucous membranes permitting release of the finger.

Harris: Rectal Prolapse. Ped Inf Dis J 14:78, 1995.

AAA. Explosive into the Diaper Diagnosis_____

1. Watery, mucoid without apparent blood but positive hemoccult. Most consistent with a bacterial gastroenteritis.
2. Differential: Viral gastroenteritis, pseudomembraneous colitis, giardiasis, Hirschsprung's disease.

BBB. Malodorous Discharge Diagnosis_____

1. The presence of a discharge in a prepubital girl is suggestive of either a retained foreign body or sexual abuse.
2. Profuse malodorous discharge that causes a child to change underwear several times per day is suggestive of *Neisseria gonorrhoeae; Chlamydia trachomatis* is associated with a clear, less profuse discharge; *Gardnerella vaginalis* may be additionally seen in prepubescent females.
3. *Shigella* species and Group A **$**eta hemolytic strep may be associated with

recurrent vulvovaginitis.

O'Connor: Vulvovaginitis. Pediatr Emerg Care 1:94, 1985.
Watkins: Vulvovaginitis. Pediatr Infect Dis J 3:444, 1981.

CCC. Generalized Papules Diagnosis_____

1. Papules, scale, excoriations, vesicles or edematous papules.
2. Lesions noted on palms, soles, and scalp.
3. Linear burrows commonly seen in interdigital spaces of caretakers.
4. Differential: Atopic dermatitis, seborrhea dermatitis, contact dermatitis, psoriasis, and papular urticaria.
5. Treatment: Options include 0.5% permethrine lotion for 8-12 hours, repeat in one week; 5-10% precipitated sulphur in petrolatum nightly for three nights; crotamiton; 1% lindaine, which carries risk for seizure in the newborn.

Camassa: Neonatal Scabies. Cutis 56:211, 1995.
Peterson: Scabies. Pediatr Ann 25:97, 1996.

DDD. Shin Nodules Diagnosis_____

1. Symmetric, very tender and erythematous nodules on the extensor surfaces of the lower extremities.
2. Nodules have indistinct borders.
3. Lesions may last one to two weeks.
4. May be manifestations of underlying infections (GABHS, Tuberculosis, histoplasmosis, coccidioidomycosis), inflammatory bowel disease, collagen vascular disease and sarcoidosis.

EEE. Swollen Toes Diagnosis_____

1. Edematous, potentially hemorrhagic, lesions of digits or penis.
2. Utilize magnifying glass, and if hair, Nair.
3. Keep patient until normal venous return.
4. Differential: Raynauds, blistering distal dacytilitis.

Ezell: Entrapment Injuries. J Urol 102:788, 1969
Kanegaye: Zipper Entrapment. J Emerg Med 9:90, 1993

FFF. Caught Digit Materials Needed_____

1. How do you safely perform extraction?

GGG. Edematous Hand Diagnosis_____

1. Insidious enlargement of the dorsum of the hand may accompany recognized history of trauma such as bee envenomation.
2. Lack of constitutional events exclude infection when there has been a bee envenomation.
3. Differential diagnosis includes occult abuse or dactylitis with hemoglobinopathy.

III. DERMATOLOGIC EMPHASIS.

A. Staphylococcal Infection.

1. The pathogenisis of staph infections is in part related to intrinsic properties including toxins and enzymes.
2. Most cutaneous syndromes are benign and include bullous impetigo, folliculitis, furunculosis and rarely cellulitis.
   a. Bullous impetigo - usually starts as a small vesicle surrounded by a well

circumscribed inflammatory reaction. The bullous lesion increases in size, fills with a clear liquid and easily ruptures exposing a glistening, red, denuded skin beneath.

3. Treatment for benign clinical syndromes include local hygiene, topical antibiotics, or oral antistaphylococcal medications.
4. Metastatic disease (deep soft tissue, joint space, lymph nodes, bone, intervertebral discs, or lung) require intravenous antibiotics.
5. An erythrogenic toxin may cause clinical findings identical to those of streptococcal scarlet fever. The initial rash is indistinguishable, having an erythematous sunburn-like hue, sand paper texture and accentuation of erythema in the skin creases. There are no palatal exanthem or strawberry tongue as is seen with GABHS.
6. Individuals may have a focus of infection such as otitis media or conjunctivitis and develop systemic signs as well as generalized involvement of skin and mucous membranes. This is often referred to as a staphylococcal scalded skin syndrome. Concurrent with temperature elevation is the onset of skin tenderness.
    a. Fragile, thin-roofed bullae appear and gentle lateral pressure on the skin produces shearing and denudation of the skin (Nikolsky sign).

Mancini: Exanthems in Childhood. Pediatr Annals 27:163, 1998.

B. Streptococcal Infection.
1. A pustular skin lesion that is honey-crusted may be the solitary manifestation of a streptococcal infection. Although staphylococci may be present along with streptococci in a honey encrusted impetigenous region, treatment with penicillin effects a cure.
2. Erysipelas is a superficial, local cellulitis of skin characterized by a raised, irregular, advancing border. The border is frequently blanched in comparison with the main mass of the lesion which is hot, red and exquisitely tender.
    a. Aspiration and gram stain will provide clue to streptococcus as the causitive organism.
3. Perianal cellulitis is a classic occurrence with streptococcus.
4. Involvement of a singular pad (classically the thumb) predicts streptococcal blistering dactylitis.
5. With a strep infection, if the infecting organisms elaborates an erythrogenic toxin to which a specific antibody has not previously been made by the host, then scarlet fever may occur. This erythrogenic toxin produces a bright red, punctuate to finely papular rash which may be seen as well as felt. The rash first appears in skin creases and areas of contact and rapidly spreads to involve the trunk, extremities and face, save the perioral region. The rash peaks by 3-7 days and slowly fades, frequently leaving a very fine desquamation that flakes spontaneously, particularly interdigitally.
6. A “milk sign” may on occasion be the clue to a streptococcal infection.

Pride: Common Pediatric Dermatosis. Pediatr Annals 27:129, 1998

C. Rubeola
1. Rubeola (measles): Has a two week incubation period followed by variably length prodromal events of cough, coryza, and conjunctivitis.
2. The exanthem is a reddish pink, sandpapery macular eruption that begins on the forehead and behind the ears spreading down to the face, trunk and extremities.
3. Individual macules evolve into confluent patches and then become papular,

especially on the face.

4. Complications include otitis media, viral pneumonia, viral encephalitis, and bacterial superinfections, particularly the lung.

D. Erythema Multiforme
   1. Erythema multiforme minor is manifested by iris lesions without constitutional events.
   2. Erythema multiforme major (Stevens Johnsons syndrome) is manifested by fever, malaise, arthralgia, vomiting, diarrhea, and chest pain followed by rash. The rash is often flat topped, well demarcated, nonscaley papules and plaques. Urticaria with lighter, edematous centers may be present (iris lesions). Mucosal areas must be involved and include in descending order oral mucosa, conjunctiva, genital and rectal mucosa.
   3. Causes include medication (NSAID, sulfa, anticonvulsants), infection (mycoplasmal, herpes simplex, syphilis, t.b., Ebstein Barr, histoplasmosis, *Yersinia* sp.) and collagen vascular diseases.
   4. Treatment is modified depending upon the underlying cause. Antihistamines may ameliorate the skin and joint manifestations. Steroids are needed for treatment of colitis.

E. Kawasaki Disease
   1. Mucocutaneous lymph node syndrome is a disease of unknown origin. To meet CDC criteria, an individual must have prolonged fever as well as four of the remaining five principle factors; the illness cannot be explained by other known disease processes.
   2. The rash occurs predominantly on the trunk, perineum, and face. The rash may take several forms of which the most common consists of erythematous plaques that are irregular and partially confluent. Classically the rash does not contain petechiae or purpuric lesions, vesicles or crust. Membranous desquamation that occurs in the latter part of the second week and into the third week of the illness begins in the subungual and periungual regions of the fingers and toes. Exfoliation is minimal or absent in other anatomical sites with the exception of the perineal area. Six to ten weeks after the onset of fever, transverse grooves or furrows may develop in the nails.
   3. The major morbidity of Kawasaki disease rests with coronary artery aneurysms, rhythm disturbance or myocardial infarction.
   4. Treatment includes high dose aspirin (80-100mg/kg/day) and high dose intravenous gamma globulin (2gm/kg over 12 hours). Aggressive treatment shortens the disease duration and minimizes the incidence of coronary complications by 95%.

F. Erythema Marginatum
   1. Erythema marginatum is a transient eruption consisting of curved or linear migrating areas of erythema that form incomplete circles.
   2. The marginated lesions may move rapidly over the skin over several hours and disappear.
   3. The lesions may occur after streptococcal infections without evidence of acute rheumatic fever, but is a major criteria for acute rheumatic fever.
   4. Marginatum may be seen in 15% of cases of acute rheumatic fever.

G. Contact Dermatitis
   1. Aerosolized rhus dermatitis can simulate one of the classic erythematous

disease states of childhood.

2. The absence of fever, and cut off from clothing are clues to the diagnosis.
   Fisher: Poison Ivy. Cutis 58:22, 1996

H. Lupus Erythematous
1. Early symptoms are fever, malaise, arthritis, or arthralgia.
2. Cutaneous manifestations occur in most affected children at some time. The butterfly rash, and erythematous blush or scaley erythematous patch, involves the malar areas and usually extends over the bridge of the nose. The rash may be photosensitive, may spread to the face, scalp, neck, chest, and extremities.
3. Polyserositis (pleurisy, pericarditis, peritonitis), renal involvement and parenchymal lung disease or CNS derangement may occur.

I. Tuberous Sclerosis
1. Reddish papulonodular lesions with glistening surface.
2. Present in 90% of affected individuals by age 5 with marked proliferation in puberty.
3. Histologically represents an angiofibroma.
4. Differential: Acne, varrucae, sarcoid, SLE.
   Orlow: Neurocutaneous Syndromes. Contemp Peds, October 1995, page 59.
   Janniger: Neurocutaneous Syndrome. Cutis 51:167, 1993.

J. Gianotti Crosti
1. Acral symmetrical dermatitis that may be a clue to hepatitis B infection.
2. Rash is generally accompanied by anorexia, malaise, temp elevation and on rare occasion icterus.
   Crosti: Ulteriore alla conosceuza della acrodermatite pa pulosa infantile. G Ital Dermatol. 105:477, 1964.

K. Dermatomyositis
1. Pediatric patients are less likely to present with a cellulitis-like, diffuse facial erythema as is seen in the adults. Periorbital edema is as equally prominent.
2. Gottrons papules are seen with SLE and dermatomyositis. These scaley plaques are present over the metacarpal phalanges and proximal interphalangeal joints.
   Sung: Childhool Dermatomyositis. Pediatrics 96:391, 1997

L. Herpes Simplex
1. A patient with no previous exposure when infected with the virus experiences a primary infection characterized by painful and widespread vesiculation of the involved skin and mucous membranes; this primary infection runs an extended course of one to two weeks before spontaneously healing.
2. After having experienced the primary infection, patients develop periodic recurrent lesions in the area of the primary infection; these lesions are smaller, less painful, and shorter in duration than the primary infection.
3. Oral acyclovir in the immediate pre or post eruptive phase may effectively decrease the duration of recurrent lesions.
4. The only patients at risk for dissemination include patients with eczema (eczema herpeticum) and the immediate newborn period.
5. Infectious herpetic cervicitis or vulvitis may cause immediate or delayed

manifestations in the newborn. Neonates may present with a cluster of microvesicles on an erythematous base or even a zoster-like eruption. Those with skin lesions have a 75% risk of dissemination which is manifested by anorexia, hypothermia, and CNS derangement. Morbidity and mortality is high despite intravenous acyclovir or vidarabine.

M. Herpes Zoster
1. Varicella zoster may occur prior to recognized chickenpox or follow exposure to chickenpox.
2. Approximately one-half of the children will have no symptoms from the rash; one quarter find the lesion painful and one-quarter find the lesion pruritic.
3. The lesions are tightly clustered, small, vesiculobullous on an erythematous base in a unilateral dermatomal distribution.
4. In contrast to adults, where greater than 20 pox lesions implies dissemination, children may have multiple lesions beyond one to two dermatomes without abnormalities in cell-mediated immunity.
5. The most common locales are thorax, sacral, facial, and upper extremity.
6. Supportive care is typically all that is necessary; antivirals are unnecessary in competent children. Intravenous or ocular antivirals may be needed for trigeminal zoster.
   a. Ophthalmic branch involvement may be associated with external otitis.
   b. Involvement of the geniculate ganglion may be associated with disabling neuralgia, hearing loss or extraocular palsy.

N. Varicella Zoster
1. Most encounters occur in the populations with the least mortality.
2. The typical course involves temperature elevations in the 38-40**E**C range for a five day period.
3. Lesions first appear on the scalp, face and spread centrifugally over the body. Lesions are singular, 2-3 millimeter erythematous macules that become raised, papular and fluid filled. Vesicles are unilocular and non-umbilicated. They may occur interdigitally or sparingly on the palms or soles.
4. Patients at risk for dissemination include those less than 1, those older than 19, and possibly patients who are pregnant. Abdominal, flank or back pain may be prodromal events prior to spread to the pulmonary tree, liver or brain.
5. Dissemination should also be considered a possibility when there are either prolonged fever, coalescence of vesicles, failure of vesicular involution within five to seven days, and multiple loculated lesions on palms or soles.
6. Treatment of dissemination is intravenous acyclovir.
7. The classic appearance of varicella zoster lesions may be modified by superimposed cutaneous infection from *Staphylococcus aureus* or group A beta hemolytic strep. Lesions may also be atypical if the patient develops isolated thrombocytopenia and bleeds into each varicella lesions.

O. Afebrile Petechiae and Purpura
1. Thrombocytopenia may come from shortened platelet survival (ITP, collagen vascular, sepsis, drug induced, HUS), decreased platelet production (malignancy, bone marrow suppression), or platelet sequestration (hemangioma).
2. ITP is the most common form affecting children between 2-6 years of age.

The onset is two to six weeks following a viral illness. Children are generally asymptomatic with the exception of petechiae or ecchymoses. In contrast, patients with HUS have abdominal pain, diarrhea, pallor, purpura, altered mental status and signs of renal failure.

3. The distribution of any purpuric eruption may provide a clue to the diagnosis. Ask about Puss caterpillar exposure.
4. Linear lesions should suggest trauma which may either be self-inflicted or abusive in nature.
5. Factitial petechiae and purpura can be caused by a child sucking on a mug or sucking air out of a drinking glass.

Gardner: Puss Caterpillar Hemorrhagic Eruption. Cutis 60:125, 1997

P. Febrile Petechiae and Purpura
1. The most common cause of febrile purpura is idiopathic.
2. The second most common cause, particularly of lesions found in the head and neck region is associated with strep infection of the pharynx.
3. Echovirus and coxsackie viruses are responsible for many febrile illnesses associated with petechiae in late spring to early autumn. The echoviruses are more likely to cause truncal eruptions then hand-foot-mouth lesions of coxsackie viruses.
4. Erythema, edema of hands and feet may be followed by petechiae and purpura in a glove and sock distribution with Parovirus B19 (Puig Cutis: 54:335, 1994).
5. The febrile patient with purpura can be classified as purpura fulminans. Most people refer to the patient as having meningococcemia. However, febrile petechiae and purpura may be caused by multiple viral agents as well as bacterial agents such as *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Haemophilus influenzae.*
6. There is a rapid onset of temperature elevation, irritability, anorexia, vomiting, malaise, myalgia, chills followed by petechiae and purpura.
7. Treatment includes fluids, pressors, broad spectrum antibiotic agents.

Q. Rocky Mountain Spotted Fever
1. *Rickettsia rickettsii* is transmitted to man most commonly through the wood or dog tick. Following an incubation or approximately one week, the disease begins with headache, fever, anorexia and restlessness. A rash characteristically begins peripherally on the ankles, wrists, or lower legs then spreads to involve the entire body including the palms and soles. Early, the rash fades with pressure, but after several days it may become petechial.
2. The disease may be confused with infectious mononucleosis, rubeola, echovirus or meningococcemia. Its appearance off peak season or the absence of a tick bite may delay the diagnosis.
3. Treatment with tetracycline or chloramphenicol must be initiated prior to the development of diffuse vasculitis; if treatment is delayed, pneumonitis, myocarditis, renal involvement and CNS derangement leads to high fatality rates.

R. Anaphylactoid Purpura
1. Henoch Schonlein purpura is a vasculitis of small blood vessels that gives rise to the potential complaints of purpuric rash, abdominal pain, arthritis, and hematuria.
2. The disease is related to IgA-containing circulating immune complexes.
3. Patients exhibit any combination of clinical manifestations.
   a. Arthritis is migratory, affecting the larger joints.

b. Micro hematuria is most common with occasional azotemia.
c. Colicky abdominal pain may be associated with intussusception.
d. The rash is symmetric, most noticeable over the extensor surfaces of the legs with extension to the buttocks.
e. Scrotal purpura may simulate torsion of the testicle.

4. Signs and symptoms may wax and wane for a period of weeks to months.
5. There is no specific therapy but corticosteroids are warranted for severe abdominal pain to prevent intussusception. Corticosteroids may ameliorate severe arthritis. Corticosteroids do not beneficially affect the interstitial nephritis nor the cutaneous manifestations.
6. The differential diagnosis includes acute hemorrhagic edema of infancy. The latter has target-like, annular lesions. Edema is the clue; it involves the hands, feet, sometimes arms, legs and face. Abdominal pain, GI tract bleeding, arthritis, and nephritis are absent.

Caliskan. Acute Hemorrhagic Edema of Infancy. Arch Pediatr Adoles Med 149:1267, 1995.

S. Vitiligo
1. Patients may insidiously develop increasing depigmentation over the dorsum of the hands, axilla, face, neck, with mirrored symmetry over bony prominences.
2. When generalized, this may be a prelude to adrenal insufficiency, diabetes, thyroiditis, and hypoparathyroidism.

T. Livideo Reticularis
1. Blueish mottling of the skin on the trunk and extremities.
2. May be a physiologic response to chilling with dilatation of capillaries and small venules, however, may be a manifestation of sepsis or meningitis.

U. Methemoglobinemia
1. Poor coloration in the absence of acute cardiopulmonary disease; no change in coloration with provision of supplemental oxygen.
2. Results when the normally reduced ferrous iron in the hemoglobin molecule is oxidized to the ferric state; greater than 2% of hemoglobin circulates in the oxidized state.
3. 1% solution of methylene blue at 1-2 mg/kg is recommended for a methemoglobin levels of 30% or greater.

White: Methemoglobinemia. J Emerg Med 9:45, 1991.
Jolly: Methemoglobinemia. Pediatr Emerg Care 11:294, 1995.

V. Activated Charcoal
1. The presence of this substance in the intestinal lumen creates a gradient between the intestinal fluid and the capillary blood of the gastrointestinal mucosa favoring the passage of drug molecules from blood to intestinal fluid, where they are bound and eliminated.
2. The reluctance to willingly take this by mouth rests in large part with nursing and physician staff; pediatric patients rarely object to the gritty consistency.

IV KEY

A. Cranial penetration; B. Depressed fracture; C. *Trichophyton tonsorans*; D. Kerion; E. Retroauricular node; F. Subgaleal hematoma; G. Basilar skull fracture; H. *Neisseria gonorrhea*; I. Gonococcal arthritis dermatitis syndrome; J. Retinoblastoma; K. Rhabdomyosarcoma of the tarsal plate; L. Dacrocystitis; M. Chewer's cheek; N. Cat Scratch Disease; O. Mastoiditis; P. External otitis media; Q. Vanished stud; R. Cavernous sinus thrombosis; S. Lip licking; T. Strawberry tongue; U. Geographic tongue; V. Bismuth salicylate; W. Cold injury (popsicle panniculitis); X. Fifth disease; Y. Knife in situ; Z. Facial cellulitis secondary to dental abscess; AA Hematogenous buccal cellulitis; BB. Pneumococcemia; CC. Dental abscess; DD. Mumps parotitis; EE. Submental abscess; FF. Sublingual abscess; GG. Adenitis; HH. Superior venal caval syndrome; II. Thyroglossal duct cyst; JJ. Branchial cleft cyst; KK. Cat Scratch Disease; LL. Hemangioma; MM. Lymphangioma; NN. Haldol; OO. Hematoma of sternocleidomastoid muscle; PP. Parapharyngeal abscess; QQ. Breast abscess; RR. Necrotizing fasciitis; SS. Omphalitis; TT. Superficial adenitis; UU. Handlebar injury; VV. Hydrocele of the cord; WW. Nonabusive injury; XX. Spinal dysraphism; YY. Perianal abscess; infantile inflammatory bowel disease; ZZ. Rectal prolapse; AAA. Shigellosis; BBB. Vulvovaginitis; CCC. Scabies; DDD. Erythema nodosum; EEE. Entrapment injury; FFF. Nu gauze, WD40; GGG. Localized reaction to bee envenomation.