

Pediatric Dermatology Pathophysiology

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Acne Vulgaris

- Most common skin disease
- Affects 85% of the population between ages 12 and 25 years
- Develops at sebaceous follicles located primarily on the face and upper parts of the chest and back
- Non-inflammatory acne
 - Blackheads
 - Whiteheads
- Inflammatory acne
 - Caused by follicular wall rupture in closed comedones
 - Cystic nodules develop when inflammation is deeper
- Physiologic factors:
 - Follicular hyperkeratinization
 - Excessive sebum production
 - Colonization of *Propionibacterium acnes*
 - Inflammation secondary to the action of inflammatory products produced by *P. acnes*
 - The excessive production of sebum is related to androgenic hormones
- Clinical management:
 - Topical treatments
 - Systemic therapies
 - Surgery
 - Scarring treated with dermabrasion, lasers, and resurfacing techniques



Acne Vulgaris

- Acne conglobata
 - Highly inflammatory form of severe acne

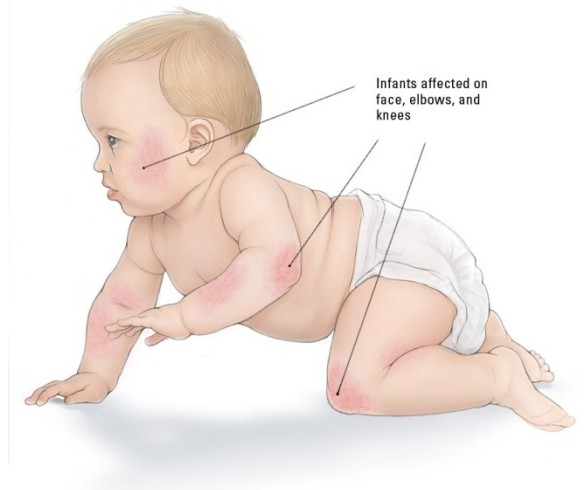
- Characterized by the formation of communication cysts and abscesses beneath the skin

Atopic Dermatitis

- Most common form of eczema in children
- The cause is unknown, but 80% of individuals demonstrate a personal or family history of asthma or allergic rhinitis
- Manifestations:
 - Increased IgE levels
 - Elevated interleukin-4
 - Positive allergen skin tests
 - Eosinophilia
- Clinical manifestations:
 - Severe pruritus, eczematoid appearance and age-dependent distribution of skin lesions
 - Young: rash to face, scalp, trunk, arms and legs
 - Older: rash to neck, antecubital and popliteal fossae, hands and feet
- Clinical management:
 - Accurate diagnosis and identification
 - Elimination of exacerbating factors
 - Reduction of emotional stresses
 - Hydration of skin
 - Anti-inflammatory agents
 - Immunomodulator and systemic therapies



Atopic Dermatitis



Diaper Dermatitis

- Group of inflammatory disorders affecting the lower abdomen, genitalia, buttocks, and upper thigh
- Diaper dermatitis is an irritant contact dermatitis
 - Inflammation encouraged by prolonged exposure to irritation by urine and feces, maceration by wet diapers, airtight plastic diaper covers, and possible association with intercurrent illness and early introduction of cereals
- Clinical manifestations:
 - Vary from mild erythema to erythematous papular lesions
- Treatment:
 - Frequent diaper changes to keep area clean and dry
 - Frequent exposure of perineal area to air
 - Topical antifungal medications
 - Short-term topical steroids
 - Barrier creams or pastes

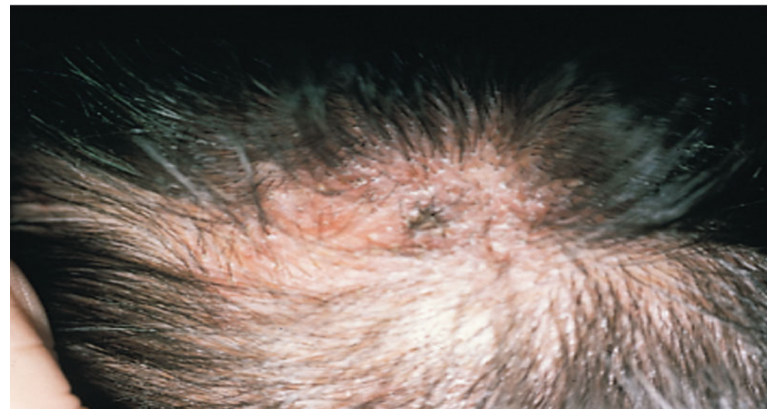
Infections of the Skin - Bacterial Infections

- Impetigo contagiosum
 - Superficial skin infection usually caused by *Staphylococcus* or group A streptococci
 - High incidence in hot, humid climates
- Bullous impetigo
- Vesicular impetigo
- Staphylococcal scalded-skin syndrome (SSSS)
 - Serious skin infection caused by exfoliative toxin producing group II staphylococci
 - The exfoliative toxin causes separation of the skin just below the granular layer of the epidermis
 - Manifestations:
 - Fever, malaise, rhinorrhea, and generalized erythema and skin tenderness, skin sloughing, and secondary infections
 - Treatment with oral and intravenous antibiotics, and aseptic technique to prevent infection



Infections of the Skin - Fungal Infections

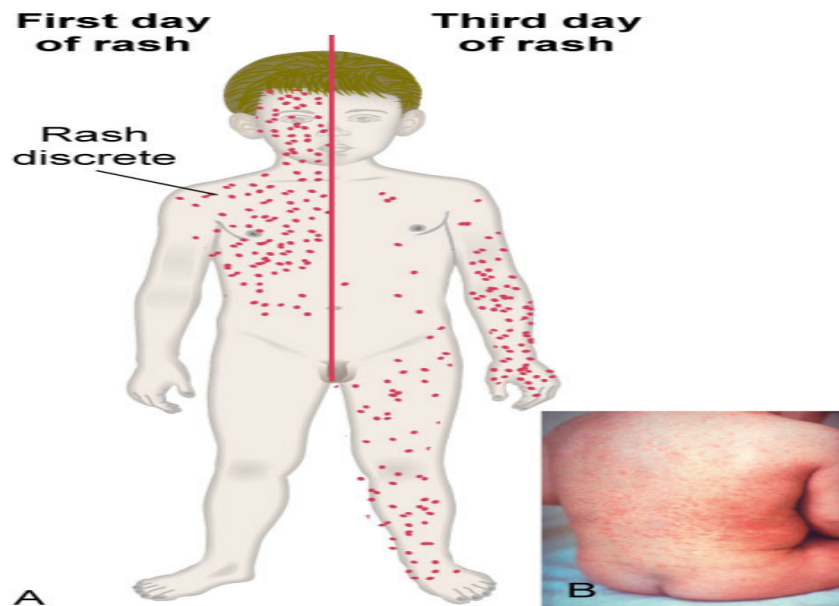
- Tinea capitis (scalp)
 - Most common fungal infection of childhood
 - Causative organisms found on cats, dogs, and rodents
 - Lesions circular and manifested by broken hairs at site, scaling and raised borders
- Tinea corporis (ringworm)
 - Kittens and puppies common source
 - Lesions erythematous, round scaling patches that spread peripherally with clearing in the center
 - Treatment with antifungals
- Thrush
 - The presence of *Candida* in the mucous membranes of the mouths of infants, and less commonly in adults
 - Characteristics:
 - White plaques or spots in the mouth that lead to shallow ulcers
 - Tongue appears to have white covering
 - Thrush can spread to the groin, buttocks, and other parts of the body
 - Treatment with oral antifungal suspension





Infections of the Skin - Viral Infections

- Molluscum contagiosum
 - Highly contagious viral infection of the skin
 - Transmission is skin to skin and contact with contaminated items
 - The virus encourages epidermal cell proliferation
 - Lesions slightly umbilicated dome-shaped papules primarily on the face, trunk, and extremities
 - No specific treatment but self-limiting and clears in 6 to 9 months
- Rubella (German measles or 3-day measles)
 - RNA virus
 - The disease is mild in most children
 - Manifestations:
 - Enlarged cervical and postauricular lymph nodes, low-grade fever, headache, sore throat, runny nose, cough
 - Faint pink to red maculopapular rash caused by virus dissemination to the skin
 - Vaccination for rubella combined with mumps and rubeola (measles) (MMR)

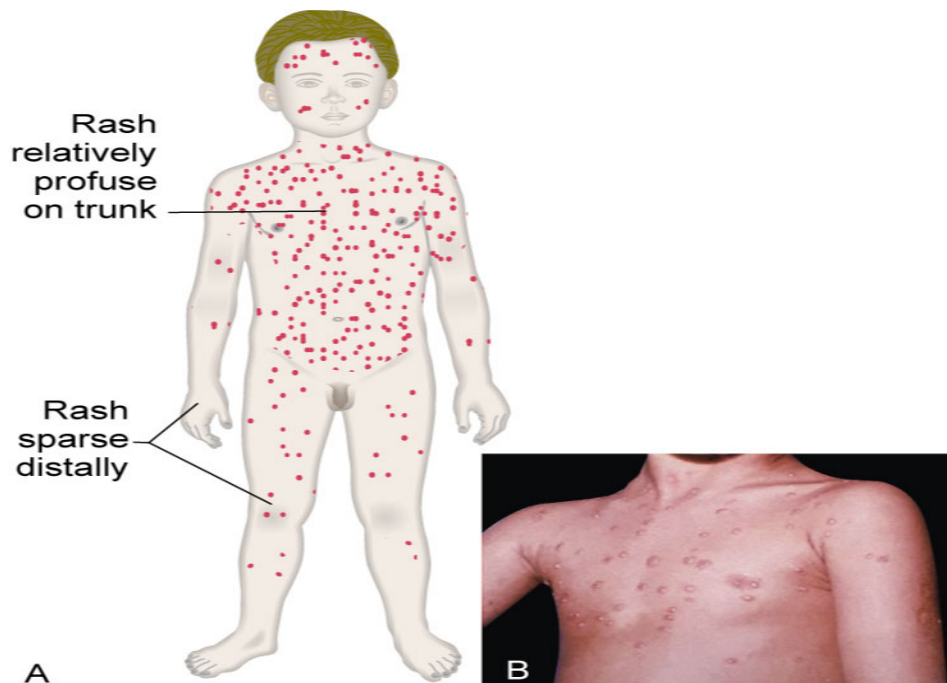


- Rubeola
 - RNA paramyxovirus

- High fever, malaise, enlarged lymph nodes, runny nose, conjunctivitis, barking cough
- Koplik spots over buccal mucosa
- Roseola
 - Characterized by fever and an erythematous macular rash that lasts about 24 hours

Infections of the Skin - Viral Infections

- Herpes zoster (shingles)
 - Occurs mainly in adults
 - Varicella virus persists for life in sensory nerve ganglia and reactivates
 - Lesions consist of groups of vesicles situated on an inflammatory base and follow the course of a sensory nerve
 - Therapy similar to that for chickenpox
- Chickenpox (varicella)
 - Highly contagious DNA virus
 - Spread by close person-to-person contact and airborne droplets
 - First signs of illness include fever, itching, and appearance of vesicles on face, trunk, and scalp
 - Uncomplicated infection requires no therapy
 - Vaccine available

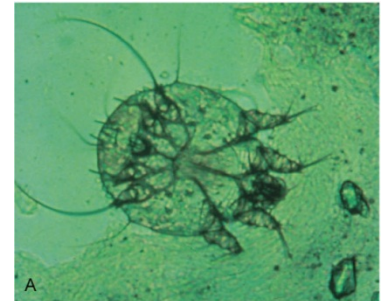


- Smallpox
 - Highly contagious and deadly

- Caused by poxvirus variolae
- Eradicated in 1977 and vaccines discontinued in 1972
- Concern that bioterrorists have virus led to implementation of vaccination and isolation criteria by the CDC

Insect Bites and Parasites - Scabies

- Contagious disease caused by the itch mite *Sarcoptes scabiei*
- Transmitted by personal contact and infected clothing and bedding
- Female mite tunnels millimeters to 1 cm into the stratum corneum, deposits eggs, and over a 3-week period the eggs mature into adult mites
- The primary lesions are burrows, papules, and vesicular lesions with severe itching
- Patient is at risk for secondary infections from scratching
- Treated with application of scabicide and linen cleaning



Insect Bites and Parasites - Pediculosis

- Pediculus capitis (head), pediculus corporis (body), and *Phthirus pubis* (crab or pubic)
- Highly contagious parasite that survives by sucking blood
 - Acquired through personal contact and shared clothing, combs, or brushes
- Treated with pediculicides; all clothes, towels, bedding, and brushes should be washed in hot water

Insect Bites and Parasites - Flea Bites

- Cat, dog, and human fleas
- Bites occur in clusters along the arms and legs
- The characteristic lesion is an urticarial wheal with a central hemorrhagic puncture
- Treatment includes:
 - Spraying home
 - Treating infected animals
 - Washing clothing and bedding in hot water

Insect Bites and Parasites - Lyme Disease

- Multisystem inflammatory disease
- Spirochete, *Borrelia burgdorferi* causative agent transmitted by tick bite
- Occurs in stages:
 - Localized infection
 - Disseminated infection 9 months after bite
 - Late persistent infection continuing for years
- Treatment with antibiotics

Insect Bites and Parasites - Bedbugs

- *Cimex lectularius*

- Live in the crevices and cracks of floors, walls, and furniture and in bedding or furniture stuffing
- 3 to 5 mm long and reddish brown
- Bedbugs feed in the darkness
 - Attach to the skin, suck blood, and leave
- Lesions are red macules that develop into nodules

Hemangiomas

- Strawberry hemangiomas
 - Raised vascular lesions that usually emerge 3 to 5 weeks after birth
 - The lesions proliferate, become bright red, and elevate with small capillary projections
- Cavernous hemangiomas
 - Present at birth
 - Cavernous hemangiomas involve larger and more mature vessels than strawberry hemangiomas

Vascular Malformations

- Port-wine stains
 - Congenital malformation of dermal capillaries
 - Flat, pink, to dark reddish purple lesions
- Salmon patches
 - Macular, pink lesions resulting from distended dermal capillaries
 - Usually fade by 1 year of age
 - Common on the nape of the neck, forehead, upper eyelids, or nasolabial folds

Miliaria

- Vesicular eruption after prolonged exposure to perspiration, with subsequent obstruction of eccrine ducts
- Miliaria crystallina
 - Ductal rupture within the stratum corneum
 - Clear vesicles without erythema
- Miliaria rubra (prickly heat)
 - Erythematous papules and papulovesicles

Port Wine Stain

Strawberry Hemangioma

Salmon Patch

