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Part 1: High-Yield Pediatric Rash Study Guide

1. Morphological Foundations

Accurate description of lesions is vital during your clerkship presentations and shelf exams:

- **Macule:** A flat, distinct, discolored area of skin that is less than 1 cm wide. It does not involve any change in the thickness or texture of the skin.
- **Patch:** A flat, discolored area of skin that is larger than 1 cm wide. Like macules, they are not elevated or depressed.
- **Papule:** A small, solid, elevated inflammatory skin lesion that is less than 1 cm in diameter.
- **Plaque:** A broad, raised, solid skin lesion that is usually larger than 1 cm in diameter and frequently has a plateau-like flat top.
- **Vesicle:** A small, circumscribed, elevated, fluid-filled blister that is less than 1 cm in diameter.
- **Bulla:** A large fluid-filled blister that is greater than 1 cm in diameter. It can be filled with serous, seropurulent, or hemorrhagic fluid.
- **Pustule:** A small, elevated, circumscribed skin lesion less than 1 cm in diameter that contains pus (purulent exudate).

2. Core Disease Profiles

Atopic Dermatitis (Eczema)

- **Key Clinical Maxim:** Often referred to as "the itch that rashes" because intense pruritus precedes the visible skin changes. Repetitive rubbing and scratching lead to excoriation, skin barrier breakdown, and eventual chronic lichenification.
- **Distribution Changes:** Typically affects the cheeks, forehead, and behind the ears in infants. As children age, the distribution progresses to the flexural surfaces (the antecubital and popliteal fossae).
- **Key Distinctions:** It lacks the well-demarcated margins and heavy, adherent mica-like scales found in other papulosquamous eruptions like psoriasis (which favors extensor surfaces).
- **Major Complications:** Secondary bacterial infections (*Staphylococcus aureus*, Group A *Streptococcus*) or Eczema herpeticum (a dermatological emergency characterized by a sudden crop of uniform, punched-out, umbilicated vesicopustular lesions caused by HSV).

Scabies (*Sarcoptes scabiei*)

- **Pathophysiology:** An infestation by the human itch mite. The pregnant female mite burrows into the host's epidermis ($\approx 2\text{ mm}$ daily), depositing eggs and

fecal pellets (scybala) along the tunnel. This debris triggers a severe Type IV hypersensitivity reaction.
- **Clinical Presentation:** Intensely pruritic, erythematous papules that worsen significantly at night due to increased bed warmth. Look closely for the diagnostic grey/white, threadlike, serpiginous burrows.
- **Classic Distribution:** Interdigital web spaces of the fingers and toes, flexor surface of the wrists, axillae, periumbilical region, waistline, and the genitalia/buttocks. The scalp and back are generally spared in older children but can be involved in infants.
- **Persistent Post-Scabietic Nodules:** Granulomatous reactions to dead mite antigens can persist as firm, non-pruritic nodules for weeks to months post-treatment in covered areas (groin/axilla) and do not represent active infection.

Allergic Contact Dermatitis (Poison Ivy / Rhus Dermatitis)

- **Mechanism:** A classic Type IV (delayed-type) cell-mediated hypersensitivity reaction occurring 12–48 hours after exposure to urushiol oil found in plants.
- **Clinical Pattern:** Characterized by a sharp linear arrangement of erythematous papules or vesicles resulting from the plant directly brushing across exposed skin.
- **Black Spot Poison Ivy:** A rare but high-yield variant where the plant sap dries into black, lacquer-like spots on the skin prior to the onset of tissue inflammation.
- **Management Principles:** Treated with topical or oral corticosteroids depending on severity. For extensive rashes, oral steroids must be given as a long, gradual taper (typically 2–3 weeks) to prevent severe rebound inflammatory flares.

Henoch-Schönlein Purpura (HSP)

- **Pathophysiology:** The most common systemic vasculitis in children, often triggered by an upper respiratory tract infection. An unknown antigen stimulates IgA antibody-antigen complex deposition, leading to localized small-vessel necrotizing vasculitis.
- **Clinical Tetrad:** 1. Non-blanching palpable purpura, primarily distributed over the lower extremities, buttocks, and dependent areas.
  2. Migratory polyarthritis or arthralgias (most commonly affecting ankles and knees).
  3. Colicky abdominal pain (due to localized bowel wall edema/ischemia).
  4. Renal disease (manifesting as micro- or macro-hematuria and proteinuria).
- **Prodrome:** A transient maculopapular or urticarial rash may precede the true palpable purpura by 24 hours.

Part 2: High-Yield Flashcards

Card 1

- **Front:** How is a flat skin lesion that measures 1.5 cm in diameter categorized?
- **Back:** A **Patch** (defined as a flat lesion $> 1\text{ cm}$, whereas a macule is $< 1\text{ cm}$).

Card 2

- **Front:** Which classic pediatric parasite infestation causes severe pruritus that characteristically worsens at night and presents with threadlike, serpiginous burrows?

- **Back: Scabies** (*Sarcoptes scabiei*).

Card 3

- **Front:** What complication of atopic dermatitis presents as a sudden eruption of uniform, umbilicated vesicles and pustules over pre-existing eczema?
- **Back: Eczema herpeticum** (caused by a secondary HSV infection overlaying a damaged skin barrier).

Card 4

- **Front:** A patient presents with linear tracks of fluid-filled vesicles on their leg after a hiking trip. What type of skin lesion distribution and mechanism does this highlight?
- **Back: Linear distribution** characteristic of **Allergic Contact Dermatitis (Rhus dermatitis)** due to plant oils.

Card 5

- **Front:** Why must a course of systemic corticosteroids given for extensive Poison Ivy dermatitis be tapered slowly rather than stopped abruptly?
- **Back:** To prevent **rebound symptoms/flares** of the intense inflammatory dermatitis.

Part 3: Interactive Practice Quiz

This 10-question practice quiz covers clinical high-yield topics regarding pediatric rashes and dermatologic morphology to help prepare you for clinical rounds and shelf exams.

PediatricEducation.org Rash Quiz
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Take your time running through the interactive scenarios to solidify your dermatological exam classifications. Best of luck on your clerkship rotation!