Common Diagnoses in Pediatric Dermatology:
Empowering the pediatrician and knowing when to refer

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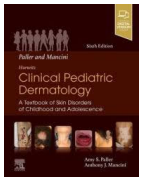
Outline

- Atopic dermatitis
- Hidradenitis Suppurativa
- Vascular lesions
- Other birthmarks and pigmentary disorders
- Common infections and viral exanthems



https://doi.org/10.1016/C2012-0-06017-6

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Atopic Dermatitis

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Pathogenesis

- *Genetic factors + environmental influences*
- Genetics dictates immune response and skin barrier integrity
  - Most common uniallelic or biallelic loss-of-function mutations in profilaggrin *(FLG)*
- Environmental factors include irritants, allergens (pollen, foods), heat/cold, microbiome, mechanical injury
  - These activate the immune system – specifically Th2 cells express IL-4,-5, and-13, which promote eosinophilia and IgE production but suppress the expression of epidermal barrier proteins as well as antimicrobial peptides
- *S. aureus* (usually MSSA), present in 70% of lesional skin – less commensal organisms

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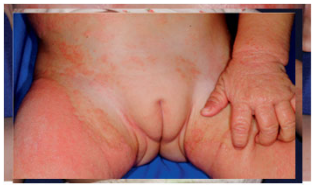
Infantile AD

- Typically begins on scalp, forehead, cheeks
- Diaper often spared, predilection for extensor surfaces
- "Acute" and weeping, may be confused for infection
- Itch may be disguised as fussiness or wiggling
- Saliva a common irritant
- Mimickers: seborrheic dermatitis (not typically as itchy; may have both)



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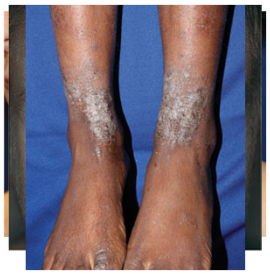
Childhood AD

- Classic areas of involvement in this group are the wrists, ankles, hands, feet, neck, and antecubital and popliteal regions
- Facial involvement shifts toward periorbital area
- Lesions more lichenified or thickened over time
- Lymphadenopathy and nail dystrophy may be seen



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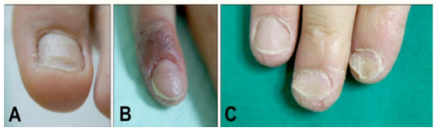

Chung BY et al.. Nail Dystrophy in Patients with Atopic Dermatitis and Its Association with Disease Severity. *Ann Dermatol.* 2019;31(2):121-126

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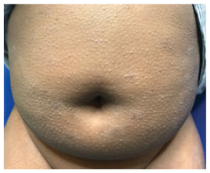
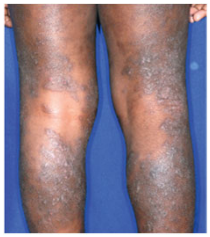
Follicular Eczema

- Seen more commonly in patients with darker skin types





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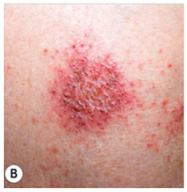
Nummular Eczema

- Stubborn coin shaped plaques common on the extremities
- Classically more treatment resistant, often weeping
- May have secondary infection



Norbert Reider; Irina Gasslitter. Other eczematous eruptions. *Dermatology*, 13, 232-245

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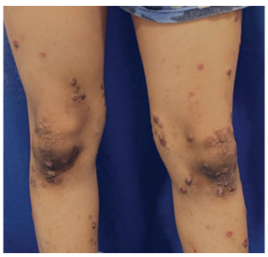
Prurigo Nodularis

- Well circumscribed and lichenified itchy papules, most common on the lower extremities



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Treatment

- Common misconception about length of time that it is safe to use topical steroids -- treat until clear
- Sudden onset or sudden worsening consider concomitant viral illness, viral infection of the skin, bacterial infection of the skin, or something new coming into contact with the skin
- Treatment of atopic dermatitis has four pillars
  1. **Moisturization**
  2. **Anti-inflammatory**
  3. **Anti-itch**
  4. **Anti-infection**
- Not all need 3&4

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1) Moisturization (and bathing)

- Daily baths hydrate the skin -- water loss is prevented by emollient application within a few minutes after bathing
- Prefer a thick emollient (cream) or ointment (miliaria!)
- Wet wraps of plain water can be applied at night after bathing and after application of moisturizer or topical medication
- What about oil?
  - Sunflower seed and safflower seed oils preferred
  - Some studies also show virgin coconut oil helpful, would avoid olive oil (contact sensitization possible)

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2) Anti-inflammatories

- Topical steroids are our mainstay of treatment
  - Creams may be more prone to burning but may be less messy/preferred by patients, ointments more effective
  - If the appropriate topical steroid is chosen, the goal is for rash to clear with twice daily application in 2-3 weeks on any given body surface area
  - Other topicals like protopic ointment, elidel cream, and eucrisa ointment are best used for maintenance or very mild atopic dermatitis (SE of stinging/burning)

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Body Area	List of topical options
Face	
	Hydrocortisone 2.5% ointment or cream Desonide 0.05% ointment or cream Alclometasone 0.05% ointment or cream Fluocinolone 0.01% oil
Body	
	Fluticasone 0.05% cream Triamcinolone 0.025% cream or ointment Triamcinolone 0.1% cream or ointment **Mometasone 0.1% cream or ointment** **Fluocinonide 0.05% ointment or cream** **Clobetasol 0.05% ointment or cream**

Consider referral

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3) Antihistamines

- This is a widely debated topical though still generally used among most dermatologists
- Sedating antihistamines (hydroxyzine preferred over Benadryl;doxepin) can be useful to help with sleep in addition to controlling dermatitis
- Non-sedating antihistamines may be helpful for those with other signs of atopy or urticaria

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4) Anti-infection

- Bleach baths ("swimming pool bath") can be helpful at decreasing burden of disease flaring (S. Aureus)
- Alternative is CLN wash (hypochlorous acid wash)
- Dilute vinegar may also be helpful for smaller areas or wounds (1 tbs per cup of water)

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Bleach baths can be an effective tool for managing atopic dermatitis (AD). Taking a bleach bath — a bath with lukewarm water and bleach — two to three times per week may help reduce the inflammation and itch associated with AD, as well as reduce the amount of Staphylococcus aureus (or "staph") bacteria living on the skin which can increase the risk of infection.

How to take a bleach bath

What you need:

- Bathtub
- Water
- Measuring cups or spoons
- Regular or non-concentrated, unscented household bleach (5–6% sodium hypochlorite)

Recommended water-to-bleach ratio:*

Tub size	Full, standard-size bathtub (~40 gallons)	Half standard-size bathtub (~20 gallons)	Baby-sized bathtub (~4 gallons)
Bleach	½ cup	¼ cup	1 tablespoon
Age	Adults	Adults and children	Children and babies

*This bleach bath recipe has the same level of chlorine as your average swimming pool.

Directions:

1. Fill your bathtub with lukewarm water. Be sure the water is not too hot.
2. Add bleach to water and mix it in thoroughly. Do not add any other products or ingredients to the bathwater.
3. Get into the tub. Soak your body for 10 minutes. Do *not* submerge your head or face under the water. Avoid splashing and getting water in your eyes. Do *not* soak for longer than 15 minutes.
4. After you're done soaking, rinse your body off with lukewarm water and pat dry.
5. Use your moisturizer of choice to lock moisture into your skin.

Talk to your provider

Before you try a bleach bath for yourself or your child, please consult with your healthcare provider first. They can help you decide if it is a good option for you. For more resources on bathing and moisturizing with AD, visit **NationalEczema.org**.

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Is systemic therapy needed?

1. After failing appropriate trial of topical therapy with appropriate escalation of strength in the steroid ladder and topical steroids cannot be stopped without immediate rebound of rash
2. Percentage of body surface area involved
3. Frequent hospitalizations or secondary infection despite preventative measures
4. Quality of life measures!
   - **Are they losing sleep?**
   - **Is their itching affecting concentration at school or daycare?**

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Is it a food allergy?

- No evidence that avoidance of maternal dietary antigens during pregnancy or lactation has a protective effect during the first 18 months of life on the development of AD or on food sensitization!
- Solid foods, including potentially allergenic foods, should not be delayed in at-risk infants
  - Early referral to AI for those with moderate to severe AD may help with parental hesitancy for food introduction

Soriano VX, Ciciulla D, Gell G, Wang Y, Peters RL, McWilliam V, Dharmage SC, Koplin JJ. Complementary and Allergenic Food Introduction in Infants: An Umbrella Review. Pediatrics. 2023 Feb 1;151(2):e2022058380.
Abrams EM, Shaker MS, Chan ES, Brough HA, Greenhawt M. Prevention of food allergy in infancy: the role of maternal interventions and exposures during pregnancy and lactation. Lancet Child Adolesc Health. 2023 May;7(5):358-366.

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Hidradenitis Suppurativa

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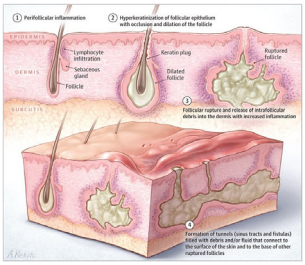
Pathogenesis

- Chronic inflammation of apocrine glands (autoinflammatory)
- Occlusion of hair follicles → rupture → re-epithelize to form tunnels under skin



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Who does HS affect?

- Increased prevalence in females and African Americans
- Typically develops after puberty (we see it as early as 7 or 8)
- Potential association with other inflammatory conditions such as Crohn's disease

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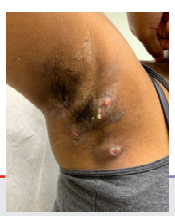
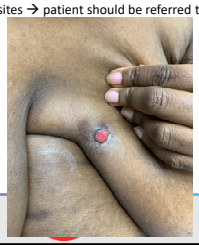
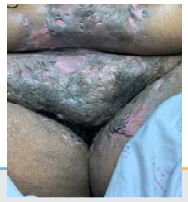
Clinical Presentation

- Patients develop recurrent tender subcutaneous nodules in axilla, anogenital regions, and under breasts
- 2 or more lesions in these sites → patient should be referred to dermatology

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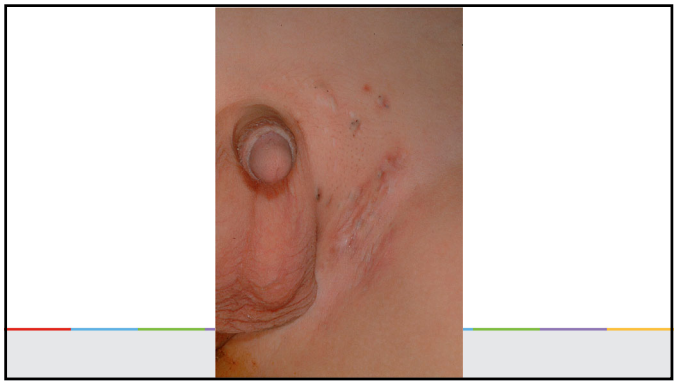

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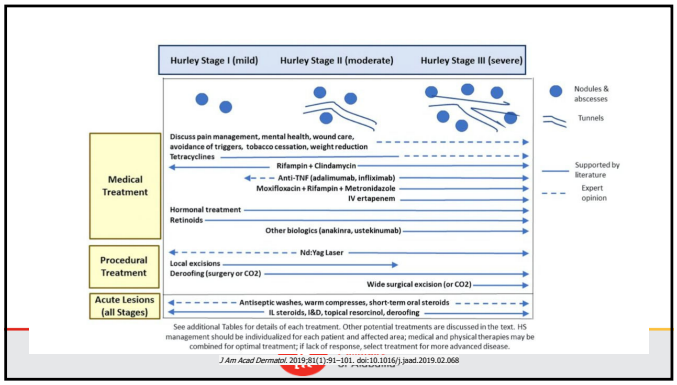

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Vascular lesions

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Nevus simplex

- Ectatic capillaries represent persistent fetal circulatory patterns in skin
- Typically midline and symmetric
- Up to 40% of newborns, may be extensive
  - Usually will have at least one typical site of involvement: glabella (77.8%), nape (59.3%), and eyelids (55.6%)
  - Additional sites were the scalp, including the vertex, occiput, parietal (66.7%); nose (66.7%); lip (59.2%); lumbosacral skin (55.6%); and upper and mid back (14.8 %)

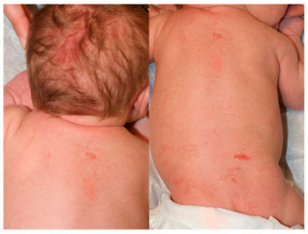

Fig 4. NS with prominent involvement of the scalp, nape, as well as lesions on the upper and lower back. Note that some but not all are directly overlying the midline.

Juern AM, Glick ZR, Drolet BA, Frieden IJ. Nevus simplex: a reconsideration of nomenclature, sites of involvement, and disease associations. J Am Acad Dermatol. 2010 Nov;63(5):805-14.

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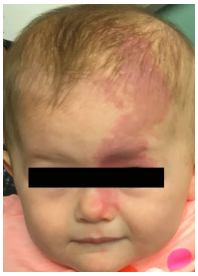
Nevus flammeus (PWB)

- Typically evident at birth, will not thicken or proliferate at the 2-3 month mark as wound a hemangioma
- Over time (several years), lesions thicken and develop vascular blebs that bleed
- Earlier intervention with laser shows better outcomes (swaddle until age 2)



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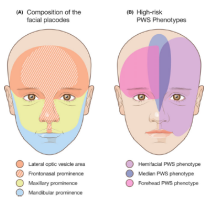
Work up to assess for Sturge-Weber syndrome

- Ophthalmology exam– glaucoma and diffuse choroidal hemangioma
- MRI with contrast - Tram track gyraform calcifications
- Neurology evaluation

If + MRI findings:
- Early intervention with aspirin and anti-epileptics



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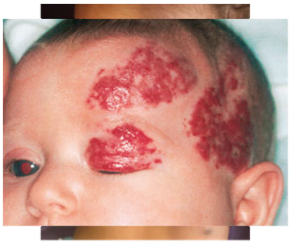
Infantile Hemangioma

- Typically, evident at birth or first few weeks of life
- Most rapid growth 2-3 months of age (not adjusted for prematurity)
- Plateau around 6-8 months (deeper persist)
- Start to involute around age 1, maximum improvement around 5-8 years of age
  - Often residual scar tissue or redness
- Eye lesions may need ophthalmology eval
- Consider referral to discuss propranolol for any facial lesion larger than 0.5 cm, diaper lesion, trunk lesion >2 cm, trunk lesion in a highly visible or cosmetically sensitive location, ulcerated or painful hemangioma



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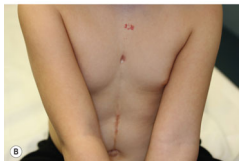
PHACE Syndrome

- Posterior fossa malformations
  - *Most commonly the Dandy-Walker variants*
- Hemangiomas
  - *Particularly large, segmental facial lesions*
- Arterial abnormalities
  - *Mainly cerebrovascular and extracranial system*
- Cardiac abnormalities
  - *Coarctation, aortic arch anomalies, VSDs*
- Eye abnormalities
  - *Microphthalmos, retinal vascular abnormalities, persistent fetal retinal vessels, optic nerve atrophy, iris hypertrophy, colobomas, excavated optic disc*
- Sternal cleft
  - *Sternal cleft, supraumbilical raphe, or both*

https://sketchymedicine.com/2014/02/phace-syndrome-hemangiomas/

MRI/MRA of the brain and neck
Echocardiography
Ophthalmologic evaluation



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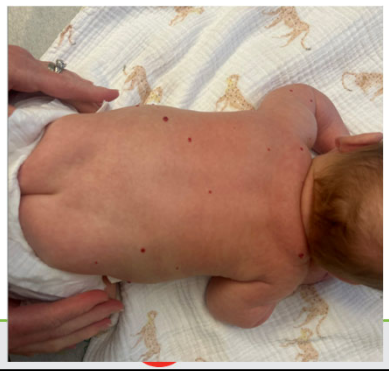

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Neonatal Hemangiomatosis

- Diffuse (with internal organ involvement) or benign
- Most common organ involved – ***Liver (US if 5 or more)***
- Other organs at risk secondarily – ***heart, thyroid***

The transient hypothyroidism associated with hepatic IH is caused by hemangioma production of the thyroid hormone inactivating enzyme, type 3 iodothyronine deiodinase. Evaluation reveals elevated thyroid-stimulating hormone (TSH), normal to decreased free thyroxine (fT4), decreased free triiodothyronine (fT3), and increased reverse T3 (rT3).

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Other birthmarks and pigmentary disorders

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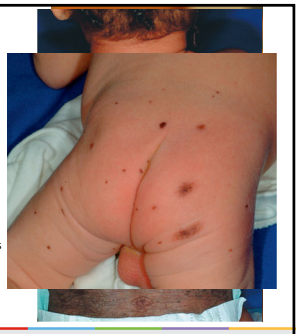
Congenital Nevi

- Present at birth or within the first few months of life
- Neural crest derived
- Grow rapidly during early infancy and enlarge in proportion to the child's growth – thicken during puberty
- Large and giant lesions on the head, neck, and back have risk of neurocutaneous melanosis (also >20 satellite nevi)
  - Risk of melanoma 10-15% over lifetime, usually <5 years of age and nodular
  - Risk of melanoma in small or medium size lesion is about 1% and comparable to general population



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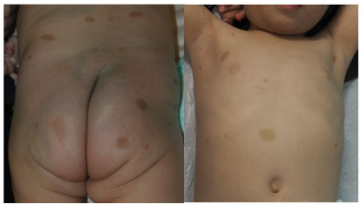
Café au lait macules

Earliest signs:
- 6 or more CALMs > 5 mm in diameter
(Large lesions suspicious for early PNFs)
- Axillary freckling*
- Tibial bowing, psedoarthrosis
- Sphenoid wing dysplasia resulting in pulsatile exophthalmos



Friedman JM. Neurofibromatosis 1. 1998 Oct 2 [Updated 2025 Apr 3]. In: Adam MP, Bick S, Mirzaa GM, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2026. Available from: https://www.ncbi.nlm.nih.gov/books/NBK1109/

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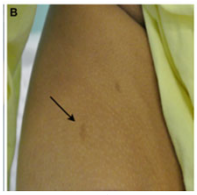
CALMs and risk of NF1

- **High-risk group:** Patients with 6 or more regular CALMs and under 29 months, or those with 6 or more CALMs under 14 months, faced an **80.4%** chance of developing NF1.
- **Intermediate-risk group:** Patients with fewer than 6 CALMs under 29 months, or 6 or more CALMs over 29 months without atypical CALMs, had an **11.5% to 14.3%** chance of developing NF1.
- **Low-risk group:** Patients with fewer than 6 CALMs over 29 months, or those older than 29 months with atypical CALMs, **had a 0.9% chance** of developing constitutional NF1.



Ben-Shachar S et al. Predicting neurofibromatosis type 1 risk among children with isolated café-au-lait macules. J Am Acad Dermatol. 2017 Jun;76(6):1077-1083.e3.

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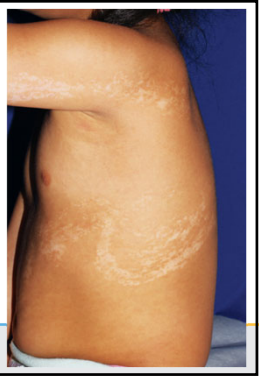
Pigmentary Mosaicism

- Hypo or hyperpigmented lesions along lines of blaschko, can co-exist
- Extracutaneous manifestations occurred more often with hypopigmentation
- Other associations: developmental delay (54%), bone issues (38%), seizures or electroencephalogram abnormalities (37%), dysmorphic facial features (31%), and/or psychomotor retardation (16%)



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Infections and exanthems

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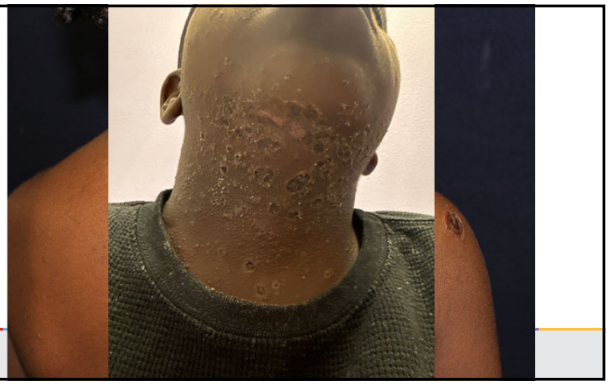

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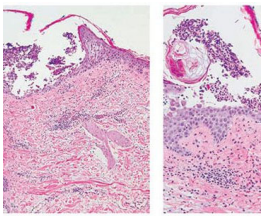
Bullous Impetigo



- Blistering secondary to exfoliative toxin produced by bacteria (same in SSSS)
- Localized disease can treat with mupirocin, often will need oral antibiotics (Keflex)

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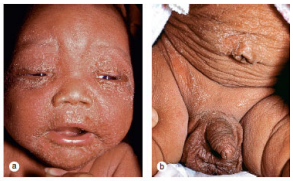
Staphylococcal Scalded Skin Syndrome

- **Staphylococcal exfoliative toxin**
  - Binds desmosomes in epidermis → loss of cell-cell adhesion leads to bullae formation and sloughing of skin
- **Systemic effect, bacteria not present in denuded skin unless you are swabbing primary site**
- Peri-oral and peri-ocular fissuring, skin folds, then generalized erythema with + Nikolsky sign
- Oral nafcillin, clinda, +/- MRSA coverage



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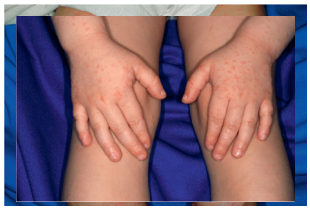
Gianotti Crosti Syndrome

- Symmetrically distributed on the face, buttocks, and extremities of children
- Usually with preceding URI-like symptoms
- EBV is believed to be the most common etiology in the United States
- Hep B, CMV, pox virus, parvovirus B19, rotavirus, and HHV-6



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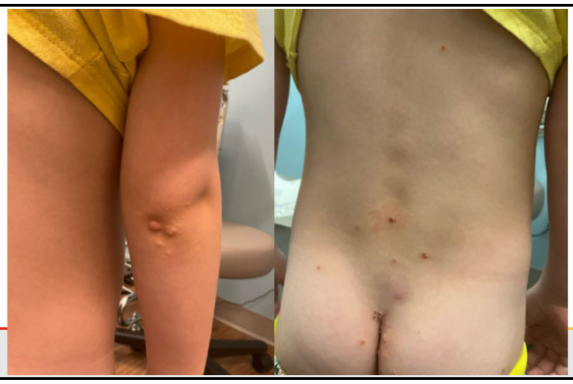

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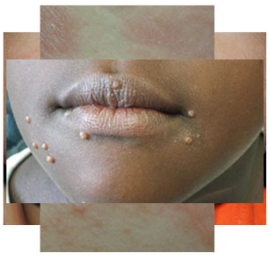
Molluscum Contagiosum



Caused by ***Poxvirus***

- Face, trunk, diaper area common
- Spontaneous remission within 6 months to 2 years
- Lesions themselves may cause scarring as can treatment (consider referral if numerous or symptomatic)
- Treatment options: **cryotherapy**, Gotucream, dilute apple cider vinegar, berdazimer gel, **cantharidin**, cimetidine

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A comment about sexual abuse/transmission

- New genital herpetic lesions in children who have independent toileting are suspicious for abuse and should be reported
- Condyloma most often acquired through vertical transmission or by contact with adults and young diapered children
  - Usually innocent if <3 years of age (long latency period)
- Molluscum contagiosum is most often acquired innocently, sexual transmission is possible

CONTINUING MEDICAL EDUCATION

Cutaneous signs of child abuse

Amy Swerdlin, MD,[a] Carol Berkowitz, MD,[b,d] and Noah Craft, MD, PhD, DTM&H[a,b,d]
Los Angeles and Torrance, California

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Question 1.

- A 12 mo M with a history of moderate atopic dermatitis presents to clinic. He was previously well controlled on triamcinolone ointment used occasionally to the abdomen, legs, and antecubital fossa. Over the past two weeks his atopic dermatitis has started to flare and is unresponsive to triamcinolone twice daily for 2 weeks. What is your next **best** step in evaluation?
  a) Ask about introduction of new foods
  b) Increase strength of topical steroid
  c) Look for signs and symptoms of infection
  d) Ask about recent sick contacts
  e) Both c&d

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Question 2.

- The pathophysiology of which common localized skin infection is like that of staphylococcal scalded skin syndrome?
  a) Giannoti crosti syndrome
  b) Eczema herpeticum
  c) Bullous impetigo
  d) Molluscum contagiosum

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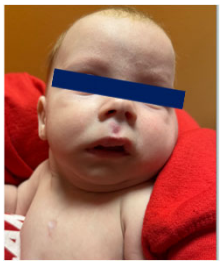
Question 3.

- The following patient presents to your clinic for her first well child exam. She is noted to have a vascular patch on the upper lip and swelling of the left parotid area. What other evaluation should be considered for this patient?
  a) Renal ultrasound
  b) Echocardiogram
  c) Liver ultrasound
  d) Chest x ray



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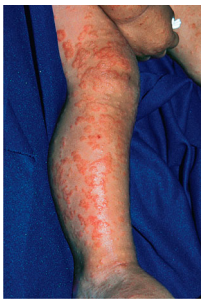
Question 4.

- A patient presents to clinic with the following eruption. Which of the following viruses is a common inciting factor?
  a) Parvo B19
  b) EBV
  c) HHV6
  d) Poxvirus
  e) All of the above



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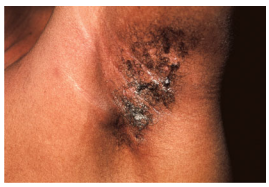
Question 5.

- What other autoinflammatory disease has shown association with this condition?
  a) Crohn's disease
  b) JIA
  c) Dermatomyositis
  d) SLE



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