Baby Rashes – Skin Eruptions in Newborns and Infants: Common Place and the Concerning

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Disclosures

My spouse/partner and I have the following relevant financial relationship with a commercial interest to disclose:

Gritstone Oncology (salary, stock)
Path AI (stock)
UpToDate (royalty)
Purity Brands (consultant)
CASE 1: PUSTULES
Micro Workup

- Pustule gram stain: few polys, no organisms
- Pustule culture: no growth
- Blood cultures: no growth
Pustules in Infancy

- Erythema toxicum neonatorum
- Transient neonatal pustular melanosis
- Neonatal acne
- Acropustulosis of infancy
- Congenital cutaneous candidiasis
- Eosinophilic pustular dermatosis of infancy
Erythema Toxicum Neonatorum

• Most common pustular disease in **full term** infants with vesicles/pustules in **first few days of life**
• Often resolve within 24 hours but can last for up to 2 weeks. No longterm sequelae.
• **Eosinophils** surround pilosebaceous apparatus below basement membrane
• 7% with eosinophilia
Transient Neonatal Pustular Melanosis

- **African-American infants**
- 0.2-4% of newborns
- Present at birth and resolves within 24-48 hours
- Small clustered pustules/vesicles that rupture easily leaving collarettes of scale and hyperpigmented macules. Minimal erythema
- **Neutrophils >> eosinophils**
Neonatal Acne
(Neonatal Cephalic Pustulosis)

• 20% of newborns
• First few **weeks** of life
• Localized to **face** typically
• Associated with malassezia
• May see **sebaceous hyperplasia**
Acropustulosis of Infancy

- Onset at birth to 2 years of age
- African Americans, males
- Worse in summer
- Recurrent crops of pruritic acral subcorneal pustules that increase in size over a week and resolve in 2-3 weeks
- Neutrophils
Congenital Cutaneous Candidiasis

• At birth or first 12 hours of life
• Erythematous macules and papulopustules on face, trunk, extremities
• Most do not have systemic disease although low birthweight infants are at greater risk
• Topical antifungals
Eosinophilic Pustular Dermatosis of Infancy

- Described by Ofuji/Lucky
- Not associated with HIV
- Male:Female = 4:1
- Onset first 14 months, resolves by 3 years of age
- Recurrent crops every 1-3 weeks of sterile, pruritic (follicular) papules and pustules on face, scalp
- Topical steroids
Pustules in Infancy

- **Erythema toxicum neonatorum**
  - First days, FT, Eosinophils

- **Transient neonatal pustular melanosis**
  - At birth, AA, Neutrophils

- **Neonatal acne**
  - First weeks, face, malassezia

- **Acropustulosis of infancy**
  - Recurrent, AA, Neutrophils

- **Congenital cutaneous candidiasis**
  - At birth/first hours, may not have systemic symptoms

- **Eosinophilic pustular dermatosis of infancy**
  - By 14 months, recurrent, topical steroids

Reference: Mengesha and Bennett Am J Clin Dermatol 2002
CASE 2: VESICLES & PAPULES
Differential Diagnosis

- Acrodermatitis Enteropathica (Zn deficiency)
- Acropustulosis of Infancy
- Eosinophilic pustular folliculitis
- Erythema toxicum neonatorum
- Incontinentia pigmenti
- Mastocytosis
- Seborrheic dermatitis
- TORCH infections - Toxoplasmosis, Other (syphilis, varicella-zoster, parvovirus B19), Rubella, Cytomegalovirus (CMV), and Herpes infections
- Wiskott-Aldrich Syndrome
- Congenital Varicella
- Neonatal HSV
- Seborrheic dermatitis
- Psoriasis
- Scabies
- Atopic Dermatitis
- Folliculitis
- Hyperimmunoglobulinemia E Syndrome
- Langerhans cell Histiocytosis
  - Multifocal
  - Unifocal
  - Congenital Self-Healing
“Blueberry Muffin”
Differential Diagnosis

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Blood cultures, HSV/VZV DFA & cultures, empiric antibiotics and acylovir!
Langerhans Cell Histiocytosis: Initial Workup

• **Blood:**
  - CBC+diff, retics, ESR, direct/indirect Coombs, Ig levels, coags, LFTs
  - BM aspirate

• **Urinalysis (DI)**

• **Imaging:**
  - **CXR** – micronodular/interstitial infiltrate, spared costophrenic angles, late honeycombing
  - High-res CT if suspected
  - **Skeletal survey** – differentiate unifocal vs. multifocal
  - CT/MRI/FDG-PET (LN, spleen, lung)
    - FDG-PET – identify late relapsers
Late Effects

- Endocrinopathies
- Cognitive deficits
- Neurologic problems
- Orthopedic defects
- Poor lung function
- Liver disease
- Dental problems
- Elevated malignancy risk
CASE 3: MEMBRANE OR BLISTERS
Newborn with a “Membrane”

Collodian baby
“Collodian Baby”

- 65% autosomal recessive congenital ichthyosis
- 5-6% shed collodian membranes -> normal skin

- Early Management: emollients, hydration, warmth, eye/mouth care
Lamellar Ichthyosis

• Autosomal recessive congenital ichthyosis
• Mutation in transglutaminase 1 ($TGM1$) – formation of cornified envelope.

• Range of clinical features (mild to severe)
  – large lamellar plate-like scales with relatively mild underlying erythroderma
  – +/- Ectropion and mild eclabium
  – Scales prominent over the face, trunk, and extremities – flexor areas
  – Palms and soles: palmar hyperlinearity vs. keratoderma with fissures
  – Scalp: scarring partial hair loss
  – Nails: stippled, pitted, ridged, or thickened, subungual hyperkeratosis
Blisters in Newborn/Infant

- Epidermolysis Bullosa
- Ichthyoses
- Incontinentia Pigmenti
- Immunobullous – EBA, LIGA, BP, CP, pemphigus
- Infectious – HSV, bullous impetigo, SSSS, syphilis, etc.
- Bullous mastocytosis
- Traumatic blisters
CASE 4: ERUPTIONS WITH SCALE
Differential Diagnosis of Atopic Dermatitis: Serious/Rare Conditions

- **Metabolic/nutritional/genetic**
  - Acrodermatitis enteropathica / zinc deficiency
  - Other nutritional deficiencies (biotin, essential FA)
  - Netherton syndrome
  - Phenylketonuria
  - Gluten-sensitive enteropathy
  - Hurler syndrome

- **Immune disorders**
  - Hyper IgE syndrome
  - SCID
  - Wiskott-Aldrich
  - Agammaglobulinemia
  - Ataxia-telangiectasia
  - Neonatal lupus erythematosus

- **Proliferative disorders**
  - Langerhans cell histiocytosis

From Box 15-3 Neonatal Dermatology, ed. Eichenfeld, Frieden & Esterly
Empiric Treatment

- Afebrile, eating, stooling, activity @ baseline

Home care:
- Dilute bleach baths daily
  - National Eczema Association “recipe”
- Topical corticosteroids BID
- Emollient QID
- Wet wraps
- 1 week follow up; call patient in 3 days
Deficiency in cutaneous antimicrobial peptides
Impaired regulatory T cell function

• Bacterial infections
  – *S. aureus/MRSA*

• Viral infections
  – HSV (eczema herpeticum)
  – Warts
  – Molluscum
  – Coxsackie
CASE 5: MIMIC
Neonatal Lupus

- 1-2% of babies born to mothers with autoimmune disease (systemic lupus, Sjogren’s syndrome and antibodies to SSA/Ro or SSB/La)
- Mothers may **not** have symptoms at the time of infant’s birth

- Transplacental passage of maternal anti-SSA/Ro or anti-SSB/La antibodies
- Recurrence rate of NL after initial child born 35-50%
Treatment/Course

• Cardiology referral
  – Normal ECHO and EKG
• Topical steroids to rash
• Follow-up at age 4 months showed improving eruption
Dermatologic Findings

• Present at birth or up to 4 months of life (mean 6 weeks)
• Annular, arcuate, with central atrophy rarely urticarial
• Scalp and face: raccoon eyes
• Photosensitive
• May resemble a fungal infection
• Resolves in 6-8 months. Rare long term sequelae: telangiectases
Complications

- Heart Block: Binding of anti-SSA/Ro or anti-SSB/La antibodies to fetal cardiac tissue damaging AV node rarely SA node
  - Manifests between 18-24 weeks gestation
- Elevated liver function, hepatosplenomegaly, cholestasis, hepatitis 9-15%
- Anemia, neutropenia, thrombocytopenia
- Hydrocephalus, macrocephaly