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Blistering Diseases in Newborns

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Diagnosis	Clinical Findings	Treatment	Notes
Infectious Diseases			
Herpes simplex virus (HSV)	Erythematous macules and singular or grouped vesicles primarily on the scalp and face; disseminated disease with lethargy, fever, poor feeding, and hypotonia	Contact isolation, IV antivirals (eg, acyclovir), local wound care, respiratory support, antiepileptics for seizures, ophthalmic ointment	Highest risk of transmission is via active lesions in birth canal; 70% of cases caused by HSV-2 infection; mortality rate of disseminated neonatal HSV infection >50%
Pemphigus syphiliticus	Superficial acral blisters and erosions, condyloma lata, whitish plaques, organomegaly, bony abnormalities	IV penicillin G (50,000 units/kg) every 12 h for 1 wk, wound care	Causative organism is *Treponema pallidum*; very rare manifestation of congenital syphilis; acquired transplacentally; requires repeat RPR test and CSF analysis until results are negative
Staphylococcal scalded skin syndrome (SSSS)	Acute onset of erythema of the face, trunk, and groin followed by superficial flaccid blisters and exfoliation	IV penicillin, clindamycin, cephalosporin for MSSA, vancomycin for MRSA	Caused by exfoliative toxins of *Staphylococcus aureus*; infection typically stems from mucosal source (eg, oropharynx or nares), therefore lesional cultures are negative for *S aureus*
Varicella	Congenital varicella syndrome: scarring and/or vesicles in a dermatomal pattern on the trunk, hypoplasia of the arms and legs, microcephaly, ocular abnormalities; neonatal varicella: disseminated vesicles with mucosal involvement	Immediate treatment with VZIG, acyclovir (if VZIG is not immediately available)	Congenital varicella syndrome is a rare complication of maternal exposure to varicella in first 20 wk of pregnancy; neonatal varicella caused by neonatal exposure several days before or after delivery
Genetic Disorders			
Bullous congenital ichthyosiform erythroderma	Crops of superficial bullae and erosions on the trunk, arms, or legs with erythema at birth on the trunk, arms, or legs; verrucous skin changes appear at 3 mo	Local wound care for blisters, keratolytics once verrucous lesions present	AD inherited defect in keratin 1/10; high risk of secondary infection in denuded skin
Dystrophic epidermolysis bullosa	Tense blisters in sites of mild trauma as well as widespread erosions, can also involve the gastrointestinal and gastrourinary tracts	Aggressive wound care, minimize skin handling, hospital contact precautions to avoid infection, FEN monitoring, temperature control	AD or AR inherited defect in *COL7A1*, increased risk of SCC in adulthood
Epidermolysis bullosa simplex (EBS)	Flaccid blisters and erosions in sites of mild trauma (eg, from placement of electrodes or blood pressure cuff), possible mucosal involvement	Aggressive wound care, minimize skin handling, hospital contact precautions to avoid infection, FEN monitoring, temperature control	AD inherited defect in keratin 5/14

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Diagnosis	Clinical Findings	Treatment	Notes
Junctional epidermolysis bullosa (JEB)	Tense blisters in sites of mild trauma as well as on hands and feet	Aggressive wound care, minimize skin handling, contact precautions to avoid infection, FEN monitoring, temperature control	AR inherited defect in laminins 5 (alpha 3, beta 3, gamma 2), *COL7A1*, or integrin beta genes, which determines subtype; subtypes are determined by the specific defect but have similar clinical findings with the exception of JEB with pyloric atresia
Kindler syndrome	Congenital blistering on acral skin and photosensitivity (improves with age), pigmentation changes and skin atrophy (worse with age); poikiloderma of the face and neck, palmoplantar hyperkeratosis	Local wound care, photoprotection, keratolytics for palmoplantar skin	AR defect in *KIND1*, which contributes to cell adhesion; patients have increased risk of cutaneous SCC in adulthood
Ichthyosis bullosa of Siemens	Skin fragility, blisters mostly on acral skin, diffuse erythema at birth; blisters replaced by hyperkeratotic plaques on the arms and legs in early childhood	Initially local wound care and hospital contact precautions to limit secondary infection; keratolytics and emollients for hyperkeratotic skin	AD inherited defect in keratin 2e; tends to have islands of normal skin within areas of affected skin, somewhat unique to this ichthyosis subtype
Incontinentia pigmenti	Vesicles and blisters at birth following the lines of Blaschko; blisters evolve into verrucous lesions, then to hyperpigmented and hypopigmented macules later in life	Local wound care	X-linked dominant defect in *IKBKG* (also called *NEMO*)
Transient bullous dermolysis of the newborn	Large blisters on the arms and legs or areas of friction at birth that can result in residual hypopigmentation and milia formation; usually resolves by 1 y of age	Local wound care and prevention of infection	AR/AD defect in *COL7A1*; variant of epidermolysis bullosa
Metabolic Disease			
Acrodermatitis enteropathica	Crusted papules, erosions, and pus-filled vesicles around the mouth and genitals, fussiness; appears within weeks of birth in bottle-fed neonates, upon weaning in breastfed infants	Zinc replacement	AR inherited defect in *SLC39A4* responsible for zinc absorption; earlier in formula-fed neonates due to easier absorption of zinc from human breast milk
Miscellaneous			
Acral peeling skin syndrome	Superficial desquamation of skin on the hands and feet, redness, flaccid blisters, itching	Minimize friction and heat on acral skin, prevent secondary infection with antibacterial soap, local wound care	AR inherited mutation in *TGM5*; often misdiagnosed as EBS; exacerbated by heat, humidity, and friction
Aplasia cutis congenita	Most commonly appears on the scalp; localized absence of the dermis, possible involvement of subcutaneous tissue and blister formation	Local wound care, skin grafting for larger defects	Idiopathic etiology; can result from prenatal methimazole exposure

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Diagnosis	Clinical Findings	Treatment	Notes
Bullous mastocytosis	Diffuse eruption of tense, sometimes hemorrhagic blisters that do not result in scarring; can also present as an erythematous macular eruption; involvement of internal organs can cause GI bleeding and cardiovascular collapse	Wound care, glucocorticoids, adrenaline, antihistamines, avoidance of triggers for mast cell degranulation	Sporadic *KIT* mutation; can mimic SSSS
Congenital erosive and vesicular dermatosis	Vesicles and superficial erosions on the trunk and acral skin that heal with reticulated scarring; alopecia, neurologic and ophthalmologic complications	Local wound care, infection prevention	Increased risk of postnatal HSV infection; affected neonates often are born prematurely
Erythema toxicum neonatorum	Papules, vesicles, pustules, and erythematous macules on the face, trunk, arms, and/or legs that appear within the first 72 h after birth	Benign, self-limited condition; no treatment necessary	Incidence increases with gestational weight
Sucking blister	0.5–2 cm oval blisters on the fingers, hands, and distal arms	Self-resolving	Thought to be due to neonatal sucking on the affected body part in utero
Transient neonatal pustular melanosis	Vesicles and pustules present at birth on the arms, legs, trunk, face, and/or buttocks; vesicles rupture easily resulting in hyperpigmented macules that remain for several months	Benign, self-limited condition; no treatment necessary	Most common in black patients

Abbreviations: IV, intravenous; RPR, rapid plasma reagin; CSF, cerebrospinal fluid; MSSA, methicillin-sensitive *Staphylococcus aureus*; MRSA, methicillin-resistant *Staphylococcus aureus*; VZIG, varicella zoster immunoglobulin; AD, autosomal-dominant; AR, autosomal-recessive; FEN, fluid, electrolyte, and nutrition; *COL7A1*, collagen, type VII, alpha 1; SCC, squamous cell carcinoma; *KIND1*, kindlerin; *IKBKG*, NF-κB essential modulator; *SLC39A4*, solute carrier family 39 (zinc transporter), member 4; *TGM5*, transglutaminase 5; GI, gastrointestinal; *KIT*, mast cell growth factor receptor.

Practice Questions

1. **Which congenital blistering condition is caused by a mast cell growth factor receptor *(KIT)* mutation?**
   a. aplasia cutis congenita
   b. bullous mastocytosis
   c. congenital erosive and vesicular dermatosis
   d. epidermolysis bullosa simplex
   e. ichthyosis bullosa of Siemens

2. **What gene mutation is present in acrodermatitis enteropathica?**
   a. collagen VII
   b. keratin 2e
   c. mast cell growth factor receptor
   d. NF-κB essential modulator
   e. solute carrier family 39 (zinc transporter), member 4

3. **Which congenital blistering disease is associated with an increased risk of squamous cell carcinoma in adult patients?**
   a. aplasia cutis congenita
   b. bullous mastocytosis
   c. Kindler syndrome
   d. pemphigus syphiliticus
   e. varicella

4. **Which congenital blistering condition can be caused by prenatal exposure to methimazole?**
   a. aplasia cutis congenita
   b. bullous mastocytosis
   c. dystrophic epidermolysis bullosa
   d. Kindler syndrome
   e. pemphigus syphiliticus

5. **Which congenital blistering condition is caused by a mutation in transglutaminase 5?**
   a. acral peeling skin syndrome
   b. aplasia cutis congenita
   c. bullous mastocytosis
   d. dystrophic epidermolysis bullosa
   e. Kindler syndrome

Fact sheets and practice questions will be posted monthly. Answers are posted separately on www.cutis.com.