

# First Distinguish Neonatal Rash as Infectious or Not

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BAL HARBOUR, FLA. — Although there is no single classification for neonatal rashes, subdividing these conditions into infectious versus noninfectious conditions, and further separating them by lesion type, provides a framework for diagnosing infants with skin disease, Dr. Anthony J. Mancini said at the annual Masters of Pediatrics meeting sponsored by the University of Miami.

For example, infectious lesions in newborns may be characterized as either vesiculopustular or those that present with bullae, erosions, or ulcers, said Dr. Mancini, of the pediatrics and dermatology departments at Northwestern University Feinberg School of Medicine and head of pediatric dermatology at Children's Memorial Hospital in Chicago.

Vesiculopustular conditions include staphylococcal pustulosis. This condition occurs most often in the diaper area, and patients present with relatively few lesions. Rarely, the lesions are accompanied by bacteremia, cellulitis, meningitis, or pneumonia. Although *Staphylococcus aureus* is the most common cause of pustulosis, group A or B streptococcus, *Listeria*, and *Pseudomonas* also can cause pustulosis.

Another infectious vesiculopustular condition is congenital candidiasis, which usually occurs within the first



**Noninfectious neonatal acne usually presents in the first 2-3 weeks of life and resolves in a few weeks or months.**

DR. MANCINI

6 days of life, and can be associated with maternal vulvovaginitis. The infant with congenital candidiasis presents with

erythematous papules and pustules on the soles and palms, usually caused by an ascending in utero infection. Risk factors for serious disease include low birth weight and a history of delivery room instrumentation, maternal intrauterine device, or cerclage. Also, these infants may have yellow discoloration, thickening, and ridging of their nails, sometimes with paronychia inflammation, Dr. Mancini noted.

A newborn with neonatal herpes—usually acquired from the mother during passage through the birth canal—usually presents with the characteristic vesicles on an erythematous base, often with clustering around the eyes. Neonatal herpes can affect the skin, eyes, and mucous membranes, as well as the central nervous system and other organs, and a significant number of benign cases may progress into a more serious disseminated form of herpes if they are not treated early, Dr. Mancini noted.

Infections in newborns that may present as bullae, erosions, or ulcers include bullous impetigo and staphylococcal scalded skin syndrome. A toxin secreted by *S. aureus* causes both of these conditions; bullous impetigo is the localized form, while scalded skin syndrome is a disseminated process based on hematogenous spread of the toxin.

Superficial peeling is a characteristic feature, but in severe cases the extensive skin peeling can require intensive care.

Other bullous or ulcerative infectious conditions in neonates include ecthyma gangrenosum, in which disk-shaped purple papules can evolve into bullae, erosions, and necrotic ulcers with eschar. This condition is most likely to occur in immunocompromised children, and indicates the presence of *Pseudomonas aeruginosa* bacteremia.

In the noninfectious category, conditions presenting as vesiculopustular lesions include erythema toxicum neonatorum, which presents as papules, pustules, and blotchy erythema.

This condition occurs in up to 50% of full-term neonates, but it is rare in premature infants with birth weights of less than 2,500 g, Dr. Mancini said. The condition arises within the first 2 days of life, and usually resolves over the next week or two.

Transient neonatal pustular melanosis is more common in darker skin, compared with lighter skin; as many as 5% of African American newborns have this condition, Dr. Mancini said. Prominent pustules, especially on the palms and soles, characterize the condition, as does a lack of erythema. After rupture, peripheral collarettes of scale are seen, and hyperpigmentation develops, which may last for several months.

Neonatal acne, also known as neonatal cephalic pustulosis, usually presents within the first 2-3 weeks of life, and resolves within a few weeks or a few months. The papulopustules tend to appear on the cheeks, but not on the trunk, and may be treated with a mild (2.5%) benzoyl peroxide or 2% erythromycin gel, if necessary. Topical antifungal cream also may be considered, given the occasional association of this condition with *Malassezia* species, but the lesions of neonatal acne usually resolve on their own with time.

Miliaria, or prickly heat, can be so extensive that it is misdiagnosed as atopic dermatitis and treated as such, with extensive application of emollients, which makes the condition worse, Dr. Mancini said. Prickly heat occurs in the summer due to humidity, but it can occur in the winter due to overbundling babies

in cold weather. Parents can make the condition worse by overapplying an emollient, especially a greasy product. Miliaria presents as tiny, red papules and papulopustules, compared with the scaly plaques of eczema.

Finally, consider histiocytosis when faced with noninfectious, vesiculopustular lesions in infants. Histiocytosis is more common than congenital herpes, which is among the most common misdiagnoses in affected neonates, Dr. Mancini noted, and the lesions may become hemorrhagic.

Diagnostic pearls for neonatal histiocytosis include refractory or purpuric seborrheic dermatitis, eroded papules or nodules in areas of skin flexion, and crusted papules on the palms and soles.

Noninfectious bullous disorders include sucking blisters, a common and benign disorder caused by vigorous sucking of the affected body part by the fetus in utero.

Epidermolysis bullosa (EB) is an inherited mechanobullous disease and another source of noninfectious bullae. Infants with this condition present with blistering and open erosions, Dr. Mancini said. In addition, they may have large areas of aplasia cutis and mucosal involvement. The subtype of EB that the patient has determines the clinical presentation.

Mastocytosis is caused by an increase in cutaneous mast cells, and it can manifest as bullous lesions in infants. It presents with tan macules and papules that may have a "peau d'orange" (orange peel) appearance. Flushing, irritability, diarrhea, and respiratory distress are other potential features of this condition.

Finally, another category of noninfectious diagnoses



**Bullous impetigo, caused by *Staphylococcus aureus*, features superficial erosions with a peripheral collarette, representing the remnants of the blister roof.**



**Tense pustules of staphylococcal pustulosis in a newborn male's groin can unroof upon swabbing with a cotton-tipped applicator, leaving a superficial, moist erosion.**

are those that refer to a "red, scaly baby," a neonate or infant who presents with widespread erythema and scaling. Diagnoses of this presentation include seborrheic dermatitis, atopic dermatitis, and psoriasis, Dr. Mancini said.

However, other conditions to consider include nutritional or metabolic disorders, immunodeficiency, ichthyoses, or ectodermal dysplasia.

"Cradle cap" is a characteristic presentation of seborrheic dermatitis in infants, which also may involve the groin, the umbilicus, and areas of skin flexion. By contrast, atopic dermatitis tends to spare the diaper area, and often involves the extremities.

Cradle cap can often be associated with a *S. aureus* colonization or infection. Psoriasis has some clinical overlap with seborrhea; it often occurs in the diaper area and scalp, and it can be triggered by infection with group A streptococcus.

Consider immunodeficiency in any baby with eczema or seborrheic dermatitis that resists treatment, Dr. Mancini said.

Another cause of red, scaly lesions in the infant is neonatal lupus, a diagnosis which should not be missed. It presents as scaly, erythematous patches and plaques that are sometimes diffuse, but most often occur in the peri-orbital area, which creates a "raccoon eye" presentation. Atrophy or telangiectasia also may be present. The mothers of children with neonatal lupus likely have anti-Ro, anti-La, or anti-U1 ribonucleoprotein antibodies, he noted, and the condition can be associated with congenital heart block.