

Infection Risk Up in Extreme Prematurity of Skin

BY BETSY BATES

Los Angeles Bureau

SANTA BARBARA, CALIF. — Enhanced survival of the smallest of premature infants presents special challenges to dermatologists tasked with caring for conditions arising from incomplete development of the skin.

Skin is a relatively early player in fetal development, with an epidermis present at 36 days that consists of a basal layer and a superficial peridermal layer. Ectodermal tissue gradually appears during organogenesis, and the stratum corneum begins to form around hair follicles at 14 weeks.

But the bridging of these cells into functional skin that includes an epidermal layer does not occur until 22-24 weeks' gestation, an age when preemies now survive at many institutions, said Dr. Lawrence F.



Tape used for umbilical lines may erode skin and lead to secondary infections.

DR. EICHENFIELD

Eichenfield, chief of pediatric and adolescent dermatology at Rady Children's Hospital, San Diego.

Complications associated with extreme prematurity of the skin can continue to be seen in babies born at 29- or 30-weeks' gestation or even beyond.

"The timing of this is interesting. What we see with very premature infant skin is skin that doesn't quite have the thickness, doesn't have the adhesion [of] mature skin," explained Dr. Eichenfield at the annual meeting of the California Society of Dermatology and Dermatologic Surgery.

Translucent premature skin may be incapable of fully performing critical functions, leaving infants susceptible to fluid electrolyte loss, temperature dysregulation, injuries, infections, and increased uptake of potentially toxic agents.

One unusual physical consequence of underdeveloped skin is anetoderma of prematurity, characterized by tissue paper-like depressed brown scars or outpouchings of skin.

Although these lesions may not appear to be associated with overt trauma, they tellingly appear in areas where leads or adhesives have been placed, and most likely represent postinflammatory hyperpigmentation, said Dr. Eichenfield. "Look at the pattern of the lesions" to deduce their origin, he suggested.

Quite commonly, erosions and crusts that would be "banal" in other settings can become profound problems in extremely premature infants. For example, the tape used to adhere umbilical lines may erode the skin and lead to significant secondary infections.

The suction pressure produced when leads are removed can lead to ecchymosis in immature skin, or the ecchymosis can be a sign of invasive fungal infection. All too often, it can be hard to distinguish the

two, said Dr. Eichenfield, also a professor of pediatrics and medicine at the University of California, San Diego.

One sign not to miss is diffuse superficial crusting around the umbilical line or elsewhere, which can be a tip off to invasion and colonization with cutaneous candidiasis. "This is important, because it is a significant player in mortality in the [neonatal] ICU," he said.

Another critical troika of symptoms includes pustules/papules, ecchymosis, and

crusts. When these three signs are present, opportunistic fungal infections should be a "very, very strong consideration," stressed Dr. Eichenfield.

Aspergillus and *Rhizopus* are only two of hundreds of fungi that may infect premature infants opportunistically, with extremely high rates of associated morbidity and mortality. "If you take care of it with debridement and systemic antifungals quickly, [while it remains confined to the skin], you save the child's life," he said.

Risk factors for fungal infection in preemies include corticosteroid and antibiotic use, adhesive tape, and hospital construction: the latter currently a major issue in California, since hospitals are racing to conform with state earthquake retrofitting standards. At Rady Children's Hospital, four or five cases of *Aspergillus*-associated fungal infections have been diagnosed in the past year or so, as construction progresses on the building and the surrounding medical complex, he noted. ■

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