Published in final edited form as:

J Pediatr. 2014 November ; 165(5): 1063.e1. doi:10.1016/j.jpeds.2014.06.069.

An Unusual Presentation of Dermatophytosis in a Premature Infant

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A 24-week gestation female infant weighing 516 g was born by vaginal delivery following premature rupture of membranes less than 12 hours before delivery. The mother had been performing cervical self-checks at home prior to delivery and had found a bulging amniotic sac necessitating delivery. The infant's early course included mechanical ventilation, surfactant, and phototherapy for hyperbilirubinemia. On day 5, the infant had an elevated temperature to 38.7° and that night developed an erythematous rash with papules and plaques on her back and posterior arms (Figure 1) and appeared to be in the distribution of phototherapy exposure. Broad spectrum antibiotics, including fluconazole, were started after blood culture was obtained. A skin biopsy and skin scrapings were collected, revealing numerous fungal organisms throughout the stratum corneum and hair follicles with elongated, septate, and branching hyphae worrisome for aspergillus (Figure 2; available at www.jpeds.com). Secondary to the high rate of invasive aspergillus disease in premature infants,¹ antifungal therapy was changed to amphotericin. On day 15, the infant developed necrotizing enterocolitis with colonic perforation. The surgical pathology did not reveal fungal organisms, though aspergillus has been implicated in cases of necrotizing enterocolitis.^{2,3} On day 23, the culture obtained from the biopsy was speciated as *Trichophyton rubrum*, a common cause for tinea corporis. No organisms grew from the blood culture, indicating that despite the large number of organisms and rapid onset, the infection was localized to the skin and not invasive. The mother recalled that she had a rash around the time of delivery on her inner thighs, though no skin scrapings were performed on the mother. The infant ultimately had care withdrawn from unrelated complications of prematurity.

Dermatophytosis is a fungal infection of the epidermis and other keratin containing tissue commonly caused by *Trichophyton* and *Microsporum* genera. These organisms are ubiquitous in nature often found in warm, humid soil, and are transmitted by human contact with the fungal spores. One would suspect that premature infants would be at particularly high risk for such infection given their immature host response⁴ and premature development of the epidermis.

Though it is unclear how this infant acquired the infection, there are few reports of premature infants having cutaneous *Trichophyton* infections through proposed vertical transmission^{5,6} as well as transmission from healthcare workers.⁷ Given this and the warm, humid air that comprises the pre-term environment in the neonatal intensive care setting, it is surprising that dermatophyte infections in premature infants appear to be rather rare.

Some reports have described care with topical antifungal treatment for limited disease,⁸ though given the extension of fungal elements deep within the hair follicle and the gestational age of the patient, we believed systemic therapy was warranted. Another important consideration is that this infection was localized to areas exposed to phototherapy, possibly contributing to a rapid localized growth of the organisms. In consideration of these factors, dermatophytosis should remain on any differential when considering pre-term neonatal skin infections.

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Figure 1.
Clinical image showing erythematous papules that coalesce with mild crusting on the back and posterior arms.

Figure 2.
Microscopic silver-stained image at 20× showing elongated hyphae infiltrating the stratum corneum.