Case of Bullous Impetigo Progressing to Staphylococcal Scalded Skin Syndrome: Case Report

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ABSTRACT
Staphylococcus aureus can cause many exfoliative skin conditions. This includes conditions like Bullous Impetigo, which is localized to Staphylococcal Scalded Skin Syndrome, a life-threatening condition causing blistering of the upper layer of skin. Certain exfoliative toxins are released that blister the superficial epidermis by hydrolyzing human desmoglein 1. For example, bullous impetigo, the toxin produces blisters locally at the site of infection, whereas in cases of the scalded-skin syndrome, it circulates throughout the body, causing blisters at sites distant from the infection. The disease especially affects infants and small children. SSSS is usually preceded by sore throat or conjunctivitis.
INTRODUCTION
Staphylococcal skin infections are one of the most common skin diseases in children. Staphylococcal Skin Infections can manifest either as localized bullous impetigo or generalized cutaneous involvement with systemic illness. It is caused by an exfoliative toxin released by staphylococcus. Diagnosis is either done clinically or can be confirmed by a skin biopsy specimen. Prompt diagnosis and therapy with proper antibiotics and supportive treatment have led to a decrease in the mortality rate (Menon, 2015). Here is a case for bullous impetigo developing into staphylococcal scalded skin syndrome in an immunocompetent infant.

Case Report
A 10 month-old infant presented a Flaccid bulla with central face axillae, groin, neck, inguinal areas, and back. The lesion started as a small macule with shiny crust and fissures in perioral and periorbital skin four days back, which turned into a bulla and enlarged over the next two days and was associated with fever. There was no history of burns or trauma. On examination, a large erosive, erythematous area with a thin, shiny crust and fissures in perioral, periorbital, perianal, and postauricular, skin detachment involving > 50% of the total body surface area was seen. Bullous impetigo, staphylococcal scalded skin syndrome (SSSS) and toxic epidermal necrolysis were possible diagnoses. Swab/tissue cultures were performed, the results yielded amoxicillin-susceptible Staphylococcus aureus. Punch biopsy was performed that revealed acantholysis at the upper spinous and granular layer with polymorphous infiltrates at the upper dermis. These findings were suggestive of bullous impetigo developing into staphylococcal scalded skin syndrome. Intravenous amoxicillin+clavulanic acid (50mg/kg per day) and local supportive care quickly improved with complete re-epithelialization in 12 days.

Discussion
Staphylococcus aureus is often responsible for late septic infections, more rarely of toxic ones, occurring in the neonatal period (Amagai et al., 2000). Although bullous impetigo and SSSS are a spectrum of diseases caused by staphylococcus aureus-induced exfoliative toxins, they have distinct differences (Plano et al., 2001). In bullous impetigo, the exfoliative toxins are restricted to the area of infection, and bacteria can be cultured from the blister contents. In staphylococcal scalded skin syndrome the exfoliative toxins are spread hematogenously from a localized source,
causing widespread epidermal damage at distant sites (Mockenhaupt et al., 2005). The lesions of bullous impetigo are commonly seen on the face, trunk, and extremities, which are vesicles to begin with and later become pus-filled, followed by rupture and crusting. The lesional bacterial culture reveals *S. aureus*.

Nikolsky’s sign, a disruption of normal skin caused by mechanical stress, is negative. In SSSS, the diagnosis is mainly clinical, based on the findings of tender erythroderma, bullae, and desquamation with a scalded appearance especially in friction zones, periorificial scabs/crusting, positive Nikolsky sign, and absence of mucosal involvement (Hubiche et al., 2012). The diagnosis can be confirmed by culturing *S. aureus* from any suspected primary focus of infection, but a skin biopsy is usually not necessary, but if performed, it may show superficial intraepidermal separation along the granular cell layer (Lasek-Duriez et al., 2009). In our patient, bullous impetigo was characterized by isolation of *S. aureus* and by histological findings. However, there was no case of extensive bullous impetigo followed by SSSS in neonates, as far as we know. Once SSSS is diagnosed, the treatment consists of supportive care and eradication of the primary infection with anti-staphylococcal antibiotics administered by vein for a minimum of seven days (Courjon et al., 2013). Bullous impetigo and staphylococcal scalded skin syndrome have different prognosis.

**Conclusion**

In conclusion, clinicians should be aware, although not frequent, that bullous impetigo may progress to SSSS, which differs in mortality, and close observation is required whenever suspicious.

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Study significance: The Staphylococcal Scalded Skin Syndrome especially affects infants and small children. SSSS is usually preceded by sore throat or conjunctivitis.

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