



# STAPHYLOCOCCAL SCALDED SKIN SYNDROME – SSSS

**S.Mahalakshmi , Professor , J.Jebasheela , Asstant Professor, S.P.Deepa Associate Professor**  
Department of Pediatrics  
Venkateswara Nursing College ,The Tamilnadu Dr.MGR Medical University

## ABSTRACT

Staphylococcal scalded skin syndrome is a potentially lifethreatening disorder caused mostly by a phage group II Staphylococcus aureus infection. Staphylococcal scalded skin syndrome is most common in newborns than adults. Staphylococcal scalded skin syndrome will appear abruptly with diffuse erythema and fever. The diagnosis might be confirmed by a skin biopsy specimen are often expedited by frozen section processing, as staphylococcal scalded skin syndrome should be distinguished from the life threatening toxic epidermal necrolysis. Histologically, the superficial epidermis is detached, the separation level being at the granular layer. The diffuse skin loss is thanks to a circulating bacterial exotoxin. The aetiological exfoliating toxin may be a serine protease that splits only desmoglein 1. The exfoliative toxins are spread haematogenously from a localized source of infection, causing widespread epidermal damage at distant sites. Sepsis and pneumonia are the most feared complications. The purpose of this review is to summarize advances in understanding of this serious disorder and supply therapeutic options for both paediatric and adult patients. Recent epidemiological studies have demonstrated that paediatric patients have an increased incidence of Staphylococcal scalded skin syndrome during the summer and autumn. Mortality is a smaller amount than 10% in children, but is between 40% and 63% in adults, despite antibacterial therapy. Previously, intravenous immunoglobulin had been recommended to combat Staphylococcal scalded skin syndrome, but a recent study associates its use with prolonged hospitalization. (*Key words: Erythema, Staphylococcal, exotoxin, desmoglein 1, antibacterial, immunoglobulin.*)

## Introduction:

Staphylococcal scalded skin syndrome (SSSS), also referred to as Ritter von Ritterschein disease (in newborns) Ritter disease and staphylococcal epidermal necrolysis, encompasses a spectrum of superficial

blistering skin disorders caused by the exfoliative toxins of some strains of *Staphylococcus aureus*. It is a syndrome of acute exfoliation of the skin typically following an erythematous cellulitis. Severity of staphylococcal scalded skin syndrome varies from a couple of blisters localized to the location of infection to a severe exfoliation affecting almost the whole body. A mild sort of the illness involving desquamation of just the skin folds following impetigo has been described.

### **Outbreaks of SSSS:**

The SSSS isn't a really common disease throughout world. The first identified outbreak of SSSS was in Ireland. In available literatures related with SSSS, a small number of outbreaks have been observed. However, infections associated with *S. aureus* are increasing. From maternity and neonatal perspective, the staphylococcus infection (both methicillin-sensitive and resistant) may be a matter of concern. In one recent study, a huge outbreak of the SSSS with an unusual phage pattern was recorded during a 115-day period and study involved 68 neonates. The exfoliative dermatitis was observed in 24 neonates and bacterial strains were isolated from 23 neonates. Eight babies had generalized staphylococcal scarlet fever. Therefore, chance of outbreaks may not be neglected and especially in neonatal sections, it may be difficult to control. In case of outbreak of SSSS, either in neonatal care unit or at children caring centre, the likelihood of a staphylococcal carrier within the nearby area should be screened. In order to manage the matter related to outbreak of SSSS, the healthcare personnel, medical care staff or visitors or infected persons with *S. aureus* should be identified. Upon identification of such persons, appropriate eradication medicines are to tend. To avoid any longer infections, the concerned should follow strict hand washing with antibacterial soap.

### **Pathogenesis:**

SSSS is caused by exfoliative toxin (ET) produced by *Staphylococcus aureus*. The nasopharynx, conjunctivae, external ears and navel are most often infected. When ET spreads to the whole body by blood circulation, desmoglein 1, a desmosomestructural protein, is broken. Pemphigus foliaceus-like acantholytic and intraepidermal blisters form on the upper epidermal layer.

### **Symptoms of SSSS:**

Early signs of SSSS usually begin with the hallmark symptoms of an infection:

- \* fever
- \* irritability

\*Fatigue

\*chills

\*weakness

\*lack of appetite

\* conjunctivitis (an inflammation or infection of the clear lining that covers the white portion of the eyeball).

the sore typically appears in the diaper region or around the stump of the umbilical cord in newborns and on the face in children. In adults, it can appear anywhere.

**As the toxin gets released, you may also notice:**

\* Red, tender skin, either limited to the entry point of the bacteria or widespread

\* Easily broken blisters

\* Peeling skin, which may come off in large sheets

These conditions can be life-threatening, which makes prompt treatment all the more important.

### **Investigations:**

**Biopsy:** Diagnosis is suspected clinically, but confirmation usually requires biopsy (frozen section may give earlier results). Specimens show non-inflammatory superficial splitting of the epidermis.

**Cultures:** should be taken from the conjunctiva, nasopharynx, blood, urine, and areas of possible primary infection, like the umbilicus during a neonate or suspect skin lesions. Cultures should not be taken from bullae because they are sterile, unlike in bullous impetigo, where cultures of the blister fluid will yield a pathogen.

### **What is the treatment of staphylococcal scalded skin syndrome?**

Since intravenous antibiotics are typically required to completely remove the infection, treatment for SSSS typically necessitates hospitalization. An anti-staphylococcal, penicillinase-resistant antibiotic such as flucloxacillin is used. Clindamycin, cephalosporin, Nafcillin, and Oxillin are some more antibiotics. When treating infections that may be methicillin-resistant (MRSA), vancomycin is utilized. Oral antibiotics are frequently changed out in a few of days, depending on the patient's reaction to the treatment. The patient may potentially be sent home from the hospital to get care at a receiving facility. Because they impede healing, corticosteroids are not prescribed to patients with SSSS.

### **Other supportive treatments for SSSS include:**

\* Taking paracetamol as needed for pain and fever

\* Keeping an eye on and sustaining hydration and electrolyte intake;

\* Taking care of the skin, which is typically quite delicate. Applying petroleum jelly will keep the skin hydrated. Typically, newborns with SSSS are housed in incubators. Even though SSSS has severe external symptoms, children usually recover well and finish healing in 5-7 days after beginning treatment.

### Prevention:

In order to prevent SSSS, several facts are to be considered which includes following points

- i. Antibacterial/ antiseptic soap are to be used in hand wash.
- ii. Clean towel or fresh clothing are to be used to dry the body or hands.
- iii. The linens and clothes are to be washed in hot water.
- iv. Antibacterial products are to be used in cleaning wall.
- v. The fingernails must be short to avoid any contamination.
- vi. Schools and childcare centers are to be avoided when the infection is in contagious form.
- vii. The personal hygiene items should not be shared.
- viii. Washing hands before touching any damaged or broken skin.
- ix. In cases of mild infections, bacterial colonizing can be prevented in the nostril and under the fingernails with antibiotic creams like Fusidic Acid or by using petroleum jelly several times daily, for a week of each month.

### Complications:

Most people with SSSS recover with no problems or skin scarring if they receive prompt treatment. However, same bacterium that causes SSSS can also cause the following:

- pneumonia
- cellulitis (an infection of the deep layers of the skin and the fat and tissues that lie below it)

### Key Points:

- Generalized desquamation and systemic illness are most often toxic epidermal necrolysis in older patients and staphylococcal scalded skin syndrome (SSSS) in infants and young children (and occasionally in immune compromised adults).
- Do a biopsy and culture the conjunctiva, nasopharynx, blood, urine, and areas of possible primary infection, such as the umbilicus and suspect skin lesions.
- Treat patients with antistaphylococcal antibiotics and, if disease is widespread, in a burn unit if possible.

- Monitor and treat for complications similar to those that occur with burns (eg, fluid and electrolyte imbalance, sepsis).

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