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**Case Report**

# *Staphylococcal* scalded skin syndrome caused by methicillin-resistant *Staphylococcus aureus* with superadded fungal infection in a neonate

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## ABSTRACT

*Staphylococcal* scalded skin syndrome (SSSS) or acute *staphylococcal* epidermolysis is an exfoliative skin disease and a toxin mediated *staphylococcal* infection affecting mostly neonates and adolescents. We describe here a case of 10-day old full term, vaginally delivered baby weighing 1530gms presenting with erythematous lesions first developing on the face and later spreading to the entire body for the last 6 days. The mucosal areas were spared. Blood culture of the patient revealed growth of Methicllin Resistant *Staphylococcus aureus* (MRSA). Culture from the skin lesions also revealed growth of MRSA with similar antibiotic sensitivity pattern. Fungal culture from the skin lesions revealed growth of Candida tropicalis. The diagnosis of SSSS was based on clinical criteria and microbiological findings.

**Keywords:** Candida tropicalis, MRSA, SSSS

## INTRODUCTION

*Staphylococcal* scalded skin syndrome (SSSS) is a rapidly expanding exfoliative disease of skin characterized by blistering and epidermal peeling.[1] The disease is induced by exfoliative toxins (ET) of *Staphylococcus aureus* and typically occurs in newborn babies with onset between 3-16 days of life.[2] Its resistance to conventional antibiotic treatment is also a new reality.[3] We describe a case of SSSS caused by MRSA with superadded fungal infection.

## CASE REPORT

A ten-day old full-term baby with history of normal vaginal delivery was admitted to the Neonatal ICU with diffuse, erythematous lesions with peeling of the skin spreading over the entire body. According to the mother the lesions first started appearing on the face 4 days after delivery. The baby was taken to a primary health care centre and kept for two days, from where he was referred to our tertiary care centre.

On examination, the baby was febrile, had a weak cry and poor sucking. The heart rate was 148/min, Respiratory rate was 46/min. No significant findings were observed on per abdominal and Cardiovascular examination. Nikolsky sign (easy separation of skin layers upon application of horizontal, tangential pressure to the skin) was positive. Blood investigations revealed high CRP (C-Reactive protein)-245.7mg/dl, Creatinine was low (0.48mg/dl), WBC Count-13,200/mm$^3$, haemoglobin-15.5g/dl. Electrolyte levels of Sodium (147mmol/l) and potassium (5.5mmol/l) were high.

The clinical appearance was interpretive of SSSS. Blood culture and culture of the blister were done. The baby was empirically put on Inj. Cefotaxime and Inj. Amikacin. Blood culture revealed growth of Methicllin

Resistant *S. aureus* sensitive to Vancomycin and Linezolid only. Culture from the skin lesions also revealed growth of MRSA with the same antibiotic sensitivity pattern. Following the receipt of the sensitivity report, Inj. Vancomycin was started.

**Figure 1: Fungal infection in a neonate.**

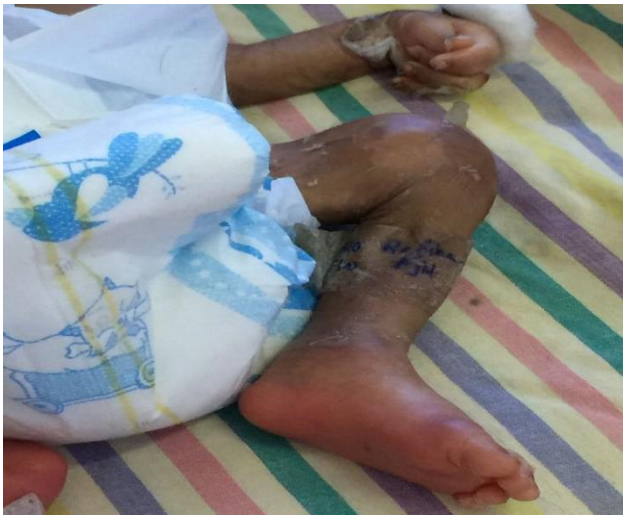

**Figure 2: Fungal infection in a neonate left leg.**

Scrapings from the skin lesions were also inoculated in four Sabouraud's Dextrose agar tubes with chloramphenicol (0.05gm/L) to exclude fungal infection. The culture revealed growth of Candida tropicalis in all the four tubes, which was confirmed by using VITEK 2 Yeast ID card. The antifungal susceptibility pattern was performed in VITEK2. The isolate was sensitive to Voriconazole (MIC≤0.12), amphotericin B (MIC≤0.25), caspofungin (MIC≤0.25), micafungin (MIC≤0.06) and flucytosine (MIC≤1). The patient was put on Inj. Amphotericin B. However, the recovery status of the patient could not be assessed because the patient left the hospital against medical advice.

## DISCUSSION

SSSS is a clinical manifestation of infection caused by exfoliative toxin producing Staphylococci, usually phage II *S. aureus* strains. These toxins especially ET-A and ET-B spread haematogenously and cause erythema, blistering and superficial scalding of the skin by targeting the protein desmoglein I in the zona granulosa of the epidermis.[4] The diagnosis is usually made on clinical ground, but it is important to take swab from the lesions in order to identify the primary focus. In our case the diagnosis was based on clinical findings of superficial blisters and demonstration of *Staphylococcal* infection by positive culture. Prompt treatment with effective antibiotics forms the mainstay of treatment. In our case treatment was delayed as the diagnosis could not be established initially at the primary health care centre. Also, infections caused by MRSA have become increasingly complicated because of their increasing resistance to antimicrobial agents. Besides antibiotic therapy, supportive skin care, adequate analgesic treatment, minimum handling and appropriate management of fluid and electrolyte balance are necessary.[5,6] Factors that may be responsible for higher incidence of SSSS in neonates are lack of immunity to exfoliative toxins and renal immaturity which results in decreased clearance of the toxins.[7] There have been scattered reports of isolated cases of SSSS from different parts of India.[8,9] In our case, the condition of the neonate was further complicated by superadded fungal infection which is a rare presentation. Literatures have suggested that there is a significant correlation between SSSS outbreaks and nasal carriers of *S. aureus*.[10]

## CONCLUSION

Considering the increasing prevalence of Staphylococcus aureus infection as well as nasal carriage of Staphylococcus aureus among patients and Health care workers, incidence of SSSS is on the rise. SSSS is a potentially fatal condition in neonates. Prompt diagnosis and early institution of therapy is crucial for better prognosis. To the best of our knowledge this is the first case of SSSS with superadded fungal infection reported from this region.

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