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Characteristics of staphylococcal scalded skin syndrome in children at Dr. Soetomo Hospital on 2010 - 2014

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Abstract

Background Staphylococcal scalded skin syndrome (SSSS) is a toxin-mediated epidermolitic disease characterized by erythema and widespread detachment of the superficial epidermis, caused by *Staphylococcus aureus*. The rarity of the disease makes it hard to review its characteristics.

Objective To evaluate the clinical characteristics of patients with SSSS in Dr. Soetomo Hospital.

Methods A medical records-based cross sectional analysis of SSSS (ICD-10 L00) from 2010 – 2014 was done. Epidemiology data involving sex, age, bodyweight, diagnosis, clinical course, laboratory examinations, management, therapy response, and end result were collected.

Results Among 19 medical records suspected as SSSS, 8 were discarded because the final diagnosis was bullous impetigo, impetigo contagiosa, and epidermolysis bullosa. Most (6/11) were infants. All patients presented with efflorescence, mostly as a combination of erythematous macule (8/11), yellowish crust (6/11), and erosion (6/11). Fever was present in 10 patients. *Staphylococcus aureus* was found in blood culture of one patient among the three checked (1/3), while the others yielded *Acinetobacter baumannii* and *Klebsiellapneumonia*. Three cases had their skin lesions cultured, where 2 also grew *Staphylococcus aureus* (2/3). Most (6/11) patients received three kinds of antibiotics. Cloxacillin was given to 10 patients. Pneumonia (3/11) and septicemia (3/11) were the most common complications. Six patients were discharged in good condition, three by request and two died due to septicemia.

Conclusion The most common features are erythematous macule, yellowish crust, skin erosion, and fever. Some are complicated by pneumonia and septicemia most treated with three kinds of antibiotics.

Keywords: staphylococcal scalded skin syndrome, skin manifestation, culture, anti-bacterial agents, children

Recurrent cellulitis in osteopetrosis: a case report

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Abstract

Background Cellulitis is a skin infection that develop as a result of bacterial entry through skin barrier, involving the deeper layers of the skin and subcutaneous tissue. Local abscesses usually came as a complication. The abnormality of bone structure in patient with osteopetrosis added problem in healing process and increase the risks of recurrency. This paper demonstrates a case of periorbital cellulitis in patient with osteopetrosis and severe malnutrition.

Objective To understand the management of cellulitis in pediatric patients with comorbid factors.

Case A 4 year-old girl with recurrent swelling under the left eye area came into hospital because of progressive enlargement of the swelling and fever. Five months prior to admission, there were similar symptoms and patient underwent a 14-days hospitalization because of a ruptured abscess on the same site. Patient went home with the scar left on the infection site. Patient was diagnosed osteopetrosis from radiological finding of her skull x-ray and bicytopenia at 2-years-old. On physical examination, there were severe malnutrition, hepatosplenomegaly, erythematous swelling and undulation under the left eye. Laboratory findings include bicytopenia, elevated procalcitonin, and the swab culture of the lesion showed *Eschericia coli* twice, subsequently. Orbita and paranasal computed tomography (CT) showed bilateral proptosis with cellulitis in left palpebrae and naso-maxilla, complete skull osteopetrosis, and complete hyperostosis obliteration of paranasal sinuses. At first, the patient were given ceftriaxone as an empirical antibiotic, and then change into piperacillin-tazobactam followed by cefepime based on the swab culture. Patient went home with silent chronic abscess.

Keywords: periorbital cellulitis, osteopetrosis, recurrent cellulitis

**Characteristics of Staphylococcal Scalded Skin Syndrome in children
at Dr. Soetomo Hospital on 2010 - 2014**

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ABSTRACT

Background: Staphylococcal scalded skin syndrome (SSSS) is a toxin-mediated epidermolytic disease characterized by erythema and widespread detachment of the superficial epidermis, caused by *Staphylococcus aureus*. The rarity of the disease makes it hard to review its characteristics.

Objective: To evaluate the clinical characteristics of patients with SSSS in Dr. Soetomo Hospital.

Methods: A medical record-based cross-sectional analysis of SSSS (ICD-10 L00) from 2010 – 2014 was done. Epidemiology data involving sex, age, bodyweight, diagnosis, clinical course, laboratory examinations, management, therapy response, and end result were collected.

Results: Among 19 medical records suspected as SSSS, 8 were discarded because the final diagnosis was bullous impetigo, impetigo contagiosa, and epidermolysis bullosa. Most (6/11) were infants. All patients presented with efflorescence, mostly as a combination of erythematous macule (8/11), yellowish crust (6/11), and erosion (6/11). Fever was present in 10 patients. *Staphylococcus aureus* was found in blood culture of one patient among the three checked (1/3), while the others yielded *Acinetobacter baumannii* and *Klebsiella pneumoniae*. Three cases had their skin lesions cultured, where 2 also grew *Staphylococcus aureus* (2/3). Most (6/11) patients received three kinds of antibiotics. Cloxacillin was given to 10 patients. Pneumonia (3/11) and septicemia (3/11) were the most common complications. Six patients were discharged in good condition, three by request and two died due to septicemia.

Conclusion: The most common features were erythematous macule, yellowish crust, skin erosion, and fever. Some were complicated by pneumonia and septicemia, most treated with three kinds of antibiotics.

Keywords: *staphylococcal scalded skin syndrome; skin manifestation; culture; anti-bacterial agents; children*

INTRODUCTION

Staphylococcal scalded skin syndrome (SSSS) is a toxin-mediated epidermolytic disease characterized by erythema and widespread detachment of the superficial epidermis, caused by *Staphylococcus aureus*.¹ *Staphylococcus aureus* still remains one of the most common bacteria causing disease in humans, despite the invention of effective antibacterials and improvement in hygiene. The organism is thought for causing over 60% of all skin and soft tissue infections in children and responsible for up to one-fourth of all visits to pediatric clinics. Skin and soft tissue infections that usually caused by *S. aureus* are bullous and non-bullous impetigo, folliculitis, furunculosis, carbunculosis, cellulitis, surgical and traumatic wound infections, mastitis, and neonatal omphalitis.²³

Staphylococcal scalded skin syndrome (SSSS) incidences in the general population between 0.09 and 0.56 cases per million inhabitants, less than a tenth the incidence of toxic epidermal necrolysis. However, its incidence in infants has been reported as high as 250 per million in the Czech Republic², a figure derived from a paediatric dermatologist specifically evaluating every infant for this disorder. The condition is caused by certain strains of *Staphylococcus aureus* that release serine protease exfoliate toxins that cleave desmosomal cadherins, specifically desmoglein 1, in the superficial epidermis, resulting in destruction of cell–cell adhesion and creating blistering and denuding of the skin. SSSS has a mortality rate of 3.6–11% in children.

There were still limited data of SSSS epidemiology in Indonesia, and also dr. Soetomo hospital. Present study is carried out with the objective to evaluate the clinical characteristics of patients with SSSS in Dr. Soetomo hospital.

SUBJECTS AND METHODS

A medical record-based cross sectional analysis of SSSS (ICD-10 L00) from 2010 – 2014 was done. Epidemiology data involving sex, age, bodyweight, diagnosis, clinical course, laboratory examinations, management, therapy response, and end result were collected.

RESULTS

Among 19 medical records suspected as SSSS, 8 were discarded because the final diagnosis was bullous impetigo, impetigo contagiosa, and epidermolysis bullosa.

The baseline characteristic can be found on table 1. There were equal number of each gender, most (6/11) were infants.

Table 1. Baseline characteristics

Baseline Characteristics	n(%)
Sex	
• Male	6 (54.5)
• Female	5 (45.5)
Age	
• 0-1 months	1 (9.1)
• 1 – 12 months	6 (54.5)
• 1 – 3 years	3 (27.3)
• ≥ 3 years	1 (9.1)
Nutritional status	
• Severe malnutrition	2 (18.2)
• Moderate malnutrition	1 (9.1)
• Good	7 (63.6)
• Overweight	1 (9.1)
Median Length of stay (range) days	7 (4-35)
Median temperature at admission (range) °C	38 (36.6 – 39.5)

Table 2. Clinical symptoms of SSSS patients

Clinical symptoms	n(%)
Other symptoms	10 (90.9)
• Fever	5 (45.5)
• Pain	1 (9.1)
• Dyspnea	4 (36.4)
• Gastro Intestinal tract	3 (27.3)
• Upper Respiratory Infection	
Complication	
• Pneumonia	3 (27.3)
• Sepsis	3 (27.3)

Table 3. Laboratory results of SSSS patients

Laboratory	n(%)
Hemoglobin classification	3 (27.3)
• Anemia	8 (72.7)
• Normal	
Leukocyte classification	1 (9.1)
• Leukopenia	7 (63.6)
• Normal	3 (27.3)
• Leukocytosis	
Platelet count	3 (27.3)
• Thrombocytopenia	6 (54.5)
• Normal	2 (18.2)
• Thrombocytosis	
C-Reactive Protein (CRP) level	4 (36.4)
• No data	4 (36.4)
• Normal (< 10 mg/L)	3 (27.3)
• High (> 10 mg/L)	
Albumin level classification	1 (9.1)
• No data	4 (36.4)
• Hypoalbuminemia	6 (54.5)
• Normal	

All patients presented with efflorescence, mostly as a combination of erythematous macule (8/11), yellowish crust (6/11), and erosion (6/11). Fever was present in 10 patients. *Staphylococcus aureus* was found in blood culture of one patient among the three checked (1/3), while the others yielded *Acinetobacter baumannii* and *Klebsiella pneumoniae*. Three cases had their skin lesions cultured, where 2 also grew *Staphylococcus aureus*(2/3). Pneumonia (3/11) and septicemia (3/11) were the most common complications. Leukocytosis only happened in three patients. Most (6/11) patients received three kinds of antibiotics. Cloxacillin was given to 10 patients. Six patients were discharged in good condition, three by request and two died due to septicemia.

DISCUSSION

In this study, we can see the epidemiology of SSSS in Dr Soetomo Hospital. Most patient affected were infant, which had still immature immune system. Most of patient with good nutritional status, and with median of stay only 7 days. Infection was more common in males, infants <1 year of age⁴, and adults over 65 years old. The risk of mortal infection was highest in patients on hemodialysis and in those with HIV infection, although solid organ transplantation, heart disease cancer, illicit intravenous drug use, alcohol abuse, diabetes, stroke also has quite high mortality incidence. Children exposed to frequent and/or multiple hospital infections are also at high risk of developing staphylococcal infections, particularly in intensive care units.

Physical examination revealed fever as the most frequent symptoms. All patient have combination of efflorescence, with most of them had combination of erythematous macule, skin erosion and yellowish crust. Spectrum of blistering skin disorders caused by staphylococcal exfoliative toxins are varied by nature. Severity of skin lesions can range from localized blisters in bullous

impetigo to generalized exfoliation. The localized form, known as bullous impetigo, presents with flaccid transparent bullae without systemic symptoms. Children with generalized form, also known as Ritter disease, usually present with fever and erythema. Superficial blisters then develop rapidly and rupture on slightest pressure to leave extensive areas of denuded skin

Laboratory result revealed that not all patient will have leukocytosis, even though the pathophysiology of this disease is infection. None of the patient underwent skin biopsy. The swab culture done in 3 patients, and two of them revealed *Staphylococcus aureus* infection. It also found on one of three patients checked for blood culture. The diagnosis of localized and generalized scalded skin is mainly clinical. Biopsy of the lesion remains the most useful investigation, should additional confirmation is needed.² Skin lesions swab and colonizing sites may help identify fever and any secondary skin infection as well as its influence on the three organ systems (gastrointestinal, respiratory, urinary tract). Blood cultures are positive in <5% of pediatric patients, compared with >50% in adults.

All of the patient received more than one systemic antibiotic, with cloxacillin as the most frequently used antibiotic. Children with a few localized lesions of bullous or non- bullous impetigo and no systemic symptoms can be treated with topical antibacterial such as mupirocin, but multiple and/or extensive lesions require systemic antibacterials. The treatment of choice is penicillinase-resistant penicillins such as cloxacillin and flucloxacillin. In adults, current treatment recommendations are cefazolin or ocloxacillin. In children requiring intravenous therapy, sulbactam/ampicillin and cefuroxime are both suitable, but ceftriaxone has a major advantage in that it can be given once daily, so it hold major advantage on outpatient clinic setting.⁵

CONCLUSION

The most common features were erythematous macule, yellowish crust, skin erosion, and fever. Some were complicated by pneumonia and septicemia: most treated with three kinds of antibiotics.

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Jadwal:

Pra PIT: 31 Oktober - 1 November 2015 di Hotel JW Marriott Surabaya

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