

## Case Report

# Wound care in a child suffering from Stevens-Johnson syndrome in PICU: case report

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### Abstract

Stevens-Johnson Syndrome is considered a life-threatening adverse drug reaction. The pathogenesis of these syndromes is still unclear, but several drugs, such as anticonvulsants and antibiotics, and especially sulfonamides, non-steroidal anti-inflammatory drugs, and allopurinol were predominantly suspected of triggering this reaction. A 5-year-old boy patient who came to hospital attention for an urticarial reaction developed after taking amoxicillin, then a recent scarlet fever acquired by brother. Due to the worsening of the lesions, he was admitted to our PICU after being intubated for deterioration of the respiratory dynamics and safe treatment of secretions. Nursing care is crucial: care of patient hospitalized with Stevens-Johnson syndrome and Toxic Epidermal Necrolysis consists of wound care, infection prevention, comfort management, hydration and nutrition, psychosocial support, and prevention of long-term complications. For all patients with SJS and TEN, it is essential to perform a total body daily evaluation of the skin. If the dressings remain intact, it is advisable to note the appearance of visible skin and any visible exudate or staining on the outside of the intact dressings. If dressings are being removed or need to be reapplied daily, a full skin evaluation is useful.

**Keywords:** Wound Healing, Stevens-Johnson Syndrome, Nursing, Erythema Multiforme, Pediatric Intensive Care Unit

### Introduction

Stevens-Johnson Syndrome (SJS) is considered a life-threatening adverse drug reaction. It has the same clinical manifestation of Toxic Epidermal Necrolysis (TEN) syndrome and the only difference is the dimension of the epidermal detachment. They are considered a late-onset allergic reaction

and are associated with high mortality. There are differences in the extent of detached or detachable skin: SJS affects < 10% of body surface area with SJS/TEN overlap 10-30% of the body surface and TEN >30%<sup>1,2</sup>.

The pathogenesis of these syndromes is still

unclear, but several drugs, such as anticonvulsants and antibiotics, and especially sulfonamides, non-steroidal anti-inflammatory drugs, and allopurinol were predominantly suspected of triggering this reaction<sup>3</sup>. The incidence is rare in children, and the highest mortality was observed in children aged 0-5 years<sup>1</sup>.

Currently, there are no evidence-based standardised treatment guidelines available and the usual treatment is mainly based on withdrawal of the suspected causative agent and supportive therapy.

It is important to immediately discontinue the causative drug and start supportive care.

Studies in children have been scarcely reported and are limited to small case series and retrospective series. Specific therapeutic strategies are controversial and include systemic corticosteroids and the use of intravenous immunoglobulin. There are also approaches, more recently, such as immunosuppressive therapies, including cyclosporine and TNF- $\alpha$  inhibitors<sup>1,2</sup>.

Several problems presented themselves in the management of this clinical case, including from the nursing point of view.

The main difficulties encountered were: endotracheal tube anchorage for flaking skin, maintenance of thermoregulation for exposed dermis, control of skin infections, hygiene care, control of secretions (salivary and bronchial), risk of bleeding and hydro-electrolyte imbalance due to abundant exudates.

### **Patient Information**

A 5-year-old boy patient who came to hospital attention for an urticarial reaction developed after taking amoxicillin, then a recent scarlet fever acquired by brother. The child previously had no medical conditions and had never shown allergies, other than a mild urticarial reaction after administration of the same antibiotic in previous years. A selective IgA deficiency was found retrospectively.

### **Clinical findings**

The reaction initially presents with bilateral lesions in the corner of the mouth bilaterally, followed by the onset of fever, edema of the lips, and the periocular area, and continuing with erythema of the cheeks. Treatment for suspected Steven Johnson syndrome, was started in the previous hospital: Ig-vena therapy, steroids, antihistamines, and antibiotics. Due to the worsening of the lesions,

he was admitted to our PICU after being intubated for deterioration of the respiratory dynamics and safe treatment of secretions.

On admission to Paediatric Intensive Care Unit (PICU), the patient presented bullous skin lesions on the chest, back of the hands and feet, eyelid and lingual edema, stomatitis, red-purple skin, hyperaemic conjunctivae and preserved motility, evolving maculopapular lesions on the trunk, genitals, back of hands and feet, stomatitis, and tongue edema.

Subsequently, there is rupture of the vesicles and skin changes with exposure to the dermis. After 20 days there is an improvement in the lesions of the trunk and limbs. Necrosis of the lips and exudative lesion of the auricle remain.

### **Timeline**

The different skin presentations and the evolution of the lesions with the treatments described can be found in Table 1.

### **Diagnostic evaluation, therapeutic intervention, and nursing management**

On arrival in the PICU, in addition to airway management, sedation, ventilation, hemodynamic monitoring, water and volemic balance, and infection control, skin wound management was crucial for child treatment and child healing. In fact, there were considerable difficulties in keeping the dressings in place, as well as in securing the garments and mobilising them. Antidecubitus devices, advanced dressings, isolation with a dedicated nurse to avoid infection as much as possible, and constant monitoring and treatment of pain were applied.

Treatment was multidisciplinary:

- Systemic therapy is supportive: cyclosporine, plasmapheresis, or immunoglobulin ev, corticosteroid therapy, and TNF-alpha factor inhibitors;
- Cleaning of lesions on the face, limbs and trunk, scrotum and auricle with saline solution and application of dermomycin cream (due to local contamination) every 48h, nonadhesive dressings and sterile gauze to cover, to be replaced when needed.
- The oral mucosa was the biggest challenge as it was a difficult area to treat as it required cleaning and disinfection, and being injured and bleeding it was very difficult to perform an oral cavity according to current protocols and at the same time medicate in such a way as to reduce






				
<b>0 DAY:</b>	<b>7 DAYS:</b>	<b>15 DAYS:</b>	<b>20 DAYS:</b>	<b>28 DAYS:</b>
Presence of bullous skin lesions on the chest, back of hands and feet, eyelid and lingual oedema, stomatitis, red-purple skin.	Vesicles rupture and alteration of the skin with exposure of the dermis	Improvement of lingual and palpebral oedema, reduction of vesicles, necrosis of the lips; auricle remains and erosion of the scrotum	Extubation, improvement of trunk and limb lesions, necrosis of the lips and exudative lesion of the auricle remains	The resolution of injuries and mild lip and eyelid damage remains continuation of inpatient and home care.

Table 1.

the injured area or at least not make it worse, also because the presence of the endotracheal tube was a possible risk factor for decubitus lesions, not to mention the risk of infection. We opted for an oleic matrix dressing with sustained release of Reactive Oxygen Species (ROS), which facilitates the healing process by creating a favourable microenvironment for microcirculation activation.

- Papillary conjunctivitis and conjunctival chemosis treated with betamethasone and chloramphenicol gel, sodium carmellose in eye drops, covering the eyelids with a non-adherent dressing;
- Subsequently in the genital area and auricle where the condition did not improve, application of 2% eosin and non-adh gauze, pink honey and vaseline on the labial area; on the scabs, we proceeded with fusidic acid sodium salt cream.

The stabilization of medical devices was the biggest challenge because, in addition to the skin lesions existing and therefore the limited availability of anchoring patches to the skin, an high risk of infection and pressure injuries were also present.

Initially intubated with orotracheal tube in an emergency, due to bleeding and oedema, in a short space of time was replaced by rhinotracheal tube. We proceeded to fix it with a hypoallergenic adhesive non-woven fabric as we are used to doing in our unit (Figure 1) but within the next few days the skin layer had completely exfoliated and there was no skin left to stick the patches to.

So we changed the anchoring system, using adult fixators, positioned in reverse, and an additional safety fixation with sterile bandages, (Figure 2) in order to support the device and ensure a safe airway without further damaging the child's face. As for the venous accesses, these were dressed with sterile gauze and hypoallergenic adhesive non-woven fabric in the areas where the skin was injured, applying a polyurethane dressing underneath to protect. While at the extremities of the limbs where the skin was intact and did not show any eruptions, they were fixed as indicated with polyurethane film. The remaining devices such as bladder catheter or gastric tube were simply fixed with sterile gauze and elastic bandage so as to apply as few plasters as possible.

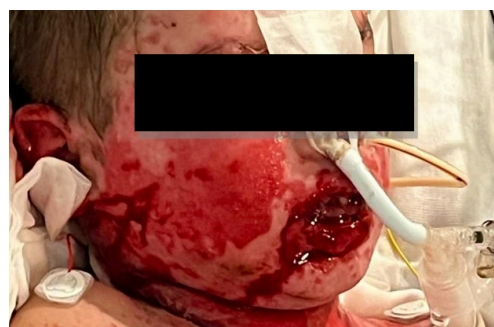


Figure 1.



Figure 2.

### Follow-up and outcomes

Once discharged from the PICU, and transferred to the in-patient unit, the nurses continued with the suggested medication for the ears, eyes, and mouth where crusted lesions still persisted, with progressive improvement. At home, the parents until complete recovery.

### Discussion

A multidisciplinary team approach is necessary and should include consultations with specialists in wound care, dermatology and/or plastic surgery, ophthalmology, infectiology, critical care, respiratory therapy, physical therapy, and diet.

Nursing care is crucial: care of patient hospitalized with Stevens-Johnson syndrome and Toxic Epidermal Necrolysis consists of wound care, infection prevention, comfort management, hydration and nutrition, psychosocial support, and prevention of long-term complications<sup>1,4</sup>.

For all patients with SJS and TEN, it is essential to perform a total body daily evaluation of the skin. If the dressings remain intact, it is advisable to note the appearance of visible skin and any visible exudate or staining on the outside of the intact dressings. If dressings are being removed or need to be reapplied daily, a full skin evaluation is useful.

Compromised basic skin integrity, the presence of medical devices such as ventilation and feeding tubes, urinary catheters, poor nutritional status, and reduced mobility place an increased risk of hospital-acquired pressure injuries. Special beds and/or equipment may be required to reduce this risk. The patient should be examined at regular intervals for any sign of pressure injury, and a wound specialist should be consulted as soon as possible to prevent further damage.

### Patient Perspective

The patient was sedated on admission and for the first few days of hospitalisation to allow good control of the pain caused by the skin lesions and the devices. Subsequently, despite a progressive escalation of the same, he presented episodes of delirium and agitation in the presence of hallucinations. During the last week of hospitalisation, the child was more calm, trusted the nursing staff, and even managed to have a good relationship with his parents. He reports that he had a good experience and never felt any physical pain.

Both the patient and the parents were

psychologically supported throughout the period and in follow-up and claim to have benefited from it.

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