RESEARCH
www.commprac.com
ISSN 1462 2815

SINDROM STEVENS-JOHNSON (SSJ)

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DOI: 10.5281/zenodo.11069826

Abstract

Stevens-Johnson syndrome (SJS) is a severe mucocutaneous reaction marked by extensive epidermal sloughing and necrosis that is frequently brought on by drugs or infections. It starts with flu-like symptoms and progresses to a red or purplish rash that spreads and blisters. Mucous membranes are compromised, especially those in the mouth and genitals, resulting in sagging blisters and skin peeling. SJS is characterized according to the body surface area involved, with varied fatality rates: SJS (ten percent), SJS overlap/toxic epidermal necrolysis (TEN) (10-30 percent), and severe TEN (>30 percent). In Europe and America, the incidence is believed to be 1-6 instances per million persons each year, with males having a higher prevalence. The mortality rate in SJS ranges from 5-12% to more than 30% in severe TEN. Early detection, cessation of suspected drugs, and hospitalization are all critical. The evolution of symptoms, early treatment attempts, and referral to specialized care are all described in a case history. Although no prior identical sickness or drug sensitivities were noted, the patient has diabetes that is under control. The family background is unimpressive. The clinical presentation, medication history, and suitable investigations are used to make a diagnosis. Laboratory abnormalities such as renal failure and elevated inflammatory markers are possible.

Keywords: Stevens-Johnson Syndrome, Mucocutaneous Reaction, Rash, Blister, Diagnosis.

INTRODUCTION

Stevens-Johnson syndrome (SSJ) is an acute mucocutaneous reaction syndrome characterized by necrosis and extensive epidermal sloughing and can cause death. The initial lesions are erythematous macules, mainly on the trunk and proximal extremities. Mucous membranes, which include the eyeball lining in the mouth and genitals, develop progressively into sagging blisters, and subsequent epidermal peeling occurs. Stevens-Johnson syndrome (SSJ) is a dermatology emergency that often begins with flu-like symptoms, followed by a red or purplish rash that can spread and blister. Stevens-Johnson syndrome (SSJ) usually occurs as an allergic reaction to medications or infections. Based on the body surface area involved, NE is classified into Stevens-Johnson syndrome (<10%), SJS overlap/toxic epidermal necrolysis (TEN) (10-30%), and NET (>30%) (Lim et al., 2016; Allanore et al., 2008).In Europe and America, the overall incidence of SJS is estimated to be 1-6 cases/1 million/year, affecting all races. The ratio of males to females is 2:1. The mortality rate in NE is 20 -25%, varying from 5-12% in SJS to >30% in NET. SJS is a disease that can cause death, so it needs fast and appropriate or optimal treatment, recognizing and immediately stopping drugs suspected of causing allergies and treating patients in the hospital (Allanore et al., 2008).

Case Study

A. Patient identity

Name	: NMS
No	: 22027397
Gender	: Female
Age	: 58 years
Date of birth	: February 4, 1964
Address	: Jl. Antasura 162, Peguyangan, Denpasar, Bali
Treatment date	: May 22, 2022

B. Main complaint

Red spots peeling all over the body

C. Current Illness History

The patient complained of reddish spots appearing on the face since 5 days of SMRS, reddish spots followed by swelling in the mouth, and itching 2 days before the spots appeared on the face. The patient complained of fever and nausea, so he went to a general practitioner and received paracetamol, allopurinol, and antacids. 4 days of SMRS, the patient went to the general practitioner and received cefadroxil 2x500mg, cetirizine 1x1 tab, paracetamol 3x500mg, and methylprednisolone 3x4mg. 3 days of SMRS complaints getting worse, red spots blackening and expanding, and blisters in several locations, accompanied by red eyes, peeling lips, and sores on the genitals. On the day of SMRS, the patient was taken to Bhakti Rahayu Hospital, received medication through an infusion, and was referred to Prof. Hospital. Dr. IGNG. Work on getting therapy and further treatment.

D. History of previous illness

Prior history of similar illness was denied. History of drug allergy was denied. The patient has controlled diabetes mellitus with insulin injections since 5 years ago.

E. Family history of illness

History of hypertension, heart disease, asthma, and allergies was denied. There is no known family history of a similar disease.

F. Physical examination

General condition	: Normal
GCS	: E4V5M6
Blood pressure	: 130/90 mmHg
Pulse	: 90 kali/minute
Respiration	: 20 kali/minute
Temperature	: 36.8˚C
Head	: anemic +/+, icteric -/-, palpebral edema -/-
Neck	: No gland enlargement was found
Cor	: S1-S2 normal, regular, murmur (-)
Lung	: vesicular +/+, crackles -/-, wheezing -/-
Abdomen	: distention (-), bowel sounds (+) normal, ascites (-), tenderness (-), liver and spleen not palpable
Extremity	: warm acral, edema (-)
Dermatological Status	
Location	: Lips
Efflorescence	: multiple erosions, clear boundaries, geographic shape, 1x2 cm in size, brownish crust above it

Location	: facialis, thoracoabdominal anterior et posterior, superior extremity dextra et sinistra, plantar pedis dextra et sinistra
Efflorescence	: Multiple purpura, well defined, geographic shape, size 1x2cm - 3x4cm
Location	: thorakalis posterior, vaginal
Efflorescence	: multiple erosions, well defined, geographic shape, size 1x2cm - 2x3cm, 9% BSA
Nikolsky sign	: (+)

G. Supporting investigation

Several additional examinations were performed on the patient, including:

1. Hematology Laboratory Examination

The complete blood count showed leukocytosis with a differential count of neutrophilia and lymphopenia, anemia, and an increase in NLR, as shown in Table 1.

Table 1: Complete Blood Examination Results

Parameter	22/05/2022	28/05/2022	Reference Value
WBC (10^3/µL)	16.05	19.62	4.1 - 11.0
% Neu	85.50	86.70	47 - 80
% Lym	9.50	9.30	13 - 40
% Mono	4.80	3.70	2.0 - 11.0
% Eos	0.00	0.10	0.0 - 5.0
% Baso	0.20	0.20	0.0-2.0
RBC (10^6/µL)	3.91	4.20	4.0 - 5.2
HGB (g/dL)	10.60	11.50	12.0 - 16.0
HCT (%)	32.80	35.00	36.0 - 49.0
MCV (fL)	83.90	83.30	80.0 - 100.0
MCH (pg)	27.10	27.40	26.0 - 34.0
MCHC (g/dL)	32.30	32.90	31-36
RDW (%)	13.90	13.60	11.6 - 14.8
PLT (10µ/µL)	354.00	431.00	140 - 440
NLR	9.00	9.32	≤ 3.13

On examination of the physiology of hemostasis, the results of the physiology of hemostasis were within normal limits, as shown in Table 2.

Table 2: Hemostasis Physiological Examination Results

Parameter	22/05/2022	Reference Value
PPT (detik)	14.3	10.8-14.4
INR	1.01	0.9-1.1
APTT (detik)	32.5	24-36

2. Clinical Chemistry Laboratory Examination

On clinical chemistry examination, the results showed an increase in BUN, creatinine, and transient blood glucose levels and a decrease in the estimated glomerular filtration rate, as shown in Table 3.

Table 3: Results of Clinical Chemistry Examination

Parameter	22/05/2022	24/05/2022	27/05/2022	29/05/2022	Reference Value
AST (U/L)	20.6				5 - 34
ALT (U/L)	30.90				11 – 34
Albumin (g/dL)	4.32				3.40 - 4.80
Glucose when	189				70 – 140
(mg/dL)	41.40	46.60	39.50	48.30	8.00 - 23.00
BUN (mg/dL)	1.47	1.43	1.32	1.39	0.57 - 1.11
Creatinine (mg/dL)	38.95	40.27	44.36	41.67	>= 90
e-LFG	137				136 - 145
Sodium (mmol/L)	4.40				3.50 - 5.10

3. Examination of Blood Gas Analysis

On blood gas analysis examination, metabolic acidosis was found, as shown in Table 4

Table 4: Results of blood gas analysis

Parameter	22/05/2022	Reference Value
pH	7.38	7,35 - 7,45
pCO2 (mmHg)	33.7	35,0 – 45,0
pO2 (mmHg)	164.00	80,0 – 100,0
BEecf (mmol/L)	-5.0	-2 – 2
$HCO3^-$ (mmol/L)	20.00	22,0 – 26,0
SO2 (%)	99.0	95 – 100
TCO2 (mmol/L)	28.50	24,0 – 30,0
Natrium (mmol/L)	137.00	136 - 145
Kalium (mmol/L)	4.40	3,50 – 5,10

4. Radiological Examination

a. AP chest photo (22/05/2022) Impression:

Cor and pulmo do not show Obs abnormalities. Right diaphragm high spondylosis thoracalis

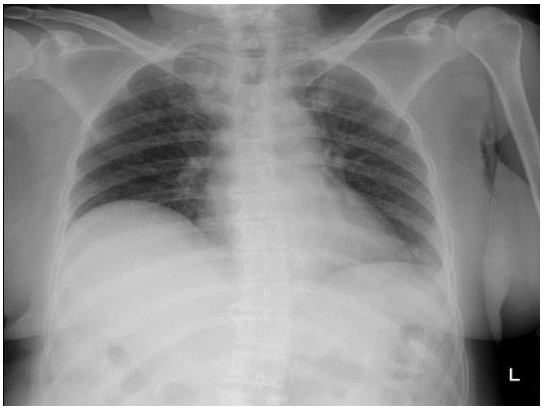

Figure 1: Results of radiological examination

5. Skin Examination

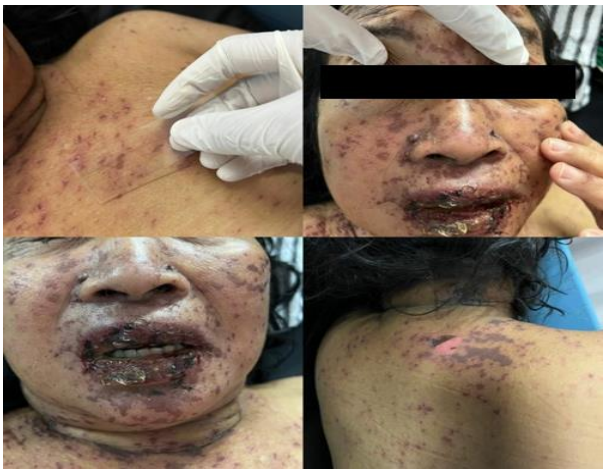

Figure 2: Skin examination results

Location: Lips

Efflorescence: multiple erosions, clear boundaries, geographic shape, size 1x2cm above it is the brownish crust

Location: facial, thoracoabdominal anterior et posterior, extremitas superior dextra et sinistra, plantar pedis dextra et sinistra Effloresensi: Multiple purpuras, clear boundaries, geographic shape, size 1x2cm - 3x4cm

Location: thoracalis posterior, vaginal

Efflorescence: multiple erosions, clear boundaries, geographic shape, size 1x2cm

- 2x3cm, 9% BSA

Nikolsky sign (+)

6. Microbiological Examination (Culture) Blood Culture (22/05/2022)

No microbial growth was found. **Swab mat OD day OS (25/05/2022)**. No yeast cells were found.

H. Working Diagnostics

Stevens-Johnson syndrome and suspected causes of allopurinol, cefadroxil, and paracetamol

I. Therapy Management

The patient is managed as follows:

1. Dexamethasone 5 mg/ml injection
2. Methylprednisolone 4 mg tablets
3. Chloramphenicol skin ointment 2% 15 gr
4. Levofloxacin 500 mg tablet
5. Nystatin drop 12 ml suspension
6. Apidra solo star 100 units/ml injection
7. Lantus solo star 100 units/ml injection

8. Valsartan 160 mg tablet
9. Cendo lyteers 15ml eye drops
10. Giving p-pred tm minidose
11. Gentamicin eye ointment
12. Optiflox eye drops
13. Omeprazole 20 mg capsules
14. Methylprednisolone 16 mg tablet

DISCUSSION

Stevens-Johnson syndrome (SSJ) is a syndrome that affects the skin, mucous membranes of the orifices, and eyes, with general conditions varying from mild to severe caused by allergies or infections. This syndrome is a complex hypersensitivity reaction affecting the skin and mucous membranes. Abnormalities of the skin in the form of erythema, vesicles, and bullae can be accompanied by purpura. Stevens-Johnson syndrome (SSJ) is a form of the mucocutaneous disease with severe systemic signs and symptoms in the form of target lesions of irregular shape, accompanied by macules, vesicles, bullae, and purpura which are widespread, especially on the skeleton, epidermal sloughing of less than 10 % of the body surface area, and involves the mucous membranes of two or more organs (Wang et al., 2021; Allanore, 2008).

In the anamnesis, it was found that reddish spots had appeared on the face since 5 days of SMRS; reddish spots were followed by swelling in the mouth, itching, fever, and nausea, so he went to a general practitioner and got paracetamol and antacids. 4 days of SMRS, the patient went to the general practitioner and received cefadroxil 2x500mg, cetirizine 1x1 tab, paracetamol 3x500mg, and methylprednisolone 3x4mg. 3 days of SMRS complaints getting worse, red spots blackening and expanding, and blisters in several locations, accompanied by red eyes, peeling lips, and sores on the genitals. The initial manifestation of SJS may be nonspecific febrile symptoms (flu-like syndrome) of malaise, fever, headache, cough, or runny nose with polymorphic lesions appearing on the skin. This lesion is characterized by forming acute vesicles and bullae with erosions. SJS also manifests in the mucous membranes. The lesions in this area are usually erosions, especially on the lips, in vesicles, and bullae (Lee et al., 2018; Lim et al., 2016).

Drugs are the leading cause of SJS (50%-80% of cases), infection or a combination of infection and drugs, and malignancy can also be a cause. Depending on the dose, drug effects usually appear after the first 8 weeks of taking the drug. Antibiotics most commonly cause SJS and TEN, followed by analgesics, cough-cold drugs, NSAIDs, psycho-epileptics, and anti-gouts. In the class of antibiotics, penicillin and sulfonamide are the most frequent, reaching 26% of cases. While the anticonvulsant groups are phenytoin, lamotrigine, carbamazepine, valproic acid, oxcarbazepine, and barbiturates; anticonvulsants may precipitate SJS within the first 60 days of use. The antiretroviral drug as a cause of SSJ is nevirapine. Several drugs that have also been reported to cause SSJ are modafinil, allopurinol doses greater than or equal to 200 mg per day, mirtazapine, TNF alpha antagonist, cocaine, sertraline, pantoprazole, and tramadol. The list of drugs at risk of causing SSJ can be seen in Table 5 (Dewi, 2019).

Table 5: List of drugs that are at risk of causing SSJ (Wong et al., 2016)

Low Risk	Moderate risk	High Risk
Beta blockers	Cephalosporins	Allopurinol
ACE inhibitors	Macrolides	Carbamazepine
Calcium Channel Blockers	Quinolones	Cotrimoxazole and
Thiazide class of diuretics	Tetracycline	Other Sulfonamides
Sulfonylureas	Acetic acid group	Sulfasalazine
Insulin		Lamotrigine
Propionic acid group		Nevirapine
		Oxicam class
		NSAIDs (meloxicam)

The complete blood count showed leukocytosis with a differential count of neutrophilia and lymphopenia, normocytic normochromic anemia, and increased NLR. In SSJ patients, expected leukocyte results can be found, or there is a slight increase in leukocytes and anemia. Increased leukocytes > 30 x 10^3/µL indicate another bacterial infection or sepsis. A viral infection or autoimmune disease usually causes lymphopenia. In SJS, the etiology that causes lymphopenia and anemia is not known. A study by Wang et al. in 2021 stated that NLR levels in SSJ patients were higher when compared to healthy controls and could be used as a predictor of SJS severity. This is following the study of Premi Sawitri and Mawardi, which stated that NLR levels in SSJ patients with SCORTEN values > 3 were higher than in SSJ patients with SCORTEN values < 3, even though the NLR values in both groups of patients increased (Primi Sawitri and Mawardi, 2022; Wang et al., 2021)

The neutrophil-to-lymphocyte ratio (NLR) evaluation combines information from two opposing immune pathways and thus reflects the inflammatory balance and is a better prognostic than a single parameter. Several studies have shown that NLR is associated with disease activity in several autoimmune inflammatory diseases and is a marker of systemic inflammation among patients with psoriasis. This suggests that NLR can reflect SJS/TEN inflammatory conditions at an early onset so that it can assist clinicians in making a diagnosis more quickly and predicting potential severity (Primi Sawitri and Mawardi, 2022; Komatsu-Fujii et al., 2018).

On clinical chemistry examination, there was an increase in glucose, an increase in BUN and creatinine levels, and a decrease in eGFR. Elevated BUN and creatinine levels and decreased eGFR are expected in SSJ patients. Acute Kidney Injury (AKI) is one of the most common complications in SSJ patients. Kidney Disease Improving Global Outcomes (KDIGO) modifies the definition of AKI as follows: an increase in serum creatinine (SCr) of 0.3 mg/dL within 48 hours, an increase in SCr of 1.5 times baseline within 7 days, or a urine volume of less than 0. 5 mL/kg/hour for 6 hours. KDIGO also shows the severity of AKI based on changes in SCr and/or urine volume relative to baseline. The pathophysiology of AKI in SSJ is complex. Studies have reported that SJS is associated with increased fluid loss from skin mucosal damage and gastrointestinal clinical features, such as abdominal cramps, severe exudative diarrhea, and bleeding, and with higher rates of infection, all of which contribute to renal dysfunction. Hung et al.'s research. In 2009, they stated that sepsis and hypoalbuminemia are independent risk factors for AKI in SSJ patients. Sepsis causes acute tubular necrosis in 27%–35% of hospitalized patients, and hypoalbuminemia, which may be related to malnutrition and reduced adequate intravascular volume, is a strong predictor of AKI in ICU patients. Infectious complications such as sepsis,

bacterial, fungal, and viral infections increase in SJS cases due to skin integrity loss (Lee et al., 2018; Hung et al., 2009).

On examination of blood gas analysis found results of metabolic acidosis. The etiology of metabolic acidosis in SJS is not specific but is suspected to be due to the patient's acute kidney injury. To maintain an average acid-base balance, the renal tubules must absorb filtered HCO3 (4,500 mmol) daily and synthesize sufficient HCO3 to neutralize the endogenous acid load. The mechanism is impaired renal bicarbonate formation with and without a concomitant decrease in bicarbonate absorption and retention of H+ ions. Total excretion of ammonia (NH4+) begins to decline when the GFR is < 40 to 50 mL/min. Renal disease associated with severe tubulointerstitial damage may be accompanied by more severe acidosis in the early stages of renal failure. The kidneys reabsorb all filtered HCO3- and produce new HCO3- in the collecting duct. Reabsorption of filtered HCO3 occurs in the proximal tubule (85-90%), in the thick ascending loop of Henle (10%), and the remainder in the distal nephron. Reabsorption of filtered HCO3- is essential for the maintenance of acid-base balance, bearing in mind that the loss of HCO3- in the urine is equivalent to the retention of H+ (both H+ and HCO3- are derived from the dissociation of H2CO3) (Yang et al., 2013).

Metabolic acidosis develops because of reduced kidney mass and the inability of the remaining nephrons to excrete their daily acid load through ammonia genesis. NH3 production in the renal tubules is stimulated by intracellular acidosis. When the systemic acid load is slightly increased, the balance is maintained by increased production and excretion of NH4+. Failure to remove NH4+ results in the retention of H+ ions and causes metabolic acidosis. The inability to secrete NH4+ (proximal tubule) or H+ ion (distal tubule) will translate into tubular acidosis through a pH-dependent mechanism (Yang et al., 2013).

Clinically SJS/TEN is divided into 3 groups based on the body area involved Body Surface Area (BSA), namely SJS (<10% body surface area), SJS overlapping NET (10-30%), and TEN (> 30%). The clinical symptoms of SJS/TEN are divided into 2 phases: the acute phase and the final phase with sequelae. The acute phase of SJS/TEN clinically begins 8 weeks after drug exposure. Initial or prodromal symptoms may be nonspecific, including fever and flu-like symptoms (itching and burning of the eyes, painful swallowing, cough, productive sputum, runny nose, headache, malaise, and arthralgias). Symptoms can last 1 week (Dewi, 2019; PERDOSKI, 2017).

After this period, symmetrical reddish, burning lesions appear on the face, upper trunk, and upper extremities. The distal parts of the arms and legs are usually not affected. Initial lesions will appear as erythematous macules to blackish red, purpuric macules, irregular shapes that will progressively be confluent. Later the lesions develop into papules, vesicles, bullae, and urticarial plaques, which usually do not itch. Typical lesions will give a 'target' appearance; the lesion appears to have 2 color zones; in the central part or core, it appears vesicular, purpuric, or necrotic. This zone is surrounded by macular erythema (Dewi, 2019).

The diagnostic criteria for Stevens-Johnson Syndrome according to the Clinical Practice Guidelines of the Indonesian Association of Dermatologists and Venereologists (PERDOSKI) can be described as follows (PERDOSKI, 2017):

1. Clinical

a. Anamnesis

1. The most essential cause is drug use.
2. History of systemic drug use (amount and type of drug, dose, method of administration, duration of administration, order of drug administration), drug contact on exposed skin (erosions, excoriations, ulcers), or mucosa.
3. Length of time from drug administration to appearance of skin disorders (immediately, moments or hours or days, or up to 8 weeks).
4. Identification of other precipitating factors: infection (Mycoplasma pneumoniae, virus), immunization, and bone marrow transplant.

b. Physical examination

1. The involvement of the skin and mucous membranes characterizes SJS and TEN.
2. Skin disorders, namely: erythema, vesicles, papules, erosions, excoriations, blackish crusts, sometimes purpura, and epidermolysis.
3. Positive Nikolsky's sign.
4. Mucosal disorders (at least two sites): usually begins with erythema, erosions, and tenderness of the oral mucosa, eyes, and genitals. Eye disorders in the form of catarrhal conjunctivitis, purulent, or ulcer. Oral mucosal abnormalities include hemorrhagic erosions, pain covered with gray-white pseudomembranes and crusts. Genital abnormalities in the form of erosion can cause synechiae (adhesions).
5. Extracutaneous symptoms: fever, body aches, and weakness, involvement of internal organs such as the lungs, which manifests as increased respiratory rate and coughing, as well as digestive organ complications such as massive diarrhea, malabsorption, melena, or colonic perforation.

2. Criteria for SJS, SJS overlap NET, and NET based on the area of epidermal detachment (epidermolysis), namely: SJS (<10% body surface area), SJS overlap, NET (10-30%), and NET (>30%) (PERDOSKI, 2017).

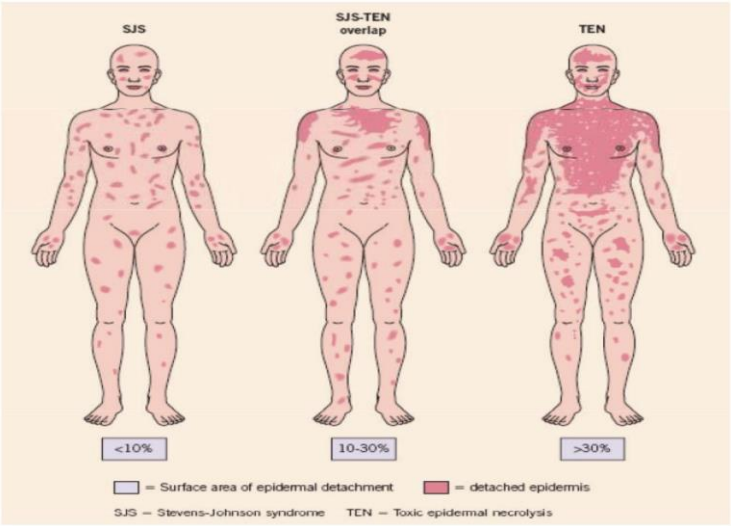

Figure 3: Differences in SJS, SJS-TEN overlap, and TEN are based on the extent of skin and mucosal lesions (Bastuji-Garin et al., 1993).

Table 6: SCORTEN severity-of-illness score (Harr dan French, 2010)

SCORTEN Parameters	Individual score	SCORTEN (sum of individual scores)	Mortality rate (%)
	Yes = 1, No = 0	0-1	3.2
Age > 40 years	Yes = 1, No = 0	2	12.1
Malignancy	Yes = 1, No = 0	3	35.8
Tachycardia (> 120x/min)	Yes = 1, No = 0	4	58.3
Epidermal area	Yes = 1, No = 0	> 5	90
released > 10%	Yes = 1, No = 0		
Serum urea > 10 mmol/L	Yes = 1, No = 0		

The severity score system, namely SCORTEN, is used to evaluate the severity and prognosis of the disease and determine the appropriate treatment for further management. SCORTEN is used as soon as the diagnosis of SJS is made. Patients with a SCORTEN value of 3 or more are advised to be treated in the intensive care unit (ICU) whenever possible. SCORTEN parameters can be seen in Table 6 (Harr and French, 2010).

In this case, the patient's SCORTEN value is 1, where the parameter that gets a value of 1 is the patient's age (> 40 years), so it can be concluded from the total SCORTEN value is 1, with an estimated mortality rate of 3.2%. The patient also does not need treatment in the ICU because SCORTEN < 3, so patient care is only in the regular ward.

The management of SJS includes three main things: stopping the use of drugs suspected of being the trigger, supportive therapy, and active intervention. Stopping the suspected drug use should be done as soon as possible. The sooner the causative drug is stopped, the better the prognosis; conversely, the more prolonged exposure will increase the risk of death. The chronology of drug use should be traced up to 1 to 4 weeks before onset. Supportive therapy includes fluid and electrolyte replacement. Urine output should be maintained at 50-80 mL per hour by intravenous administration of 0.5% NaCl plus 20 MEq KCl. Skin lesions are treated conservatively without debridement. Active interventions include administration of systemic corticosteroids, IVIG (Intravenous Immunoglobulin), Cyclosporin A, and Anti-Tumor Necrosis Factor. Corticosteroids can reduce the synthesis of proinflammatory molecules and inhibit the production of leukotrienes and prostaglandins. However, they also have anti proliferative effects and interfere with the function of monocytes and lymphocytes. In theory, this mechanism could control the immune response of SSJ patients. SSJ patients receiving systemic corticosteroid therapy have a better prognosis than supportive therapy alone. In a retrospective study, it was found that short-term high-dose steroid therapy would give good results. If the patient's general condition is good and the lesion is not thorough, prednisone 30-40 mg/day is sufficient. If the general condition is poor and the lesion is extensive, intravenous steroids such as dexamethasone 4-6 x 5 mg/day are used. After 2 - 3 days, the dose is reduced to 5 mg daily. After the dose reaches 5 mg/day, the next day, it is replaced with oral corticosteroids, for example, prednisone 20 mg a day, and a day later, it is reduced to 10 mg until it is stopped (Dewi, 2019; Magana et al., 2016).

The patient, in this case, was treated at Prof. Hospital. Dr. IGNG. Ngurah for 9 days, starting from the first day of MRS through the emergency room on May 22, 2022, until May 30, 2022, and left the hospital in an improved condition. For wound care and subsequent treatment, the patient is directed to health facility I for control. Although

there are no specific laboratory tests, abnormalities in kidney function will be found in SSJ patients, non-specific leukocytosis due to secondary bacterial infection. TNF-α, IL-2, IL-6, and serum CRP will increase but are not routinely checked due to limited funds, and not all laboratories have this testing facility.

CONCLUSION

Stevens-Johnson syndrome (SSJ) affects the skin, mucous membranes of the orifices, and eyes, with general conditions varying from mild to severe caused by allergies or infections. Stevens-Johnson syndrome is a form of mucocutaneous disease with severe systemic signs and symptoms in the form of a Target lesion of irregular shape, accompanied by widespread macules, vesicles, bullae, and purpura, especially on the skeleton, with epidermal sloughing of less than 10% of the body surface area, and involving the mucous membranes of two or more organs. A complete history of drug history and onset and adequate investigations greatly influence the diagnosis of SJS. Although there are no specific laboratory tests, abnormalities in kidney function will be found in SSJ patients, non-specific leukocytosis due to secondary bacterial infection. TNF-α, IL-2, IL-6, and serum CRP will increase but are not routinely checked due to limited funds, and not all laboratories have this testing facility.

References

1) Allanore LV, Roujeau JC, Wolff I, Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, Leffel DJ, editors. 2008. Epidermal necrolysis (Stevens- Johnson syndrome and toxic epidermal necrolysis). Fittzpatrick's Dermatology in General Medicine Edisi ke-7. New York McGraw-Hill Companies Inc;2008. h.347-54

2) Bastuji-Garin S, Rzany B, Stem RS, Shear NH, Naldi L, Roujeau JC. 1993. Clinical classification of cases of toxic epidermal necrolysis, Stevens- Johnson syndrome and erythema multiforme. Arch Dermatol 1993;129(1):92-6.

3) Dewi CC. 2019. Tinjauan atas Stevens-Johnson Syndrome dan Toxic Epidermal Necrolysis. Continuing Medical Education PERDOSKI. CDK Edisi Suplemen-2/ Vol 46, th. 2019.

4) Harr T dan French LE. 2010. Severe cutaneous adverse reactions: acute generalized exanthematous pustulosis, toxic epidermal necrolysis and Stevens-Johnson syndrome. Med Clin North Am 2010 Jul;94(4):727-42, x. doi: 10.1016/j.mcna.2010.04.004.

5) Hung CC, Liu WC, Kuo MC, Lee CH, Hwang SJ, Chen HC. 2009. Acute renal failure and its risk factors in Stevens-Johnson syndrome and toxic epidermal necrolysis. Am J Nephrol. 2009;29(6):633–8. 10.1159/000195632

6) Komatsu-Fujii T, Chinuki Y, Niihara H, et al. 2018. The thymus and activation-regulated chemokine (TARC) level in serum at an early stage of a drug eruption is a prognostic biomarker of severity of systemic inflammation. Allergol Int;67(1):90–95

7) Lee TH, Lee CC, Ng CY, Chang MY, Chang SW, Fan PC, Chung WH, Tian YC, Chen YC, Chang CH. 2018. The influence of acute kidney injury on the outcome of Stevens-Johnson syndrome and toxic epidermal necrolysis: The prognostic value of KDIGO staging. PLoS One. 2018 Sep 7;13(9):e0203642. doi: 10.1371/journal.pone.0203642. PMID: 30192870; PMCID: PMC6128626.

8) Lim VM, Do A, Berger TG, Nguyen AH, DeWeese J, Malone JD, Jordan K, Hom F, Tuffanelli L, Fillari P, Siu S, Goffman R. 2016. A decade of burn unit experience with Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis: Clinical pathological diagnosis and risk factor awareness. Burns Volume 42, Issue 4, June 2016, P836-843. https://doi.org/10.1016/j.burns.2016.01.014

9) Magana BR, Langner AL. 2016. Stevens Johnson syndrome and toxic epidermal necrolysis in children: A literature review of current treatments. EMJ Dermatol 2016;4(1):83-9

10) Perhimpunan Dokter Spesialis Kulit dan Kelamin Indonesia (PERDOSKI). 2017. Panduan Praktik Klinis Bagi Dokter Spesialis Kulit dan Kelamin di Indonesia. PP PERDOSKI Jakarta Pusat, Indonesia.

11) Primisawitri PP, Mawardi P. 2022. The Correlation of Neutrophil-Lymphocyte Ratio and Eosinophil Count with SCORTEN in SSJ/TEN. Clin Cosmet Investig Dermatol 2022 Mar 30;15:547-556. doi: 10.2147/CCID.S356450. PMID: 35387203; PMCID: PMC8978353.

12) Wang Q, Lan YP, Qi B, Yin L, Zhang LX, Liu W. 2021. Neutrophil : lymphocyte ratio is associated with disease severity and mortality in patients with Stevens-Johnson syndrome/toxic epidermal necrolysis. J Dermatol Sep;48(9):1394-1400. doi: 10.1111/1346-8138.15968. Epub 2021 Jun 1. PMID: 34060656.

13) Wong A, Malvestiti AA, Hafner Mde F. 2016. Stevens-Johnson syndrome and toxic epidermal necrolysis: a review. Rev Assoc Med Bras Sep- Oct;62(5):468-73. doi: 10.1590/1806-9282.62.05.468. PMID: 27656858.

14) Yang MS, Kang MG, Jung JW, Song WJ, Kang HY, Cho SH, Min KU. 2013. Clinical Features and Prognostic Factors in Severe Cutaneous Drug Reactions. Int Arch Allergy Immunol 2013;162:346–354. DOI: 10.1159/000354918