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Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Elderly Inpatients: A Retrospective Study at Dr. M. Djamil Padang Hospital (2016-2022)

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ABSTRACT

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are acute mucocutaneous conditions primarily triggered by medications and associated with high morbidity and mortality, especially among the elderly. This retrospective descriptive study was conducted to evaluate the clinical profile of elderly inpatients diagnosed with SJS and TEN at Dr. M. Djamil Hospital, Padang from 2016 to 2022. A total of 29 medical records were analyzed. The mean patient age was 64.9 years, with a slight male predominance (51.7%). Hypertension was the most common comorbidity (34.5%). Most cases presented with epidermolysis affecting less than 10% of body surface area (62.1%). All cases were drug-induced, with antibiotics for 41.4% of the causes. All patients exhibited the classic triad of mucocutaneous involvement. A majority of patients were hospitalized for ≤10 days (75.9%), and the SCORTEN score of 2 was most frequently observed (44.8%), predicting a 12.1% mortality risk. The recovery rate was 82.8%, while mortality reached 17.2%, predominantly due to septic complications. Findings highlight the need for cautious prescribing, early diagnosis, and prompt supportive treatment in elderly patients with SJS/TEN.

Keywords: elderly, Stevens Johnson Syndrome, Toxic Epidermal Necrolysis

INTRODUCTION

Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are acute mucocutaneous reaction syndromes that represent dermatological emergencies and are known for a classic triad of involvement: skin, orifice mucosa, and eyes. [1, 2] SJS shares similarities with TEN in terms of etiology, risk factors, pathogenesis, clinical manifestations, and histopathology. SJS is considered the minor form of TEN, with lesions covering more than 30% of the body surface area categorized as TEN. [3] To date, the exact cause of SJS and TEN is not definitively known; however, the prevailing theory suggests an immunological mechanism. It is recognized that drug allergies are the most common cause. [4] A study conducted on 166 individuals in China showed that the majority of cases were caused by antibiotics and anticonvulsants. [5]

The prognosis of patients with SJS and TEN can be influenced by disease progression and the complications that arise. Most patients with SJS and TEN require optimal inpatient care, with the length of hospital stay depending on disease severity, patient condition, comorbidities, underlying infections, and complications. [6] The most common complication leading to death is sepsis. [7]

The global incidence of SJS is 1–6 cases per million population per year, while TEN has an incidence of 0.4–1.2 cases per million population per year.[5] Data from patients treated at Dr. Moewardi General Hospital in Surakarta between 2014 and 2018 revealed that more than 50% of SJS and TEN patients were over 45 years old, with the majority being male (52%).[8] SJS and TEN can occur at any age; however, the risk increases in the elderly, with an estimated 2.7-fold higher risk compared to younger adults. As age increases, the incidence and mortality of TEN also rise.[9] The increase in incidence is influenced by several predisposing factors, such as comorbidities, polypharmacy, genetic factors, immunosuppression, malignancy, concurrent radiation therapy, and the use of anticonvulsants.[10] A retrospective study of SJS and TEN patients at a Federal District hospital in Brazil from 1999 to 2014 reported that the highest mortality was found in the elderly group (66.67% of elderly patients died).[7]

SJS and TEN conditions tend to be more prevalent among elderly patients. This group, categorized as elderly, undergoes a process known as aging. Aging is marked by an impaired ability to maintain homeostasis in response to physiological stress. [11, 12] As a result, physiological changes in this population predispose them to various health problems. [13]

The various health issues encountered by the elderly are referred to as multipathology. This condition makes treatment in the elderly more complex, leading to a higher rate of drug prescriptions compared to other age groups. Furthermore, the elderly have a greater predisposition to adverse drug reactions. This corresponds with the high incidence of chronic degenerative diseases and polypharmacy, which increase the risk of SJS and TEN and, subsequently, elevate mortality risk in this population group. [2,14] Due to the high mortality risk associated with SJS and TEN in the elderly, it is crucial to exercise caution in understanding and prescribing medications for this population. The best management approach is causative treatment. Identifying the exact cause of SJS and TEN enables healthcare professionals to deliver timely and appropriate therapy and prevention, which is expected to help reduce mortality rates and maintain life expectancy in SJS and TEN patients. [4]

This study aims to obtain information regarding the profile of SJS and TEN in the elderly in the inpatient ward of Dr. M. Djamil General Hospital, Padang, for the period 2016–2022.

MATERIALS & METHODS

This study is a retrospective descriptive study using medical record data of patients at Dr. M. Djamil General Hospital (RSUP) Padang from January 1, 2016, to December 31, 2022. The sample in this study consisted of elderly patients aged ≥60 years who were diagnosed with Stevens-Johnson Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) in the inpatient ward of Dr. M. Djamil General Hospital Padang and had complete medical records, including data on age, sex, comorbidities, epidermolysis area, etiology, classic triad involvement, length of hospitalized, SCORTEN score, and clinical outcome. Sampling was carried out using the total sampling technique. This study was conducted after obtaining approval from the Health Research Ethics Committee for ethical clearance at Dr. M. Djamil General Hospital Padang. The collected data were then processed and analyzed using SPSS.

RESULT

1.1 Frequency Distribution of Demographic Characteristics of Elderly Patients with SJS and TEN

Characteristic	Mean age ± SD	f	%
Age	64.9 ± 5.9 year		
Gender			
Male		15	51.7
Female		14	48.3
Comorbid			
Diabetes mellitus		4	13.8
Hypertension		10	34.5
Stroke		2	6.9
Epilepsy		4	13.8
Heart disease		1	3.4
Secondary infection		2	6.9
Kidney disease		5	17.2
Other comorbidities*		9	31

*** Tuberculosis, Schizophrenia, Pneumonia, Liver function disorder, HIV**

Elderly patients with SJS and TEN at Dr. M. Djamil General Hospital Padang during the 2016–2022 period were found to have an age range of 60 to 88 years, with a mean age of 64.9 years. This study also found that the majority of patients were male, totaling 15 individuals (51.7%). The most common comorbidity identified among the study subjects was hypertension (34.5%).

1.2 Frequency Distribution of SJS and TEN Based on Epidermolysis Area in the Elderly

	Epidermolysis Area	f	%
SJS	<10%	18	62.1
SJS-TEN *overlaps*	10-30%	5	17.2
TEN	>30%	6	20.7

This study found that most elderly patients with SJS and TEN at Dr. M. Djamil General Hospital Padang during the 2016–2022 period had an epidermolysis area of less than 10% (62.1%), as presented in Table 1.2.

1.3 Frequency Distribution of Etiologies of SJS and TEN in the Elderly

Etiology	f	%
Drug		
NSAIDs	4	13.8
Anticonvulsants	5	17.2
Antibiotics	12	41.4
Other drugs	8	27.6
Infections	0	0
Post-vaccination reaction	0	0
Malignancy	0	0
Idiopathic	0	0

This study found that all cases of SJS and TEN in elderly patients at Dr. M. Djamil General Hospital Padang during the 2016–2022 period were drug-induced (100%), with antibiotics being the most frequently implicated drug class (41.4%), as shown in Table 1.3.

1.4 Frequency Distribution of the Classic Triad of SJS and TEN in the Elderly

Classic Triad	f	%
Skin involvement	29	100
Eye involvement	29	100
Mucosal involvement	29	100

According to Table 1.4, the classic triad of SJS and TEN was present in all elderly patients diagnosed and treated for SJS and TEN at Dr. M. Djamil General Hospital Padang from 2016 to 2022.

1.5 Frequency Distribution of Length of Hospital Stay for SJS and TEN in the Elderly

Length of Stay	f	%
≤10 days	22	75.9
>10 days	7	24.1

This study found that the majority of elderly patients with SJS and TEN at Dr. M. Djamil General Hospital Padang during the 2016–2022 period was hospitalized for ≤10 days (75.9%), as presented in Table 1.5.

1.6 Frequency Distribution of Severity Levels Based on SCORTEN Scores in Elderly Patients with SJS and TEN

SCORTEN score	Severity Level	f	%
SCORTEN ≤1	3.2%	8	27.6
SCORTEN 2	12.1%	13	44.8
SCORTEN 3	35.8%	6	20.7
SCORTEN 4	58.3%	2	6.9
SCORTEN ≥5	90%	0	0

Table 1.6 presents the severity level of mortality risk in SJS and TEN cases, as assessed using the SCORTEN score, which ranged from 1 to 4. Most cases (44.8%) had a SCORTEN score of 2, indicating a predicted mortality rate of 12.1%.

1.7 Frequency Distribution of Clinical Outcomes in Elderly Patients with SJS and TEN

Clinical Outcome	f	%
Recovered	24	82.8
Mortality	5	17.2

Table 1.7 shows that the recovery rate (82.8%) among elderly patients with SJS and TEN was higher than the mortality rate. Among deceased patients, the mean age was 66 years, with hypertension being the most common comorbidity, followed by stroke, epilepsy, and infections. Antibiotics were the most frequently identified causative drug class, the length of hospitalization was ≤10 days, and the most common complication was sepsis.

DISCUSSION

Distribution of demographic characteristics of elderly SJS and TEN patients

A total of 29 elderly patients aged ≥60 years diagnosed with SJS and TEN were included in this study. The age range was 60 to 88 years, with a mean age of 64.9 years. The risk of dermatological conditions tends to increase with age, possibly due to increased drug use and drug interactions. [15] SJS and TEN are known to be more common among elderly patients. As the elderly population increases, the incidence of SJS and TEN is also expected to rise. This is likely due to the fact that older adults are prescribed more medications than younger populations, and most cases of SJS and TEN are drug-induced. [16] Additionally, this may also be attributed to immunocompromised conditions in this age group. [17] Aging is associated with declining physiological functions, including a weakened immune response, which is evidenced by slower immune reaction to infections. Inadequate immune responses may also result from autoimmune decline, potentially impairing the body's ability to respond to disease. [18]

Male patients were more frequently affected (51.7%) than females (48.3%). This aligns with previous findings at Dr. Moewardi General Hospital from 2014–2018, where male patients constituted 52% of SJS and TEN cases.[6] Similarly, data from Dr. M. Djamil General Hospital in 2010–2011 showed a male predominance of 72.73%, with a male-to-female ratio of 3:1.[19] Other studies reported female predominance, although no significant correlation was found between gender and SJS/TEN occurrence.[20] Tan and Tay reported an equal gender ratio in their study.[21] Overall, SJS and TEN can affect both sexes, with no established gender-based differences in incidence.[22]

Hypertension was the most frequently observed comorbidity (34.5%). This is consistent with studies by Robert et al., who also reported hypertension as the most common comorbidity in SJS/TEN (20.2–21.3%).[23] Similar findings were reported by Osward et al.[24] and Sousa-Pinto et al., who also noted hypertension as the leading comorbidity, though without a direct correlation to SJS/TEN.[25] One of the strongest risk factors for SJS/TEN is the presence of chronic illnesses, highlighting

polypharmacy and poor health status as major contributors.[26] The prominence of hypertension in this study reflects national health data (Riskesdas 2013), which reported a hypertension prevalence of 57.9% among the elderly.[27]

Distribution of SJS and TEN based on epidermolysis area in the elderly

Based on the of epidermolysis area, SJS and TEN are classified into three categories: SJS (<10%), SJS-TEN overlaps (10–30%), and TEN (>30%). In this study, SJS cases were most common (62.1%), followed by TEN (20.7%) and SJS-TEN overlap (17.2%). These results align with a 2021 study conducted at Dr. Moewardi General Hospital, which also found SJS to be more prevalent than TEN. [28] This supports the global data showing higher incidence of SJS (1–6 cases/million/year) compared to TEN (0.4–1.2 cases/million/year). [5]

SJS and TEN etiology in the elderly

This study found that all cases (100%) were drug-induced. Drugs are the most frequently reported triggers for SJS/TEN, with over 200 medications identified in the literature. [15, 29] Elderly individuals are at higher risk for adverse drug reactions compared to younger adults, particularly due to comorbid conditions requiring multiple medications, increasing the likelihood of drug interactions—especially with antibiotics. Kidney impairment in older adults further necessitates careful dosage and selection of antibiotics. [30] In this study, antibiotics were the most common causative drug class (41.4%). This mirrors findings across Southeast Asia, where antibiotics are the leading cause of SJS/TEN, followed by anticonvulsants, NSAIDs, and allopurinol. [31] A study at Dr. Soetomo General Hospital in Surabaya found NSAIDs (31.8%), anticonvulsants (29.5%), and antibiotics (25%) as the primary causes. [32] Antibiotics may cause adverse effects and hypersensitivity reactions through various mechanisms. [33]

Classic triad in elderly SJS and TEN patients

All elderly patients in this study presented with the classic triad (100%). Similar findings were reported in a 2010–2011 study at Dr. M. Djamil Hospital.[19] In contrast, a study by Susheera et al. in Thailand reported oral mucosal involvement in 95–100% of cases and eye involvement in 81.2–85%.[34] Meanwhile, the Moewardi study found eye involvement in only 50% of patients.[8] The classic triad (skin, mucosal, and ocular involvement) is a hallmark of SJS and facilitates clinical diagnosis.[4,19] This study shows that the triad involvement in elderly patients resembles that in other populations.

Hospitalization duration for SJS and TEN in the elderly

Most patients were hospitalized for ≤10 days (75.9%), which is consistent with findings from Dr. Moewardi Hospital where the average duration of stay was 10 days.[8] Hospitalization length may depend on disease severity, patient condition, underlying infections, and treatment duration.[4,8] The average treatment duration was 10 days, typically involving corticosteroids.[8] Systemic corticosteroids are considered effective if administered within 3–7 days of disease onset.[35] No significant difference in length of hospital stay was observed between elderly and younger adult populations, likely due to similar treatment protocols across age groups.

Severity levels based on SCORTEN scores in elderly SJS and TEN patients

SCORTEN scores in this study ranged from 1 to 4, with the most common score being 2 (44.8%), associated with a predicted mortality rate of 12.1%. SCORTEN is used to assess disease severity and predict mortality in SJS/TEN. In this study, elderly patients commonly scored ≥1 based on age >40 and heart rate >120 bpm, which may be linked to hypertension—the most common comorbidity. Similar SCORTEN

distribution was reported in a study at Kenyatta National Hospital (2006–2016), where score 2 was also most prevalent (45.8%). [20] Carrasquillo et al. (2019) found that SCORTEN ≥3 significantly increased mortality risk. [24] Fewer risk factors contribute to lower severity and better prognosis. [19]

Clinical outcomes in elderly SJS and TEN patients

This study reported a mortality rate of 17.2% (5 out of 29 cases), while 82.8% of patients recovered. Studies in the U.S. have reported mortality rates ranging from 4.8% to 14.8%. [26] In contrast, a Brazilian study (1999–2014) reported a much higher mortality rate of 66.67% among elderly patients, attributed to increased drug sensitivity and the prevalence of chronic degenerative diseases and polypharmacy. [14] SJS generally has a good prognosis, and early treatment is critical to recovery. Prompt discontinuation of the offending drug significantly improves prognosis. [19] In this study, all deceased patients developed septic shock, consistent with literature indicating sepsis as the leading cause of death in SJS/TEN. [7] Other studies also associate corticosteroid therapy with increased mortality due to heightened susceptibility to sepsis. Sunaga et al. observed higher mortality in patients receiving systemic steroids. [36] Additionally, the absence of standardized clinical protocols may contribute to poor outcomes. Weinand et al. emphasized the need for specialized burn unit care in SJS/TEN cases. [17] However, field observations indicated that patients were not isolated in designated units, possibly increasing the risk of secondary infections and sepsis.

CONCLUSION

The elderly patients with SJS and TEN in this study had a mean age of 64.9 years, ranging from 60 to 88 years. The majority were male, with hypertension as the most common comorbidity. Most patients had an epidermolysis area of less than 10%. All cases were drug-induced, with antibiotics being the most frequently implicated drug class. All patients presented with the classic triad of mucocutaneous involvement. The length of hospital stay was ≤10 days, and the most common SCORTEN score was 2, indicating a predicted mortality rate of 12.1%. Nearly all patients recovered.

Declaration by Authors

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