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Wound care for Stevens-Johnson syndrome and toxic epidermal necrolysis

To the Editor: Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are acute and life-threatening drug reactions characterized by extensive mucocutaneous exfoliation. SJS and TEN occur rarely, with an annual incidence of 1.2 to 9.2 and 0.4 to 1.9 per million, respectively.[1,2] Wound care for SJS and/or TEN mirrors local trends in burn management, as current guidelines lack strong evidence for these pathologic processes.[3-5] The aim of this review is to assess the effects of dressings used in the wound care in patients with SJS and/or TEN and present evidence rated according to the Strength of Recommendation Taxonomy criteria that will aid clinicians in determining the best approach to wound care for their patients with SJS and/or TEN.

A review of the literature describing wound management in patients with SJS and TEN was conducted as outlined in Supplemental Fig 1 (available at http://www.jaad.org). The search terms used were (((“*toxic epidermal necrolysis*” [Supplementary Concept]) OR “*toxic epidermal necrosis*” OR “*Stevens Johnson syndrome*”) AND (*biosynthetic OR collagen OR debridement OR dressing OR silver OR topical OR wound*)). All retrospective studies, case reports, and case series describing wound management in patients with SJS and/or TEN were included. A total of 22 articles that included the primary outcome of time to re-epithelialization (average time, 14.16 ± 9.42 days) were selected. Table I[6-27] summarizes the results.

Simple dressings (topical creams or ointments covered with bandages) and modern dressings (fiber, biologic, and synthetic) were studied. The most commonly used dressings in the wound care of patients with SJS and/or TEN were biosynthetic dressings, followed by silver-impregnated fiber dressings. Table II describes the characteristics of the dressings reported. Although all the included articles reported survival rates, only 15 reported length of stay (which varied by hospital setting, such as critical care unit or ward floor) or total hospital stay. The number of weekly dressing changes was obtained in all studies, either directly from the articles or by calculation to the closest decimal point. Pain severity during dressing changes was reported in 5 studies. Compared with simple dressings, modern dressings offer the advantage of a reduced number of dressing changes, which results in improved patient comfort. However, there is no apparent impact of their use on healing time. Most studies did not report side effects or cost of dressings. No adverse events related to the dressings were documented.

A total of 13 studies used a concomitant systemic medication. Systemic steroids and intravenous immunoglobulin were the most frequently used. Whether any of these systemic medications affected time to re-epithelialization remains to be determined. No randomized clinical trials or studies with large power were found in our search. No studies met grade A or B Strength of Recommendation Taxonomy criteria (Table I). The limitations of the studies selected include small sample sizes, use of systemic medication, and variation of time to diagnosis and time to placement of dressings. There was a lack of studies comparing 2 or more wound care interventions.

In conclusion, the use of modern dressings should be considered as part of standard therapy because of less frequent dressing changes and improved reported patient comfort. Further clinical studies are warranted, as their influence on healing time is yet to be determined.

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Table I. Studies included

Dressing type studied	Study type	SORT criteria	Systemic therapy	No. of patients	Average days to re-epithelization	Average pain scale score (1-10)	No. of dressing changes/wk	LOS, d	Survival rate	Cost of dressing
Allograft										
Lindford et al, Burns 2011;37:e67-e72.	CR		IVIG, steroids	1	17.5	NR	3.5	28	100%	0.8 euros/cm^2
Pianigiani et al, Dermatol Surg 2002;28:1173-1176.	CR		Steroids	2	8	NR	0	NR	100%	NR
Antiseptic										
Boorboor et al, Burns 2008;34:487-492.	RCS	C	NR	8	16	5.5	7	16.6	63%	NR
Biosynthetic										
Arevalo and Lorente, J Burn Care Rehabil 1999;20:406-410.	RCS	C	Cyclosporine	8	12.7	NR	0	27.3	100%	NR
Bannasch et al, Arch Dermatol 2004;140:160-162.	CR		NR	1	12	NR	0	35	100%	NR
Boorboor et al, Burns 2008;34:487-492.	RCS	C	NR	6	12.5	2.9	0	17.3	66%	NR
Bradley et al, Ann Plast Surg 1995;35:124-132.	CR		Steroids	3	9	NR	0	14.3	100%	\$88/ft^2
Lindford et al, Burns 2011;37:e67-e72.	CR		IVIG, Steroids	1	12	NR	0	28	100%	0.5 euros/cm^2
Madry et al, Pol Przegl Chir 2011;83:541-548.	CR		NR	1	21	NR	0	NR	100%	NR
Oomman and Goodwin, J Med Res Sci 2014;19:577-579.	CR		NR	1	14	NR	0	NR	100%	NR
Pfurtscheller et al, Pediatr Derm 2008;25:541-543.	CR		NR	1	8	NR	1		100%	NR
Rogers et al, Burns 2017;43:1464-1472.	RCS	C	Yes, many	24	13	NR	0	34	100%	\$0.23/cm^2
Sowder, J Burn Care Rehabil 1990;11:237-239.	CR		Steroids	1	14	NR	0	NR	100%	NR
Fiber										
Imamura et al, Int J Dermatol 1996;35:834-835.	CR		Steroids	1	56	NR	2	56	100%	NR
Melandri, J Eur Acad Dermatol Venereol 2007;21:426-427.	CR		IVIG	1	7	NR	0	12	100%	NR
Silver-impregnated										
Asz et al, J Pediatr Surg 2006;41:e9-e12.	CR		NR	1	20	NR	2	20	100%	NR
Huang et al, Burns 2008;34:63-66.	CR		Steroids	1	8	NR	1	NR	100%	NR
Huang et al, Burns 2010;36:121-126.	RCS	C	NR	9	10.4	5	2	NR	66%	NR
Huang et al, Adv Skin Wound Care 2014;27:210-215.	RCS	C	NR	8	9.5	5.75	2	NR	75%	NR
McCarthy and Donovan, J Wound Ostomy Continence Nurs 2016;43:650-651.	CR		NR	1	12	NR	1	NR	100%	NR
McCullough et al, Burns 2017;43:200-205.	RCS	C	IVIG, steroids	40	14	NR	2.5	17.1	90%	NR
Neema and Chatterjee, Indian J Dermatol Venereol Leprol 2017;83:121-124.	CR		IVIG	1	9	NR	3	12	100%	NR
Vern-Gross et al, Case Rep Dermatol 2012;4:72-75.	CR		IVIG, steroids	1	14	NR	2	23	100%	NR
Simple										
Huang et al, Adv Skin Wound Care 2014;27:210-215.	RCS	C	NR	12	11.92	7.42	7	NR	100%	NR
Xenograft										
Marvin et al, Arch Surg 1984;119:601-605.	CS		NR	5	12.4	NR	0	19	80%	NR

C, C-level recommendation is based on consensus, usual practice, opinion, disease-oriented evidence, or case series for studies of diagnosis, treatment, prevention, or screening; *CR*, case report; *CS*, case series; *IVIG*, intravenous immunoglobulin; *LOS*, length of stay; *NR*, not reported; *RCS*, retrospective study; *SORT*, Strength of Recommendation Taxonomy.