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Research Article

AN OBSERVATIONAL STUDY AND ASSESSMENT OF SCORTEN SCORE IN CASES OF SJS AND TOXIC EPIDERMAL NECROLYSIS AT A TERTIARY CARE CENTER

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A B S T R A C T

Objective- This study was done to access the outcome of Stevens-Johnson syndrome and toxic epidermal necrolysis (SJS-TEN) patients and to confirm the accuracy of SCORE of Toxic Epidermal Necrolysis (SCORTEN) as a prognostic marker in these patients by serial analysis on day 1, 3 and 5 of admission.

Material and Methods-This study was a hospital based observational study conducted on the patients who were admitted in Sawai Man Singh Hospital, Jaipur with clinically diagnosed as SJS and or TEN.

Results- Comparison of mean SCORTEN values for surviving and deceased patients, respectively, showed that although the SCORTEN values for deceased patients were, as expected significantly higher than those for surviving patients at all three time points, these were not significantly different in all 3 days.

Conclusion- We concluded that the performance of SCORTEN did not show any difference between day 1, 3 and 5. Hence, doing it on one day will provide valuable information regarding the prognosis.

INTRODUCTION

Stevens Johnson and Toxic epidermal Necrolysis syndrome (SJS,TEN) is one of the severe cutaneous adverse drug reactions (SCAR)among the four SCAR, with SJS and TEN carrying a significant mortality and mortality which is less with Acute generalized exanthematous pustulosis (AGEP), drug induced exfoliative dermatitis and Drug Rash with Eosinophilia and Systemic Symptoms (DRESS) in order.[1] Mortality rate ranges from 1-5% in SJS to 25-35% in established TEN.[2]Stevens-Johnson syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) are life threatening conditions and are characterized by large epidermal detachment of necrotic epidermis and erosions of mucous membranes.

Certain scoring systems are necessary for predicting the prognosis in SJS-TEN patients, which will help in deciding the modality of treatment and help in reducing mortality in this dermatological emergency. Measuring the severity of illness and predicting the mortality needs a specific scoring system. To measure the severity of such serious illness SCORTEN is used as an objective scoring tool. It was developed and validated in Europe by Bastuji-Garin *et al*[3] as a predictor of mortality. The SCORTEN is a SJS/TEN-specific severity of illness score based on a set of well-defined seven predictive factors which are identified and allotted equal weight age in the score, so that the SCORTEN ranged from 0 (no factor present) to 7 (all factors present), seven risk factors are age; presence of malignancy, extent of epidermal detachment, tachycardia, blood glucose, bicarbonate and blood urea nitrogen(BUN) levels recorded within 24 hours of admission.[3] It is currently being used worldwide to predict the probability of hospital mortality and to determine the efficacy of therapeutic interventions. There are studies going on in various parts of the world to evaluate its usefulness in their particular areas, as genetic factors are also important in the occurrence and prognosis of SJS and TEN patients.[4,5]

Aims and Objective

This study was done to access the outcome of SJS-TEN patients and to confirm the accuracy of SCORTEN as a prognostic marker in these patients by serial analysis on day 1, 3 and 5 of admission.

MATERIALS AND METHODS

This study was a hospital based observational study on fifty six patients admitted in Department of Dermatology ,Venereology and Leprosy, SMS Medical College and Attached Hospitals, Jaipur, Rajasthan. Study was conducted over a period of 12 months (June 2018 to June 2019) untill the sample size was reached.

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***Sampling procedure and size**:* Sample size was calculated at 95% confidence level and α error of 0.05% assessing 16.7% mortality prediction in the prognosis of Stevens Johnson syndrome on day 5 as per reference study "A clinicotherapeutic analysis of Stevens-Johnson syndrome and toxic epidermal necrolysis with an emphasis on the predictive value and accuracy of SCORE of Toxic Epidermal Necrolysis " at an absolute error of 10% the required sample size in 56 cases of Stevens Johnson syndrome.

Inclusion Criteria: All the patients who were admitted in Sawai Man Singh Hospital Jaipur and were clinically diagnosed as SJS –TEN.

Exclusion Criteria: Patient/Attendant who were not willing to give written informed consent to participate in the study and patients who came for admission after 1 week of illness.

***Statistical analysis**:* Statistical analysis was performed with the SPSS, version 21 for Windows statistical software package (SPSS inc., Chicago, IL, USA). Continuous data were summarized in the form of mean and standard deviation. Continuous data were presented in the form of proportion. Significance of categorical variables was interpreted by $\chi 2$ (Chi-square test).The Standardized Mortality Ratio was used to signify the predicted and observed mortalities of TEN subjects. Probability was considered to be significant if it was less than or equal to 0.05.

RESULTS

Fifty six cases of SJS-TEN were reported during this study period. Of these, 12 were SJS , 22 were SJS-TEN overlap and, 22 cases of TEN. Three cases of TEN and one case of SJS-TEN were excluded from the study, as they were admitted one week after the onset of reaction. The mean age of incidence of total subjects was 33.4±17.41years with range of 3years to 80 years. The mean age of incidence among males was 32.3±18.15years and the same for females was34.9±19.41 years. The difference of age between the gender was not statistically significant (p>0.05).

Table 1 Causative Drugs Implicated

DRUG		NO.OF CASES			Total
GROUP	SUBGROUP	SJS	SJS-TEN overlap	TEN	
	Phenytoin	2	7	8	17
Anticonvulsant	Valproate	0	1	2	3
	Carbamezepine	2	2	1	5
Analgesic	Ibuprofen	4	2	2	8
	Paracetamol	1	1	1	3
	Etorcoxib	1	0	0	1
	Diclofenac	0	1	0	1
	Naproxen	0	1	0	1
	Nimesulide	0	1	0	1
	Unkonwn analgesic	1	0	0	1
Antibiotic	Ceftriaxone	0	2	0	2
	Ampicillin	1	0	0	1
	Ciprofloxacin	0	0	1	1
	Ofloxacin	0	1	5	6
	Levofloxacin	0	1	0	1
Antitubecular		0	1	0	1
ART	Nevirapine	0	0	1	1
unknown			1	1	2
Total		12	22	22	56

Of the 56 cases, history of drug intake was present in all (100%) and the causative drug was identified in 53 cases (94.64%) while in 3(5.36%) cases it was unidentified. The involved drugs were; 24(42.86%) due to anticonvulsants, 15 (26.79%) due to analgesics,12(21.42%) due to antibiotics and 2 (3.57) were due to ART and AKT respectively.. Individual drug wise, Phenytoin being the commonest cause leading to 17 cases (30.35%) in our study, next being Ibuprofen in 8 cases (14.28%) others as mentioned in table [1].

Table 2 SCORTEN SCORE (day 1, day 3, and day 5) and outcome of patients

S.NO	SCORTEN SCORE			MORTALITY
	DAY 1	DAY 3	DAY 5	
1	2	2	2	NO
2	1	1	0	NO
3	1	1	1	NO
4	1	1	2	NO
5	0	0	0	NO
6	0	0	0	NO
7	3	5	DEATH	DEATH
8	0	0	0	NO
9	4	5	3	NO
10	1	1	3	NO
11	5	5	6	DEATH
12	3	5	DEATH	DEATH
13	2	3	2	NO
14	1	1	1	NO
15	3	3	1	NO
16	2	1	1	NO
17	2	2	2	NO
18	4	3	2	NO
19	1	2	0	NO
20	1	1	1	NO
21	4	4	3	NO
22	2	3	1	NO
23	0	0	0	NO
24	2	1	1	NO
25	3	2	0	NO
26	2	2	0	NO
27	1	2	4	NO
28	4	3	3	NO
29	3	4	2	DEATH
30	1	0	0	NO
31	4	4	3	NO
32	1	3	1	NO
33	3	5	3	NO
34	4	4	4	NO
35	0	0	0	NO
36	4	4	DEATH	DEATH
37	1	1	1	NO
38	1	1	1	NO
39	3	2	1	NO
40	2	3	2	NO
41	2	2	1	NO
42	1	1	1	NO
43	3	2	3	NO
44	1	1	0	NO
45	3	3	2	NO
46	2	2	2	NO
47	4	6	5	DEATH
48	4	3	4	NO
49	0	0	0	NO
50	2	1	1	NO
51	4	4	3	NO
52	4	3	3	NO
53	1	1	0	NO
54	4	5	3	NO
55	3	3	4	NO
56	2	4	4	NO

SCORTEN was calculated for all 56 patients on day1, day3 and day 5 of admission in our study as mentioned in table [2].

Table 3 The mean SCORTEN on day 1,3 and 5

DAYS	SCORTEN VALUE (MEAN±S.D.)
DAY 1	2.196±1.378

DAY 3	2.339±1.772
DAY 5	1.788±1.824

The mean SCORTEN value on day1, day 3 and day 5 were2.196, 2.339 and 1.788 respectively.[Table 3].

Table 4 SCORTEN values for surviving and deceased patients

	DAY 1	DAY 3	DAY 5
ALIVE	2	2.4	1.6
DEAD	3.67	4.83	4.33

A comparison of mean SCORTEN values for surviving and deceased patients, respectively, showed that although the SCORTEN values for deceased patients were, as expected, significantly higher than those for surviving patients at all the three timepoints, this was not significantly different in all 3 days. [Table 4]

Table 5 Difference between SCORTEN values on day 1, day 3 and day 5

DAYS	SCORTEN VALUE (MEAN±S.D.)	Chi -square	dF	p value
DAY 1	2.196±1.378			
DAY 3	2.339±1.772	0.734	2	0.674
DAY 5	1.788±1.824			

Kruskal Wallis test was performed to identify differences in the mean scores on days 1, 3, and 5. No significant difference was observed between the 3 groups.[Table 5]

DISCUSSION

SJS - TEN is a fatal severe cutaneous adverse drug reaction (SCAR) and is one of the most important dermatological disease which leads to mortality.

The present study was aimed at studying outcome of SJS & TEN patients and to confirm the accuracy of SCORTEN in predicting the mortality in Indian patients by serial analysis on day 1,3 and 5 of admission.

A total of 56 cases of SJS & TEN spectrum were reported during the study period. There wasa relatively high incidence 22(39.28%) of SJS-TEN spectrum in our study in comparison to a study done by Sushma *et al* (south india)[6], this showed a higher incidence of overlap syndrome in Rajasthan. SCORTEN was calculated for all 56 patients on day1, day3 and day 5 ofadmission in our study. The mean SCORTEN value on day1,3 and 5 were2.196, 2.339 and 1.788 respectively. Study by Vaishampayan *et al*[7] and Sekula *et al*[8] have raised the need for re-evaluation of the existing SCORTEN parameters and have also suggested few modifications to the original scale. Imahara *et al*[9] have found that the predicitive performance of SCORTEN is influenced by the treatment protocol used and Spornraft Ragaller *et al*[10] have observed that SCORTEN did not perform well in severely affected patients.

Kruskal Wallis test was employed to identify the difference in predictive value of SCORTEN on these three days. In our study, no significant difference was found in the predictive value of SCORTEN in three days. This is similar to the original studies done by Ho *et al*[5] andGuegan *et al*[11]where SCORTEN was found to be best if performed on day 3 rather than on day 1.This is in contrast to our study asothers like Bansal *et al*[12] and Vaishampayan *et al*[7], who found that the SCORTEN performance was best on day 5. This variation in the performance of SCORTEN may be due to the mean delay in hospitalization which varies in each study.

Further, we also analyzed the difference in SCORTEN values between aliveand dead patients and assessed whether the actual mortality in patients with aparticular score value in SCORTEN was comparable with the mortality predicted for that particular score. On comparing actual and predicted mortalities, it was observed that the overall actual mortality was comparable to the predicted mortality by SCORTEN on all 3 days which was similar to study done by Bansal *et al*.[12]

There are only a very few studies evaluating the applicability of SCORTEN in Indian population and to the best of our knowledge there are no published studies confirming its validity in North West Zone of India.

CONCLUSION

We also conclude that the performance of SCORTEN in our study showed no difference between day 1, 3 and 5. Hence, doing it on one day only will provide valuable information regarding the prognosis.

Declaration of patient consent

The authors certify that they have obtained written informed consent from all the patients. In the form the patient(s)/ attendants has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understood that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest - There are no conflicts of interest.

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