Validation of SLESIS-R, a Score for the Prediction of Serious Infection in Patients With Systemic Lupus Erythematosus: Data from a large Latin American Lupus Cohort

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Background and objectives

Patients with systemic lupus erythematosus (SLE) are at increased risk of serious infections, which in turn, are associated with morbidity and mortality. The Systemic Lupus Erythematosus Registry of the Spanish Society of Rheumatology (RELESSER) group has developed and internally validated a tool for prediction of serious infections in SLE, with a recently improved version (SLE SI Score Revised or SLESIS-R)1, being an accurate and reliable instrument. SLESIS-R includes age 60 years, previous SLE-related hospitalization, previous serious infection and glucocorticoid dosages, taking values from 0 to 17. to 17. In the derivation cohort, the AUC in ROC statistics was 0.861 (0.777–0.946). The cut-off chosen was ≥6. This study aimed to carry out an external validation of SLESIS-R in a multi-ethnic, multi-national Latin-American SLE cohort (GLADEL cohort).

Methods and patients

GLADEL 2.0 is an observational cohort from 10 Latin-American countries of patients ≥18 years of age who fulfilled the 1982/1997 American College of Rheumatology (ACR) and/or the 2012-SLICC classification criteria. Patients with sufficient data at baseline and first annual visits were included. The outcome variable was any serious infection during the first year of follow up that led to hospitalization or death. Baseline demographics and clinical manifestations, disease activity (SLEDAI-2k), SLICC/ACR Damage Index (SDI) and treatments were examined. Logistic regression was used to examine the predictive effect of baseline variables on the development of serious infection in the first year of follow-up. Receiver operator characteristics (ROC) analysis was used to define the area under the curve (AUC) for SLESIS-R score. The cut-off point with the best validity parameters (sensitivity and specificity) was identified.

Results

Of the 1016 patients who completed one-year follow-up, 208 (20.4%) underwent serious infections. Patients with serious infections were older, predominantly male, and had a longer disease duration (**Table 1**). This group had more frequent general, cardiac, pulmonary, hematological and gastrointestinal involvement at baseline and had a higher SDI and higher proportion of previous hospitalization. Univariate and multivariate analyses (Table 2) show variables associated with serious infection: disease duration, pulmonary and gastrointestinal involvements, and baseline glucocorticoid use. The AUC for SLESIS-R score was 0.922 (0.903-0.940) (Figure 1). A score of 7 was chosen as the optimal cut-off point, demonstrating a sensitivity of 87% and specificity of 82%.

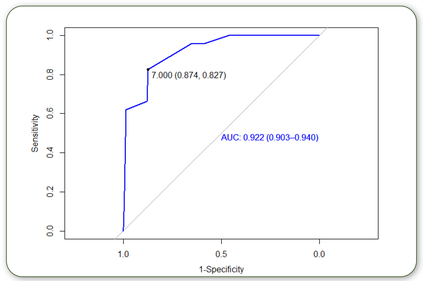

Figure 1: ROC curve for the SLESIS-R Score

Conclusions

- **Almost one-third of patients in the GLADEL cohort underwent a serious infections during the first year of follow-up.**
- **The score performed very well in predicting serious infections, better than in the derivation coho**

[1] Rua-Figueroa I, et al. Lupus Sci Med. 2024;11:e001096.

Table 1: Comparison between groups according to baseline clinical characteristics, and treatments

Variable	Serious Infection Absent (N=808)	Serious Infection Present (N=208)	p-value	Total (N=1016)
Age, Median [Q1, Q3]	34.7 [27.1, 44.2]	37.0 [28.2, 45.6]	0.068	35.3 [27.2, 44.3]
Female gender, n(%)	733 (90.7)	177 (85.1)	0.025	910 (89.6)
Disease duration (years), Median [Q1, Q3]	4.9 [1.3, 10.9]	9.3 [3.0, 15.2]	<0.001	5.6 [1.6, 11.7]
Ethnic Group, n(%)				
Afro-Latin American	68 (8.4)	15 (7.2)	0.621	83 (8.1)
Mestizo	537 (66.5)	133 (63.9)		670 (65.9)
Caucasian	193 (23.9)	56 (26.9)		249 (24.5)
Baseline clinical features, n(%)				
Cutaneous involvement	726 (90.1)	194 (93.3)	0.200	920 (90.7)
Articular involvement	671 (83.4)	173 (83.2)	1	844 (83.3)
Hematological involvement	644 (80.1)	180 (86.5)	0.042	824 (81.4)
Renal involvement	479 (59.4)	131 (63.0)	0.383	610 (60.1)
Cardiac involvement	88 (10.9)	41 (19.8)	<0.001	129 (12.7)
Pulmonary involvement	56 (6.9)	34 (16.4)	<0.001	90 (8.8)
Gastrointestinal involvement	94 (11.7)	39 (18.8)	0.009	133 (13.1)
Neurological involvement	11 (1.3)	2 (0.9)	1	13 (1.28)
Serosal involvement	254 (31.6)	69 (33.2)	0.724	323 (31.9)
Hypocomplementemia*	649 (80.3)	178 (85.6)	0.102	827 (81.4)
SLEDAI, Median [Q1, Q3]	4.0 [1.0, 10.0]	6.0 [2.0, 12.0]	0.274	5.0 [1.0, 11.0]
SDI, Median [Q1, Q3]	0 [0, 1.0]	1.00 [0, 2.0]	<0.001	0 [0, 1.0]
Previous SLE-related hospitalization	486 (60.4)	208 (100)	<0.001	694 (68.6)
Previous serious infection	359 (44.4)	187 (89.9)	<0.001	546 (53.7)
Baseline treatments, n(%)				
GC			0.216	
≤5 mg	193 (34.8)	44 (27.3)		237 (33.1)
>5 mg and<10 mg	99 (17.9)	37 (23.0)		136 (19.0)
≥10 mg and<30 mg	146 (26.4)	48 (29.8)		194 (27.1)
≥30 mg	116 (20.9)	32 (19.9)		148 (20.7)
Antimalarials	780 (97.6)	199 (95.7)	0.198	979 (97.2)
Cyclophosphamide-IV	76 (11.6)	24 (13.0)	0.094	100 (11.9)
Mycophenolate	269 (40.6)	79 (42.2)	0.074	348 (40.9)
Azathioprine	117 (17.8)	26 (14.0)	0.0001	143 (16.9)
Rituximab	29 (4.4)	9 (4.8)	0.205	38 (4.5)
Belimumab	14 (2.1)	5 (2.6)	0.809	19 (2.2)

*At least one of the following C3 or C4 or CH50; GC: glucocorticoids; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index; SDI: Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index; GC: glucocorticoids, mg/day of prednisone.

Table 2: Multivariate analysis

	Univariate OR (95%CI)	p value	Multivariate OR (95%CI)	p value
Age (years)≥60	1.1(0.5-2.2)	0.600		
Male gender	1.7(1.1-2.6)	0.019		
Disease duration	1.0(1.1-1.2)	<0.001	1.1(1.1-1.2)	<0.001
Hematological involvement	1.6(1.0-2.5)	0.035		
Cardiac involvement	2.0(1.3-3.0)	<0.001		
Pulmonary involvement	2.6(1.6-4.1)	<0.001	2.3(1.4-3.7)	<0.001
Gastrointestinal involvement	1.7(1.1-2.6)	<0.007	1.5(1.0-2.4)	0.033
General involvement	2.2(1.4-3.5)	<0.001		
Hypocomplementemia	1.4(0.9-2.2)	0.084		
SDI	1.4(1.2-1.6)	<0.001		
GC ≥30 mg at baseline	1.3(0.8-2.0)	0.200	1.5(1.1-2.4)	0.038
Azathioprine	1.1(0.6-1.7)	0.700		
Cyclophosphamide-IV	1.1(0.6-1.9)	0.600		

SDI: Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index; GC: glucocorticoids, mg/day of prednisone

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