SLESIS-R: An improved score for prediction of serious infection in patients with systemic lupus erythematosus based on the RELESSER prospective cohort

Íñigo Rúa-Figueroa[1], Maria Jesus Garcia de Yebenes [2], Julia Martínez-Barrio [3], María Galindo-Izquierdo [4], Jaime Calvo-Alén [5], Antonio Fernández-Nebro [6,] Raúl Menor-Almagro [7], Loreto Carmona [2], Beatriz García-Tejera [8,] Eva Tomero [9], Mercedes Freire [10], Clara Sanguesa [11], Loreto Horcada [12], Ricardo Blanco [13], Esther Uriarte Isacelaya [14], Javier Narváez [15], José Rosas [16], Silvia Gómez Sabater [17], Clara Moriano [18,] José Luis Andréu [19], Vicenç Torrente Segarra [20], Elena Aurrecoechea [21], Ana Pérez Gómez [22], Francisco J Nóvoa [8], Eva Salgado Pérez [23], Nuria Lozano-Rivas [24], Carlos Montilla-Morales [25], Esther Ruiz-Lucea [26], Marta Arévalo [27,] Carlota Iniguez [28], Maria J García Villanueva [29], Lorena Expósito [30], Monica Ibañez [31], Gema Bonilla Hernán [32], Irene Carrión Bárbera [33], Celia Erausquin [1], Jorge Fragío [34], Angela Pecondon-Español [35], Francisco Javier Toyos [36], Tatiana Cobo [37], Alejandro Muñoz-Jimenez [38], José Eloy Oller [39], Joan M. Nolla [40], José M Pego-Reigosa [41].

[1]University Hospital of GC Doctor Negrin, Las Palmas, [2] Institute for Musculoskeletal Health (InMusc), [3] Gregorio Marañón General Hospital, Madrid, Spain, University [4] Hospital 12 de Octubre, Madrid, [5] Araba University Hospital, Vitoria, Spain, [6] Carlos Haya General Hospital, Málaga, [7] Jerez Hospital, Cádiz, [8] Insular Hospital Complex of Gran Canaria, Las Palmas, [9] La Princesa University Hospital, Madrid , [10] University Hospitality Complex of A Coruña, A Coruña, [11] Germans Trias i Pujol University Hospital, Barcelona, [12] Hospital Complex of Navarra, Pamplona, [13] Marques de Valdecilla University Hospital, [14] Santander, University Hospital of Donostia, [15] Hospital de Bellvitge, Barcelona,[16] Marina Baixa Hospital, Villajoyosa (Alicante), [17] University Hospital of Alicante, [18] University Hospital of Leon, [19] University Hospital of Puerta del Hierro-Majadahonda, Madrid, [20] Hospital Sant Joan Despí Moisès Broggi, Barcelona, [21] Sierrallana Hospital, Torrelavega, [22] Príncipe de Asturias University Hospital, Alcalá de Henares (Madrid), [23] Orense University Complex, Orense, [24]Vírgen de la Arrixaca University Hospital, Murcia, [25] University Hospital of Salamanca, [26] Basurto University Hospital, Bilbao, [27]Consorci Corporació Sanitària Parc Taulí, Sabadell, [28] Lucus Augusti Hospital, Lugo, [29] Ramón y Cajal University Hospital, Madrid, [30] University Clinical Hospital of Canarias, Tenerife, [31] Son Llàtzer University Hospital, Palma de Mallorca, [32] La Pàz University Hospital, Madrid, [33] Del Mar Hospital, Barcelona, [34] La Fe University Hospital, Valencia, [35] Miguel Servet University Hospital, Zaragoza, [36] Virgen Macarena University Hospital, Sevilla, [37] Infanta Sofia Hospital, Madrid, , [38] Virgen del Rocío University Hospital, Sevilla, [39]Dr. Peset University Hospital, Valencia, [40] L'Hospitalet de Llobregat, Barcelona, , [41] Hospital do Meixoeiro, Vigo.

Background and objectives

Patients with Systemic lupus erythematosus (SLE) have a not uniform increased risk of serious infection. It is important to estimate the infection risk and balance the immunosuppression and infection risks in practice, but there is no evidence-based tool available to do it. SLESIS score, one score for prediction of severe infection, was previously developed by our group and validated in an external cohort 1. The original score incorporated up to 7 predictors and only a moderate performance of SLESIS score was observed, with AUC of 0.633. The objective of our study was to improve the SLESIS score both, as a predictor of infection and in terms of feasibility.

Methods and patients

We used data from the prospective phase of RELESSER (RELESSER-PROS), the SLE register of the Spanish Society of Rheumatology. A multivariable logistic model was constructed taking into account the variables already forming the SLESIS score, plus all other potential predictors identified in a literature review. Performance was analyzed using the C statistic and the area under the ROC (AUROC). Internal validation was carried out using a 100-sample bootstrapping procedure. OR were transformed into score items, and the AUROC was used to determine performance.

Results

A total of 1459 patients who had completed 1 year of follow-up were included (mean age, 49 ± 13 years; 90% females). Twenty-five (1.7%) had experienced ≥1 severe infection. According to the adjusted multivariate model, severe infection could be predicted from 4 variables: age (years) ≥60, previous SLE-related hospitalization, previous severe infection, and glucocorticoid dose. A score was built from the best model (table 1). AUROC:0.861 (0.777-0.946) (Figure 1). The cut-off chosen was ≥6, which exhibited an accuracy of 85.9% and a positive LR of 5.48.

Table 1

Predictor	Score
Age (years) ≥60	4
Previous SLE-related hospitalization	4
Previous serious infection	4
GC doses	
>5 mg and <10 mg	2
≥10 mg and <30 mg	2
≥30 mg	5

Figure 1

[1] Tejera-Segura B, Rúa-Figueroa I, Pego-Reigosa JM, et al. BMJ Open 2019;14;9(6):e028697.
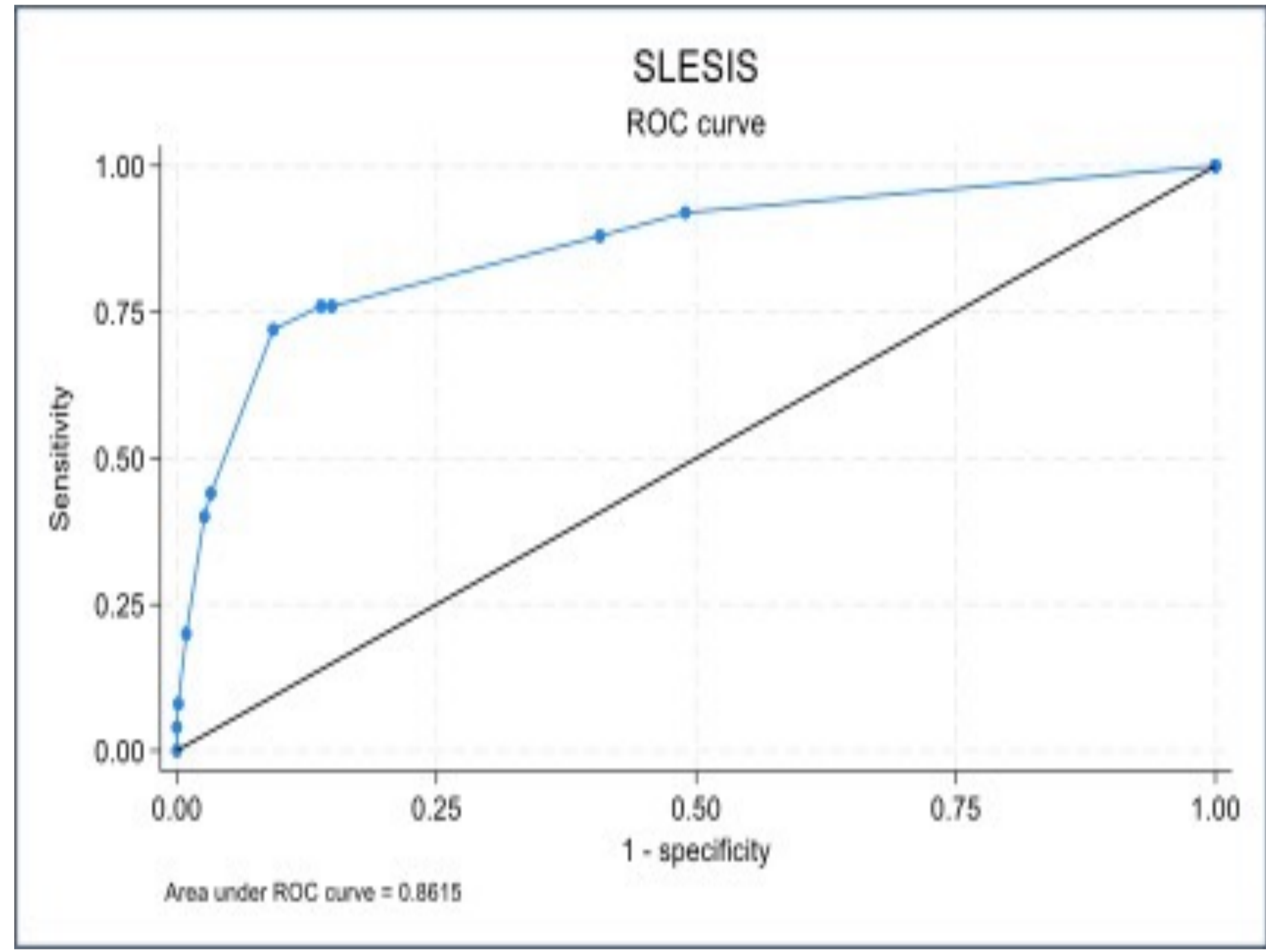
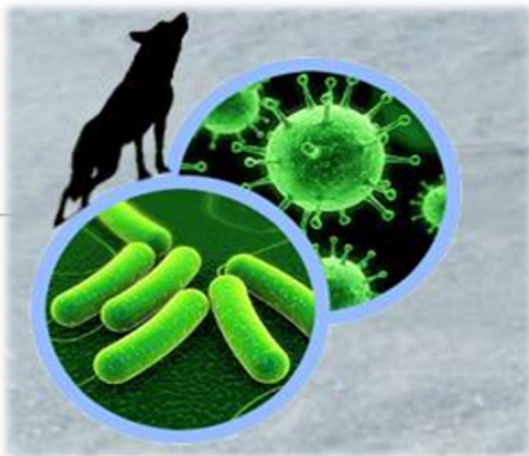## Conclusions

1° SLESIS-R is an accurate and feasible instrument for predicting infections in SLE patients

2° SLESIS-R could help to make informed decisions on the use of immunosuppressants and the implementation of preventive measures.

Acknowledgements