Performance of the Systemic lupus erythematosus disease activity score (SLE-DAS) in a Latin American population.

The accurate assessment of disease activity in patients with systemic lupus erythematosus (SLE) remains a pending task. Recently, Jesus *et al* developed and validated a novel instrument, the SLE Disease Activity Score (SLE-DAS), in two representative cohorts of Caucasian patients.[1] Through an elegant methodology, the authors demonstrated that SLE-DAS provides a more accurate identification of clinically meaningful changes over time, with higher sensitivity and similar specificity compared with the SLE Disease Activity Index 2000 (SLEDAI-2K). Although these finding have adequate methodological support, there are some points of concern that deserve further clarification. On the one hand, a clinimetric instrument must be validated in populations of different ethnic and geographical substrate before being accepted as of generalised use. On the other hand, the extent of lupus activity does not show a linear distribution in patients from a real-life scenario, so the performance of any instrument should be evaluated in individuals with quiescence or mild disease activity separately from patients with moderate to severe disease activity.

In an attempt to answer these unsolved questions, we conducted a study in our lupus cohort, which is based on a general practice of rheumatology in a university setting.[2 3] All of our participants are Mexican Mestizos, a representative subgroup of the Latin American ethnicity that comes mainly from a mixture of Amerindian and European ancestry, as well as a small share of African ancestry. From March to June 2019, all patients with SLE (fulfilling the American College of Rheumatology updated classification criteria) who attended our outpatient rheumatology clinic were studied.[4] Individuals underwent a thorough clinical examination and an evaluation of the medical records was performed, including concomitant laboratory reports performed in the 5 days prior to the consultation. Once completed, records of each patient were rated for the SLE-DAS and SLEDAI-2K, as established by the respective rule.[1 5]

A total of 227 patients were studied, whose main characteristics are summarised in table 1.

To evaluate the validity of the SLE-DAS, we compared the SLE-DAS score with the SLEDAI-2K score by correlation analysis. There was a strong positive correlation between instruments throughout the cohort, with a Spearman's rho coefficient of 0.92 (95% CI 0.90 to 0.94; p<0.0001). However, this figure was seriously modified when the analyses were carried out according to the extent of disease activity. Indeed, although the Spearman's rho coefficient was maintained (rho=0.90, 95% CI 0.87 to 0.93; p<0.0001) when the correlation was investigated in patients with quiescence or low disease activity (SLEDAI-2K<6; n=167), it fell dramatically to 0.46 (95% CI 0.22 to 0.64; p=0.0002) when only individuals with moderate to severe disease activity were analysed (SLEDAI-2K≥6; n=60). The magnitude of the positive correlation between the overall scores found here is similar to those observed in the derivation cohort (Portuguese, rho=0.94; p<0.0005) and in the validation cohort (Italians, rho=0.94; p<0.0005) used for the development of the SLE-DAS score.[1] However, an analysis recently published in 41 Indian patients suggested that correlation between clinimetric tools depends predominantly on the level of the disease activity.[6] In this study, although the correlation between scores was moderate (rho=0.70; p<0.001) in patients with active lupus nephritis, it increased significantly after 6 months of successful induction therapy (rho=0.92; p<0.001).

Table 1 Main characteristics of our lupus cohort (n=227)

Female, n (%)	209 (92.1)
Age in years, mean±SD	42.2±13.2
Disease duration in years, mean±SD	9.4±7.2
Sjögren's syndrome, n (%)	29 (12.8)
Antiphospholipid syndrome, n (%)	33 (14.5)
Diabetes, n (%)	19 (8.4)
Hypertension, n (%)	53 (23.3)

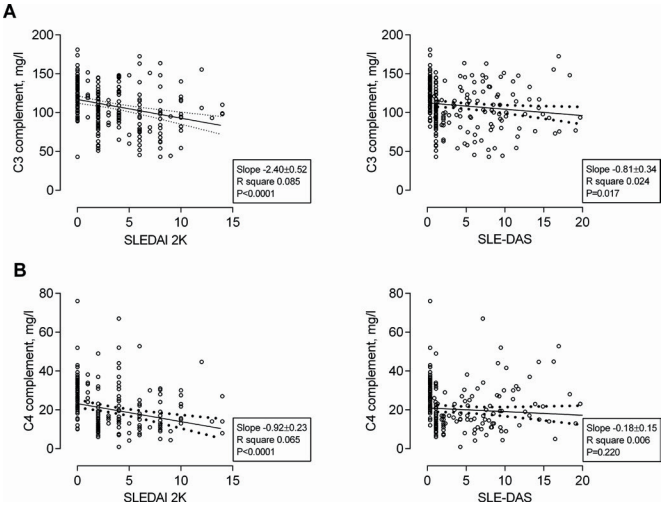

Figure 1 Linear regression analysis showing the existence of significant regression coefficients between C3 complement levels and both SLEDAI-2K and SLE-DAS scores (A). Conversely, C4 complement levels showed a linear association with SLEDAI-2K score but not with SLE-DAS score (B).SLEDAI-2K, SLE Disease Activity Index 2000.

We perform additional analyzes to deepen our understanding of the clinical performance of each of the scores. Considering that serum complement levels are among the most validated and standardised biomarkers to reflect activity in SLE, we evaluated whether variations in complement levels could be attributed to variations in each clinimetric tool. The results of linear regression analysis are presented in figure 1. As observed, both SLEDAI-2K and SLE-DAS showed low but statistically significant regression coefficients to predict C3 complement levels (figure 1A). However, for the C4 complement levels only the SLEDAI-2K showed a low but evident degree of linear association, whereas the SLE-DAS showed no relationship between variables (figure 1B).

Our results confirm that SLE-DAS has an adequate performance and a high correlation with SLEDAI-2K in the context of quiescent lupus and in patients with low disease activity, although its performance in SLE patients with moderate to severe activity may not be robust. Suboptimal performance of the SLE-DAS in subjects with high disease activity could be due to a 'ceiling effect', at a level above which one or several variables associated with disease activity no longer have a significant additive effect in the SLE-DAS score. Alternatively, it is possible that a part of the strong correlation between SLEDAI-2K and SLE-DAS is due to the accumulation of patients with low disease activity (most of them in clinical quiescence) around the score 0 in both clinimetric tools.

In summary, we validated the SLE-DAS as a useful tool to measure activity in SLE in an independent cohort of Latin

American patients with Mexican Mestizo ethnicity. However, our results also suggest that SLE-DAS does not add an advantage over the existing SLEDAI-2K score, and its performance in patients with high disease activity seems to be suboptimal.

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