Mapping the Nationwide Clinical Profile and Patterns of Care of SLE in Brazil – Findings from the Macunaíma Study

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Background

- SLE is an autoimmune disease with wide clinical variability,[1] with an estimated prevalence of 25–91 per 100,000 people in Brazil[2]
- Brazil has vast regional diversity, both from an ethnic and socio-cultural point of view

Objective

To map the clinical SLE profile in Brazil and explore how this distribution is associated with regional disparities.

Methods

A cross-sectional study (GSK Study 207353):

Brazilian patients (≥18 years) with SLE (1997 ACR criteria[3])

Standard of care for SLE for ≥1 year

5 reference centres across Brazil NO, NE, MW, SE, and SO

Questionnaires completed by physicians and nurses

Data collected:

Clinical and demographic characteristics, patterns of care

SLEDAI for disease activity SDI for organ damage

- A bootstrapping approach of logistic regression was used to explore potential factors associated with hospitalisation

Results

Patient characteristics

300 patients included

60 from each region

- Baseline characteristics are shown in **Table 1**

Table 1. Baseline demographics and disease characteristics

n (%) unless otherwise specified	Overall (N=300)	NO (n=60)	NE (n=60)	MW (n=60)	SE (n=60)	SO (n=60)
Female	277 (92.3)	56 (93.3)	58 (98.3)	54 (90.0)	54 (90.0)	54 (90.0)
Race*						
White	76 (25.3)	5 (8.3)	10 (16.7)	10 (16.7)	16 (26.7)	35 (58.3)
Black	56 (18.7)	1 (1.7)	4 (6.7)	19 (31.7)	19 (31.7)	13 (21.7)
Latino	161 (53.7)	53 (88.3)	45 (75.0)	29 (48.3)	23 (38.3)	11 (18.3)
Other	7 (2.3)	1 (1.7)	1 (1.7)	2 (3.3)	2 (3.3)	1 (1.7)
Age*, years, mean (SD)	41.9 (12.8)	37.2 (11.5)	40.5 (10.8)	41.1 (12.5)	43.5 (14.5)	47.1 (12.4)
Years of schooling*, mean (SD)	11.4 (4.7)	14.2 (3.6)	11.2 (4.7)	10.6 (3.4)	11.9 (5.6)	9.1 (4.1)
Stopped education owing to SLE†	46 (15.3)	15 (25.0)	6 (10.0)	9 (15.0)	7 (11.7)	9 (15.0)
Household income (BRL), mean (SD)	2621 (2130)	2697 (2083)	2147 (1649)	2381 (1642)	3160 (3069)	2718 (1793)
Employment†						
Active	79 (26.3)	11 (18.3)	17 (28.3)	15 (25.0)	20 (33.3)	16 (26.7)
Retired or sick leave due to SLE	100 (33.3)	25 (41.7)	12 (20.0)	17 (28.3)	22 (36.7)	24 (40.0)
Unemployed	65 (21.7)	16 (26.7)	10 (16.7)	17 (28.3)	12 (20.0)	10 (16.7)
Other	56 (18.7)	8 (13.3)	21 (35.0)	11 (18.3)	6 (10.0)	10 (16.7)
SDI score*, mean (SD)	1.3 (1.8)	0.9 (1.2)	1.4 (1.7)	0.4 (0.8)	2.6 (2.5)	1.0 (1.3)
SLEDAI score*, mean (SD)	4.3 (5.4)	5.1 (4.8)	2.6 (4.2)	4.5 (6.1)	6.4 (6.3)	3.1 (4.4)
Access to care						
Time between onset of symptoms and start of treatment, months, mean (SD)	21.6 (39.6)	16.9 (30.2)	26.0 (35.2)	16.4 (28.2)	17.6 (24.7)	31.4 (65.6)
Travel time from home to facility*, h, mean (SD)	4.4 (12.6)	11.5 (25.4)	1.7 (1.3)	3.5 (4.3)	3.7 (8.3)	1.8 (1.7)
Missed medical appointments during study period (any reason)*, mean (SD)	0.7 (1.3)	0.7 (1.1)	0.4 (0.9)	0.5 (10.9)	1.7 (1.8)	0.3 (0.8)
Medications per day*, mean (SD)	6.6 (3.9)	6.2 (2.4)	6.0 (2.7)	3.9 (2.5)	8.5 (3.7)	8.3 (5.3)

*p<0.001; †p<0.05

Disease characteristics

- The main contributing factors to disease activity, according to SLEDAI, were low complement, arthritis and alopecia (**Table 2**)

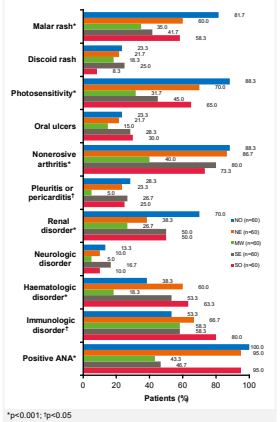
Table 2. Contributing factors to disease activity (SLEDAI profile) occurring in ≥2% of patients overall (N=300)

n (%)	Overall (N=300)	NO (n=60)	NE (n=60)	MW (n=60)	SE (n=60)	SO (n=60)
SLEDAI score*						
0–2	47 (15.7)	6 (10.0)	9 (15.0)	13 (21.7)	8 (13.3)	11 (18.3)
2–6	72 (24.0)	23 (38.3)	13 (21.7)	6 (10.0)	14 (23.3)	16 (26.7)
≥6	71 (23.7)	16 (26.7)	6 (10.0)	18 (30.0)	24 (40.0)	7 (11.7)
Low complement	54 (18.0)	6 (10.0)	10 (16.7)	17 (28.3)	8 (13.3)	13 (21.7)
Arthritis*	46 (15.3)	12 (20.0)	7 (11.7)	3 (5.0)	19 (31.7)	5 (8.3)
Alopecia†	45 (15.0)	1 (1.7)	12 (20.0)	9 (15.0)	17 (28.3)	6 (10.0)
Increased DNA binding†	43 (14.3)	9 (15.0)	1 (1.7)	13 (21.7)	7 (11.7)	13 (21.7)
Proteinuria*	41 (13.7)	19 (31.7)	4 (6.7)	2 (3.3)	7 (11.7)	9 (15.0)
Malar rash†	32 (10.7)	13 (21.7)	4 (6.7)	1 (1.7)	7 (11.7)	7 (11.7)
Haematuria†	18 (6.0)	9 (15.0)	0 (0)	3 (5.0)	1 (1.7)	5 (8.3)
Pyuria†	18 (6.0)	8 (13.3)	0 (0)	5 (8.3)	1 (1.7)	4 (6.7)
Lupus headache†	15 (5.0)	2 (3.3)	0 (0)	7 (11.7)	6 (10.0)	0 (0)
Organic brain syndrome†	12 (4.0)	1 (1.7)	1 (1.7)	8 (13.3)	2 (3.3)	0 (0)
Mucosal ulcers	10 (3.3)	1 (1.7)	4 (6.7)	1 (1.7)	3 (5.0)	1 (1.7)
Leukopenia	9 (3.0)	2 (3.3)	2 (3.3)	1 (1.7)	1 (1.7)	3 (5.0)
Vasculitis	9 (3.0)	1 (1.7)	2 (3.3)	0 (0)	5 (8.3)	1 (1.7)
Fever	6 (2.0)	1 (1.7)	1 (1.7)	1 (1.7)	2 (3.3)	1 (1.7)

*p<0.001; †p<0.01

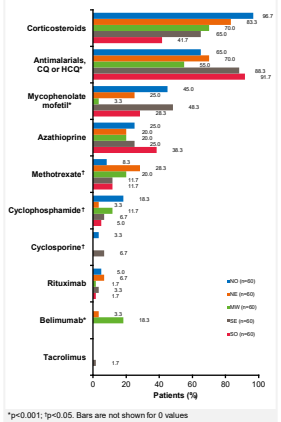
- Arthritis was found in 221 patients and predominated in all regions (mean 73.7%), with a lower prevalence in the MW (**Figure 1**)
- The SDI was scored for cataracts, proteinuria, and thrombosis (**Table 3**)
- Among associated comorbidities, hypertension was predominant in the NO (35%; p=0.001), smoking in the SO (23%; p<0.001); obesity (27%; p=0.059) and dyslipidemia (35%; p=0.023) in the SE

Figure 1. SLE clinical profile distribution by centre, according to 1997 ACR criteria[3] (N=300)



*p<0.001; †p<0.05

Figure 2. Treatment distribution by centre, according to frequently prescribed medicines (N=300)



*p<0.001; †p<0.05. Bars are not shown for 0 values

Table 3. Contributing factors to damage accumulation (SDI) occurring in ≥5% of patients overall (N=300)

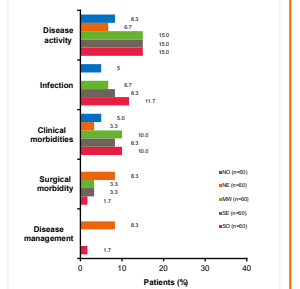
n (%)	Overall (N=300)	NO (n=60)	NE (n=60)	MW (n=60)	SE (n=60)	SO (n=60)
Optic atrophy	300 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)
Pulmonary infarction	300 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)
Stricture or upper GI tract surgery	300 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)
Cataract†	45 (15.0)	16 (26.7)	8 (13.3)	2 (3.3)	9 (15.0)	10 (16.7)
Premature gonadal failure	28 (9.3)	8 (13.3)	5 (8.3)	2 (3.3)	10 (16.7)	3 (5.0)
Proteinuria ≥3.5 g/ 24 h*	26 (8.7)	5 (8.3)	3 (5.0)	2 (3.3)	13 (21.7)	3 (5.0)
Venous thrombosis with swelling, ulceration*	22 (7.3)	3 (5.0)	11 (18.3)	3 (5.0)	5 (8.3)	0 (0)
Avascular necrosis*	21 (7.0)	2 (3.3)	3 (5.0)	0 (0)	7 (11.7)	9 (15.0)
Retinal change*	20 (6.7)	3 (5.0)	9 (15.0)	0 (0)	6 (10.0)	2 (3.3)
Cognitive impairment	19 (6.3)	3 (5.0)	2 (3.3)	5 (8.3)	7 (11.7)	2 (3.3)
Estimated or measured GFR <50%	18 (6.0)	3 (5.0)	4 (6.7)	6 (10.0)	3 (5.0)	2 (3.3)

*p<0.01; †p<0.05

Access to care

- Access to care can be challenging as patients can take up to 11.5 hours to arrive at a healthcare facility (**Table 1**)
- As biological treatments are not covered by the public health system in Brazil, the data presented in **Figure 2** may not be representative of the number of patients eligible for these treatments
- Hospitalisation rate during the study period was 21.3% across all regions, with no statistical difference between centres (p=0.651). Reasons for hospitalisation are presented in **Figure 3**
- The bootstrapping model revealed that hospitalization was associated with ethnicity (p<0.016), occupational status (p<0.001), age (p=0.02), and the use of HCQ or CQ (p<0.001)

Figure 3. Reasons for hospitalisation (N=300)



Bars are not shown for 0 values

Conclusions

This nationwide study highlights ethnic, social, and level-of-care disparities among Brazilian patients with SLE. The modelling shows evidence that such disparities contribute to the divergent clinical spectrum of SLE observed in Brazil.

Abbreviations

ACR, American College of Rheumatology; ANA, anti-nuclear antibodies; BRL, Brazilian real; CQ, chloroquine; CVA, cerebrovascular accident; DNA, deoxyribonucleic acid; GFR, glomerular filtration rate; GI, gastrointestinal; HCQ, hydroxychloroquine; MW, Midwest; NE, Northeast; NO, North; SD, standard deviation; SDI, Systemic Lupus International Collaborating Clinics (SLICC)/ACR Damage Index; SE, Southeast; SLE, systemic lupus erythematosus; SLEDAI, SLE Disease Activity Index; SO, South.

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