Chronic utilization of glucocorticoids among White and Black patients with systemic lupus erythematosus

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Background

- Among those with SLE, there are stark health disparities among Black, Hispanic, and Asian/Pacific Islander racial/ethnic groups compared to White patients (1)
- Chronic utilization of glucocorticoids is associated with worse outcomes, independent of SLE disease activity (2)
- We compared the utilization of glucocorticoids among Black and White patients in a SLE registry at an academic medical center

Methods

Patient sample

- Enrollment data from Cleveland Clinic SLE Registry
- SLE defined by SLICC or ACR criteria
- Demographic and disease-specific variables by self-report:
  - Age, sex, race, disability status, hospitalization due to SLE disease activity, current/previous SLE medications
  - Medications and hospitalizations adjudicated in electronic medical record
  - Glucocorticoid tapers not considered chronic utilization
- Systemic Lupus Erythematosus Disease Activity Index 2000 (SLEDAI-2K) obtained from clinician assessment
- Exclusion criteria: Incomplete SLEDAI-2K, glucocorticoid utilization, self-reported race

Statistical approach

- Adjusted association between race and chronic glucocorticoid use calculated using multivariable logistic regression
  - All covariates exhibiting bivariate association of p <0.1 with glucocorticoid use included
- Race, hospitalization in prior year, total SLEDAI-2K dichotomized at 6, disability, no current/prior hydroxychloroquine, current or prior cDMARD use included in multivariable logistic regression model
  - cDMARD stands for conventional disease-modifying anti-rheumatic drug (methotrexate, azathioprine, mycophenolate, leflunomide, cyclophosphamide)

Results

- 173 registry participants included in analysis
- White participants had mean age 45 (standard deviation (SD) 15) years, were 86% female, 7% identified as Hispanic, 20% had SLEDAI-2K ≥6 (mean SLEDAI-2K of 3.7 (SD 5.2)), and took median 2 (interquartile range 1-3) SLE medications
  - SLEDAI-2K ≥6 represents moderate or severe disease activity (3)
- Black participants had mean age 42 (SD 14), were 80% female, 3% identified as Hispanic, 54% had SLEDAI-2K ≥6 (mean SLEDAI-2K 6.3 (SD 6.0)), and took median 2 (interquartile range 2-3) SLE medications

Table 2. Current SLE medication use among White and Black participants

Medication	White (n = 114)	Black (n = 59)	P-value*	Odds ratio (95% confidence interval)
Chronic corticosteroids (oral or intravenous)	39 (34%)	43 (73%)	< 0.0001	5.17 (2.59-10.33)
NSAIDs†	35 (31%)	20 (34%)	0.62	1.19 (0.51-2.33)
Hydroxychloroquine	100 (88%)	49 (83%)	0.40	0.69 (0.28-1.65)
Conventional DMARDs‡ §	58 (51%)	31 (53%)	0.84	1.07 (0.57-2.01)
Biologic DMARDs¶	8 (7%)	3 (5%)	0.75#	0.71 (0.18-2.78)

All statistical tests performed utilized Pearson's Chi Squared Test except where indicated
†NSAIDs stands for non-steroidal anti-inflammatory drugs
‡DMARD stands for disease-modifying anti-rheumatic drug
§Conventional DMARDs consist of methotrexate, azathioprine, mycophenolate, leflunomide, cyclophosphamide
¶Biologic DMARDs consist of rituximab, belimumab
#Fischer's Exact Test

Table 3. Multivariable logistic regression of chronic glucocorticoid use among White and Black participants in the SLE registry.

Variable	Estimate	Odd ratio (95% confidence interval)	P-value
Intercept	-2.51		<0.0001
Race (Black)	1.74	5.69 (2.17-14.96)	0.0004
Hospitalization	-0.52	0.60 (0.21-1.69)	0.33
Total SLEDAI-2K* ≥ 6	1.73	5.66 (1.93-16.56)	0.002
Disabled	1.34	3.81 (1.45-10.07)	0.007
Never used hydroxychloroquine	1.24	3.44 (0.59-19.33)	0.17
Ever used cDMARD†	1.75	5.76 (2.20-15.04)	0.0004

Overall model p-value <0.0001; Overall model N = 145
*SLEDAI-2K stands for systemic lupus erythematosus disease activity index 2000
†cDMARD stands for conventional disease-modifying anti-rheumatic drug (methotrexate, azathioprine, mycophenolate, leflunomide, cyclophosphamide)

Conclusions

- Black participants were more than 5 times more likely to utilize chronic glucocorticoids as part of SLE disease management compared to White participants
- Increased glucocorticoid exposure may represent a plausible mechanism through which Black patients accrue additional end organ damage and mortality risk compared to White patients
- Mechanisms to improve access to and the quality of ambulatory specialist care may reduce this disparity

References

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