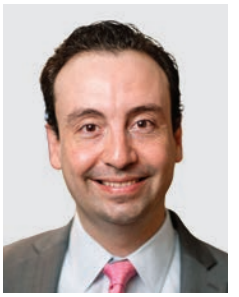
The Journal of Rheumatology 2023;50:9–10
doi:10.3899/jrheum.220933
First Release October 15 2022

The Journal of Rheumatology

Editorial

Cardiovascular Disease Disparities in Systemic Lupus Erythematosus

Alí Duarte-García[1] and Jinoos Yazdany[2]



Disparities in health outcomes are one of the greatest healthcare challenges of our times. Disparities in systemic lupus erythematosus have been reported since the 1970s, when a study performed in Alabama showed the increased frequency of SLE in people of African descent.[1] Numerous subsequent studies have reported that Black and other minority populations have worse morbidity and mortality from SLE compared to White individuals.[2] Cardiovascular disease (CVD) is the leading cause of death in people with SLE[3]; however, CVD among Black patients with SLE is understudied.[4]

Garg and colleagues sought to address this knowledge gap in this issue of *The Journal of Rheumatology*.[5] To do so, they used a population-based cohort derived from the Georgia Lupus Registry (GLR), one of the Centers for Disease Control and Prevention (CDC) SLE registries.[6-10] The GLR includes incident SLE cases from 2002 to 2004 from Fulton and DeKalb counties, which include the city of Atlanta, Georgia, in the United States.[11] These cases were painstakingly validated through manual chart reviews; all included cases either met the American College of Rheumatology (ACR) 1997 SLE criteria or had 3 ACR criteria and had SLE documented by a rheumatologist. The investigators ascertained hospitalizations and death through the Georgia Hospital Discharge Database and the National Death Index. Their cohort included 336 patients with incident SLE, of which 75% were Black. The authors followed these patients for 15 years: 2 years before diagnosis and 13 years after diagnosis. They observed that 56 (17%) of patients with SLE had incident CVD, and the majority were cerebrovascular diseases. The incidence of CVD peaked in the 2nd and 11th years after diagnosis. Over the surveillance period, Black patients with SLE had a 7-fold increase in CVD compared to White patients with SLE. Endstage renal disease (hazard ratio [HR] 2.1, 95% CI 1.1-4.1) and discoid lupus (HR 3.2, 95% CI 1.4-7.1) were also associated with CVD.

A higher incidence of CVD in Black patients with SLE has been previously reported.[12] However, this study further elucidates the magnitude of this risk. In a prior Medicaid claims study, Black patients with SLE had a 14% higher risk of CVD than White patients,[12] compared to the striking 7-fold increase reported by Garg et al.[5] Here is where the strengths of this study help to elucidate the magnitude of the disparity. First, compared to the Medicaid claims study, this study included incident patients with SLE. Prevalent cohorts include people with different durations of SLE, which might also lower CVD estimates since those at the highest risk might have had CVD—and may have died—earlier in their disease course. Therefore, reliance on a prevalent SLE cohort can underestimate CVD risk because CVD is fatal in many cases, resulting in survival bias. Second, by doing a manual chart validation, this study provides a high degree of certainty that the patients included do have SLE. This contrasts with algorithms used to identify SLE in administrative databases, which misclassifies 20% of the sample.[13] Last, this is a population-based cohort, and as a consequence, all the incident patients with SLE in the study counties were included; there is no risk of selection bias since no patients were excluded. This is an advantage to academic center cohorts, which tend to have referral bias, or administrative data, which cover mostly people

In the past 3 years, ADG has received unrelated grant funding from the Centers for Disease Control and Prevention (CDC; U01DP06491), the Rheumatology Research Foundation Career Development Award, the Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, the Mayo Clinic Margaret Harvey Schering Clinician Career Development Award for Arthritis Research, the Larry and Ruth Eaton Family Career Development Award in Innovative Arthritis Research, and the Career Enhancement Award in Women's Health Research. JY is supported by the CDC (grants A114297 and cooperative agreements U01DP005120 and U01DP006486). Additional support came from the National Institutes of Health/ National Institute of Arthritis and Musculoskeletal and Skin Diseases P30 AR070155 and K24 AR074534, the Alice Betts Chair in Arthritis, and the Russell/Engleman Medical Research Center for Arthritis.

[1]A. Duarte-García, MD, MSc, Division of Rheumatology, Mayo Clinic, and Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, Mayo Clinic, Rochester, Minnesota; [2]J. Yazdany, MD, MPH, Division of Rheumatology, University of California, San Francisco, San Francisco, California, USA.

JY has received research grant funding from Aurinia, AstraZeneca, and Gilead; and served as a consultant for Aurinia, AstraZeneca, and Pfizer.

Address correspondence to Dr. A. Duarte-García, Mayo Clinic, 200 First Street SW, Rochester, MN 55905, USA. Email: duarte.ali@mayo.edu.

See Racial disparities in SLE, *page 84*

with specific types of insurance. Thus, the estimates provided by Garg et al regarding disparities in CVD among Black and White patients with SLE[5] are among the best available.

The study also found that Black women with SLE who are aged < 55 years have a 7-times higher risk of stroke than Black women without SLE of the same age.[5] However, there are some fundamental limitations to these secondary analyses. The study relied on published general population data to compare the findings in the cohort to those of healthy peers. The cohort is based in the US South, whereas the published data represent the country. The US South generally has higher rates of diabetes, hypertension, and cardiovascular (CV) mortality than the rest of the nation (the state of Georgia is located in the so-called diabetes and stroke belts).[14-16] In addition, the annual stroke rate in the study was estimated based on the year of the highest stroke incidence among patients with SLE rather than throughout the study period. Thus, the differences observed between patients with SLE and the general population described in this report are likely biased and higher than they would have been if the comparisons had been made among people living in the same counties and the stroke rates had been estimated based on the whole study period. An additional limitation is that strokes have multiple mechanisms in SLE. It is difficult to assess whether the differences in groups result from stroke mechanisms that include a final common pathway of atherosclerosis, hypertensive emergencies (more common in Black individuals), or other etiologies specific to SLE, such as antiphospholipid syndrome. Understanding mechanisms is important for targeting interventions that reduce disparities.

In SLE, disparities exist in connection with broader inequalities in healthcare and society at large—wealth, education, housing, access to high-quality food, and others—and occur in the US and elsewhere, in both the global North and South.[17] Although awareness of these disparities has grown in the last few years, little has been accomplished in terms of reducing the equality gap. Work to eliminate disparities in CVD, a leading cause of mortality in SLE, will need to be multifaceted. The study by Garg et al[5] starts by generating scientific evidence to raise awareness. This needs to be followed by efforts to address the mechanisms of these disparities. At the individual level, improving SLE disease control, reducing CV risk factors, and ensuring access to high-quality care will be necessary. At the health system level, bolstering systems that proactively address and manage CV risk with culturally and linguistically appropriate programs across at-risk populations is essential. Finally, people with SLE may also benefit from nationwide initiatives such as the joint CDC and the Centers for Medicare and Medicaid Services initiative Million Hearts 2027, an ambitious effort to prevent 1 million myocardial infarctions and strokes within 5 years.[18] This effort focuses on implementing a small set of evidence-based priorities (eg, tobacco cessation and hypertension control programs) to improve CV health. The study by Garg et al[5] provides a benchmark for the CVD disparities observed between Black and White patients with SLE. It is time to act.

REFERENCES

1. Siegel M, Holley HL, Lee SL. Epidemiologic studies on systemic lupus erythematosus comparative data for New York City and Jefferson County, Alabama, 1956–1965. Arthritis Rheum 1970;13:802-11.
2. Gianfrancesco MA, Dall'Era M, Murphy LB, et al. Mortality among minority populations with systemic lupus erythematosus, including Asian and Hispanic/Latino persons - California, 2007-2017. MMWR Morb Mortal Wkly Rep 2021;70:236-9.
3. Taylor T, Anastasiou C, Ja C, et al. Causes of death among individuals with systemic lupus erythematosus by race and ethnicity: a population-based study. Arthritis Care Res 2022 Jul 29 (Epub ahead of print).
4. Yazdany J, Pooley N, Langham J, et al. Systemic lupus erythematosus; stroke and myocardial infarction risk: a systematic review and meta-analysis. RMD Open 2020;6:e001247.
5. Garg S, Bartels CM, Bao G, Helmick CG, Drenkard C, Lim SS. Timing and predictors of incident cardiovascular disease in systemic lupus erythematosus: risk occurs early and highlights racial disparities. J Rheumatol 2023;50:84-92.
6. Dall'Era M, Cisternas MG, Snipes K, Herrinton LJ, Gordon C, Helmick CG. The incidence and prevalence of systemic lupus erythematosus in San Francisco County, California: the California Lupus Surveillance Project. Arthritis Rheumatol 2017;69:1996-2005.
7. Izmirly PM, Wan I, Sahl S, et al. The incidence and prevalence of systemic lupus erythematosus in New York County (Manhattan), New York: the Manhattan Lupus Surveillance Program. Arthritis Rheumatol 2017;69:2006-17.
8. Somers EC, Marder W, Cagnoli P, et al. Population-based incidence and prevalence of systemic lupus erythematosus: the Michigan Lupus Epidemiology and Surveillance Program. Arthritis Rheumatol 2014;66:369-78.
9. Ferucci ED, Johnston JM, Gaddy JR, et al. Prevalence and incidence of systemic lupus erythematosus in a population-based registry of American Indian and Alaska Native people, 2007-2009. Arthritis Rheumatol 2014;66:2494-502.
10. Duarte-Garcia A, Hocaoglu M, Valenzuela-Almada M, et al. Rising incidence and prevalence of systemic lupus erythematosus: a population-based study over four decades. Ann Rheum Dis 2022 May 16 (Epub ahead of print).
11. Lim SS, Bayakly AR, Helmick CG, Gordon C, Easley KA, Drenkard C. The incidence and prevalence of systemic lupus erythematosus, 2002-2004: the Georgia Lupus Registry. Arthritis Rheumatol 2014;66:357-68.
12. Barbhaiya M, Feldman CH, Guan H, et al. Race/ethnicity and cardiovascular events among patients with systemic lupus erythematosus. Arthritis Rheumatol 2017;69:1823-31.
13. Barnado A, Casey C, Carroll RJ, Wheless L, Denny JC, Crofford LJ. Developing electronic health record algorithms that accurately identify patients with systemic lupus erythematosus. Arthritis Care Res 2017;69:687-93.
14. Howard G, Howard VJ. Twenty years of progress toward understanding the stroke belt. Stroke 2020;51:742-50.
15. Barker LE, Kirtland KA, Gregg EW, Geiss LS, Thompson TJ. Geographic distribution of diagnosed diabetes in the U.S.: a diabetes belt. Am J Prev Med 2011;40:434-9.
16. Centers for Disease Control and Prevention. Interactive atlas of heart disease and stroke. [Internet. Accessed September 9, 2022.] Available from: https://nccd.cdc.gov/DHDSPAtlas/
17. Piketty T. A brief history of equality. Harvard University Press; 2022.
18. Million Hearts 2027. [Internet. Accessed September 9, 2022.] Available from: https://millionhearts.hhs.gov/about-million-hearts/index.html