Dermatology Practical & Conceptual

Association of Black Race with Demographic, Comorbidities, and Outcome Variables in Localized Scleroderma Patients: A Retrospective Analysis of the 2017 US National Inpatient Sample

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Introduction

Localized scleroderma (LS), including morphea and linear scleroderma, is an idiopathic autoimmune pathology characterized by fibrosis and thickening of the skin and underlying tissues. [1,2] LS is more common in females and young children, and while prevalence is similar between races, Black vs White scleroderma patients had more severe presentations in single-center studies. [3] Therefore, we aimed to characterize associations in Black LS patients nationally.

Case Presentation

The 2017 National Inpatient Sample (NIS) was queried for LS cases using these ICD-10-CM codes: L94.0/L94.1. Multivariable logistic and linear regression analyses assessed associations between the Black race of LS patients and demographic, comorbidity, and outcome variables (P<0.05) (IBM SPSS 25).

There was a total of 3,750 LS patients, 63.7% White and 16.4% Black. Black vs. White LS patients were, on average, younger (52.78 [SD:16.91] vs. 58.13 years [SD:18.67], P<0.001). Female (76.7%) vs. male (23.3%) LS patients were more often Black (OR:1.711, 95% CI: 1.292–2.265, P<0.001). Blacks more often had the most associated comorbidities, including valvular disease, pulmonary circulation disease, diabetes mellitus (DM), hypothyroidism, and renal failure. Black vs. White LS patients had lower likelihoods of liver disease (OR: 0.433, 95% CI: 0.260–0.723, P=0.001), drug abuse (OR: 0.460, 95% CI: 0.220–0.964, P=0.040), and depression (OR: 0.357, 95% CI: 0.250–0.508, P<0.001). Black race did not impact hypertension risk (OR: 1.023, 95% CI: 0.785–1.333, P=0.869) (Table 1).

Table 1. Multivariable Adjusted Odds of Black vs White Race on Various Comorbidities in Cutaneous Scleroderma Patients.

Comorbidities	Adjusted Odds Ratio	95% Confidence Interval	*P*
Congestive heart failure	0.836	0.613 - 1.141	0.259
Valvular disease	1.623	1.132 - 2.328	**0.008**
Pulmonary circulation disease	19.469	8.033 - 47.187	**<0.001**
Peripheral vascular disease	0.886	0.617 - 1.274	0.514
Paralysis	5.303	2.634 - 10.679	**<0.001**
Chronic pulmonary disease	0.812	0.612 - 1.077	0.148
Diabetes without chronic complications	1.729	1.061 - 2.816	**0.028**
Diabetes with chronic complications	2.025	1.46 - 2.81	**<0.001**
Hypothyroidism	0.327	0.232 - 0.462	**<0.001**
Renal failure	1.912	1.385 - 2.638	**<0.001**
Liver disease	0.433	0.26 - 0.723	**0.001**
Peptic ulcer disease x bleeding	1.030	0.393 - 2.696	0.953
Lymphoma	2.644	0.696 - 10.041	0.153
Solid tumor (no metastasis)	3.126	1.518 - 6.441	**0.002**
Rheumatoid arthritis	1.317	1.019 - 1.703	**0.035**
Coagulopathy	0.864	0.565 - 1.323	0.502
Obesity	0.923	0.696 - 1.222	0.574
Fluid and electrolyte disorders	0.910	0.7 - 1.183	0.482
Alcohol abuse	0.868	0.3 - 2.517	0.795
Drug abuse	0.460	0.22 - 0.964	**0.040**
Depression	0.357	0.25 - 0.508	**<0.001**
Hypertension	1.023	0.785 - 1.333	0.869

Black patients had increased lengths of stay (LOS) of 1.012 days (95% CI: 0.080–1.944, *P*=0.033) and fewer average number of procedures performed (marginal difference -0.289, 95% CI: -0.542–0.037, *P*=0.025) than White patients. Increased LOS might reflect their previously reported poorer outcomes (at least for systemic scleroderma) due to racial disparities and disease pathogenesis. In a retrospective study of 2,217 systemic scleroderma patients, Blacks had increased odds of cardiac (OR: 1.6), renal (OR: 1.6) and muscle diseases (OR: 1.7), and mortality (43% vs. 35%, *P*=0.001). [3] Therefore, our finding that Black patients more often had comorbid conditions might indirectly explain the increased LOS in Blacks via increased disease severity, but this could also be due to other causes, including economic disparities, mistrust and communication barriers, and less social support versus other groups.

Conversely, the lower likelihood of liver disease in Black LS patients might be explained by the commonality of primary biliary cholangitis (PBC) as a liver disease subtype in LS patients, with PBC being more common in Whites. [4] Hypertension risk did not vary between racial groups. This may be due to the pathological association of pulmonary arterial hypertension (and subsequent secondary hypertension) with scleroderma regardless of race, thus minimizing any racial association with hypertension that might otherwise be seen in the general population. [5]

Limitations of this study include its retrospective nature and the recording of scleroderma-specific symptoms. Strengths include national breadth and large sample size.

Conclusion

In sum, Black vs. White LS patients are less likely to have liver disease and inpatient procedures, but higher LOS and risk of DM, hypothyroidism, and renal disease. Dermatologists might keep such associations in mind when treating LS patients, to optimize care and strive toward equitable outcomes.

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