SKIN

Research Letter

Hidradenitis Suppurativa Disease Severity and Outcomes Among Black Patients From Low-Income Neighborhoods at a Tertiary Care Hospital: A Retrospective Review

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ABSTRACT

Hidradenitis suppurativa (HS) is a debilitating, inflammatory condition of apocrine sweat glands. Black patients are disproportionately affected, a finding largely attributed to lower socioeconomic status (SES) in the literature; yet, most HS studies include majority White cohorts. We present, to our knowledge, the first retrospective review of an entirely Black patient population living in low-income neighborhoods diagnosed with hidradenitis suppurativa (HS) to identify potentially modifiable factors related to disease severity and outcomes. We reviewed charts of Black patients with an encounter for HS from 2010-2020 in the New Orleans University Medical Center database. Hurley stage III (HSt III) disease was associated with early and chronic onset, longer time-to-treatment, higher body mass index, and Medicaid insurance. Flared disease was associated with fewer dermatology visits, more incision and drainage procedures, and higher lost-to-follow-up rates while well-controlled patients had more surgical excisions, biologic use, and lower smoking rates. Patients were nearly evenly split among initial HSt's, and ~50% of the 473 patients were stable or well-controlled at latest disease status, suggesting low SES alone cannot explain HS race-based discrepancies. Our findings highlight potentially modifiable factors for healthcare providers to consider when holistically treating Black patients living in low-SES communities.

INTRODUCTION

Hidradenitis suppurativa (HS) is a debilitating inflammatory condition of apocrine sweat glands. Although most HS studies include majority White cohorts, Black patients are disproportionally affected, which has been largely attributed to an association with lower socioeconomic-status (SES).[1-3] Yet, the paucity of Black patient representation in existing HS literature presents an incomplete understanding of the HS race disparity. [4] We sought to identify specific factors associated with HS disease severity and outcomes among Black patients living in low-income neighborhoods.

METHODS

We reviewed charts of Black patients with an encounter for HS from 2010-2020 in the New Orleans University Medical Center database. Data was derived from patient records. Median and average household incomes and percent high incomes (households earning ≥$200,000/year) were determined by zipcode.[3,5] Hurley Stage (HSt), explicitly documented or determined by the authors using photos and/or physical exams, classified disease severity at initial presentation. Disease status (flaring, stable, well-controlled) was determined using the classification system in **Table 1**. Descriptive statistics summarized patient demographics, stratified by HSt and disease status. Logistic regression analyses, adjusting for age and sex, identified associations between clinical predictors and HSt and disease status **(Table 2)**. α=0.05 assessed significance. Study approval was granted by the Institutional Review Board of Louisiana State University School of Medicine.

RESULTS

22 misdiagnosed patients were excluded. The remaining 473 were nearly evenly split between HSt's and were predominantly middle-aged (41.8 years-old), female (67.6%), flaring (56.5%), and extremely obese (body mass index (BMI) ≥35 kg/m^2). HSt I patients presented more acutely, with older ages of onset, fewer years to dermatology, and were less often lost to follow-up (LTF) (p<0.05) **(Table 2A-B)**. Medicaid insurance and each 5-point increase in BMI were associated with a 2.5x and 24.9% increased odds of HSt III disease, respectively (p<.05) **(Figure 1)**. Odds of flaring decreased by 3.1%, 34.4%, and 61.0% with each additional dermatology visit, biologic used, and surgical excision, respectively (p<.05). Odds of flaring were 1.7x greater with incision and drainage (I&D) (p<.05). Surgical excision and former tobacco use (compared to current use) were associated with a 7.2x and 3.5x increased odds of well-controlled (WC) disease, respectively (p<.05). Odds of WC status decreased by 39.9% when LTF and 63.4% if currently smoking (p<.05). Never-smokers were 2.7x more likely to have WC status (tabulated data is in reference to never-smokers) (p<.05) **(Figure 2)**.

DISCUSSION

To our knowledge, we present the first analysis of HS in an entirely Black patient cohort. One-third of patients had mild disease at initial presentation, and half were ultimately stable/WC despite living in low-income neighborhoods, suggesting that SES alone does not explain the increased severity and prevalence of HS seen among Black patients.

Patients with mild disease presented sooner and followed-up regularly, whereas those with advanced disease had longer time-to-treatment, less follow-up, and higher BMI. Better patient outcomes were associated with more clinic visits, surgical excision, and biologic use, whereas poorer outcomes were associated with I&D's, tobacco use, and LTF status. Rather than solely attributing race-based HS disparities to low SES, future studies should further identify actionable items that are associated with improved outcomes among Black patients from low-income communities. Therefore, healthcare providers can potentially decrease diagnostic delay, misdiagnosis, unoptimized treatment plans, and patient frustration. Emergency room (ER) providers may better treat and refer HS patients who initially present to the ER (of which Black patients are overrepresented).[2,6]

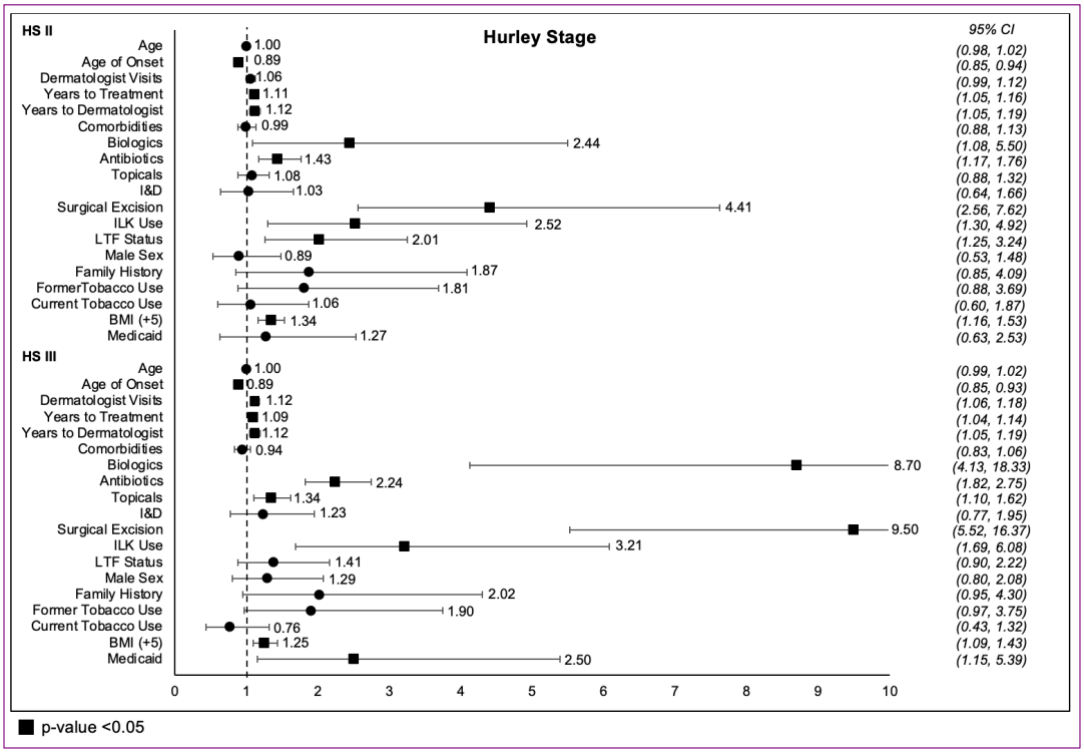

Figure 1. Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for Demographic and Clinical Predictors of Hurley Stage

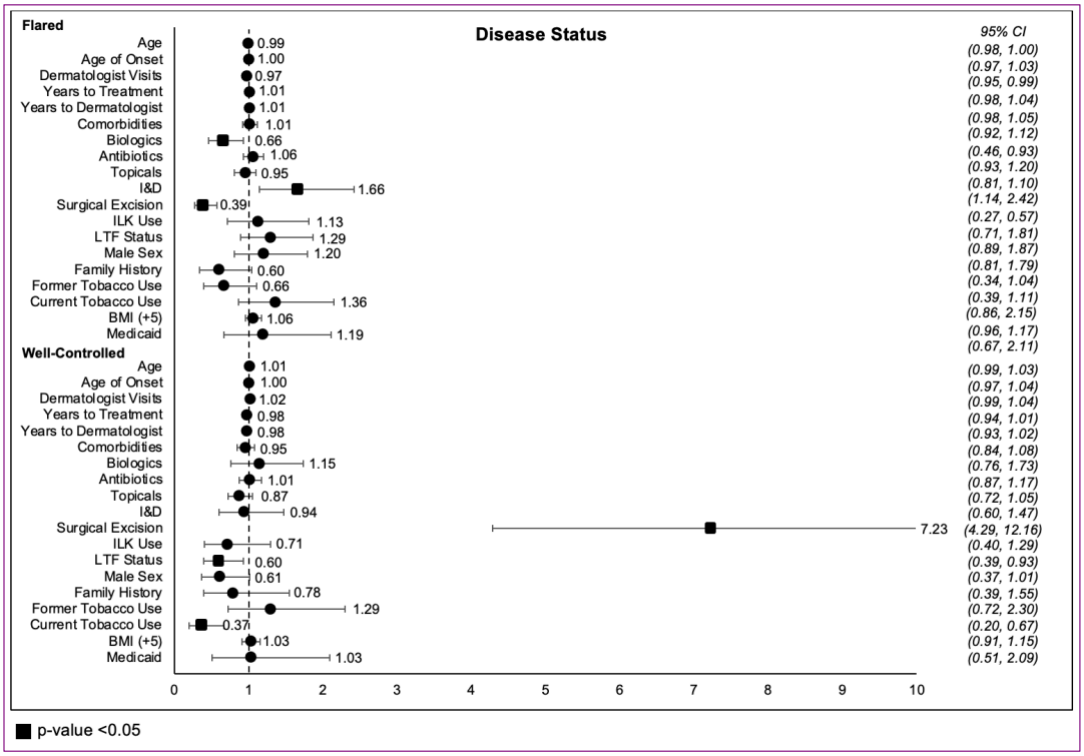

Figure 2. Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for Demographic and Clinical Predictors of Disease Status

Table 1. Disease Status Classification System.*

Classification	Description
WC	patient well-controlled; *reduction* in the number or improved character of scars, abscesses, nodules, and/or tracts and no current or interim drainage, flares, or pain; healing well s/p excision; disease in remission
Stable	patient stable; *unchanged* number or character of scars, abscesses, nodules, and/or tracts and no current or interim drainage, flares, or pain; healing well s/p I&D
Flaring	patient flaring; *increase* in number or worsening character of scars, abscesses, nodules, and/or tracts and/or current or interim drainage, flares, and/or pain

WC = well-controlled; s/p = status post; I&D = incision and drainage
*The tabulated information was either explicitly stated or described in the history of present illness, physical exam, or assessment and plan section of the patient's latest documented note pertaining to HS.

Study limitations include the retrospective nature conducted at a single center in New Orleans and the use of a non-validated classification system **(Supplemental Table 1)**.

We hope to inform the holistic treatment of HS and health policy initiatives in the setting of limited race-based HS data.

Conflict of Interest Disclosures: None

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Table 2A. Demographics by Hurley Stage (HS).

	Overall (n=447)	*HS I (n=147)*	*HS II (n=139)*	*HS III (n=161)*	*p*
			Mean (SD)		
Age	41.5 (13.5)	41.2 (14.2)	41.2 (13.0)	42.0 (13.3)	0.822
Age of Onset	28.9 (13.4)	32.3 (14.5)	26.5 (12.5)	27.7 (12.7)	**0.006**
Dermatologist Visits	4.0 (7.9)	2.0 (4.6)	3.0 (5.3)	6.8 (10.9)	**<0.0001**
Years to Treatment	6.1 (8.6)	3.6 (5.8)	8.2 (9.8)	6.9 (8.8)	**0.001**
Years to Dermatologist	10.0 (10.2)	6.5 (6.4)	11.4 (10.7)	10.8 (11.0)	**0.031**
Average Household Income	62,185.0 (16,418.6)	61,603.8 (16,544.3)	63,548.4 (17,029.2)	62,039.4 (15,770.8)	0.444
Median Household Income	41,779.3 (11,906.1)	40,870.1 (12,072.6)	42,963.4 (12,891.8)	41,593.2 (10,803.2)	0.329
Percent High Income	3.8 (3.0)	3.7 (3.0)	4.0 (3.1)	3.7 (3.0)	0.760
Comorbidities Count	2.4 (2.0)	2.5 (2.0)	2.4 (1.9)	2.3 (2.1)	0.724
			% (n)		
Male Sex	32.7 (146)	31.3 (46)	28.8 (40)	37.3 (60)	0.268
Onset					**<0.0001**
Acute	11.7 (52)	30.8 (44)	2.2 (3)	3.1 (5)	
Chronic	88.3 (391)	69.2 (99)	97.8 (136)	96.9 (156)	
Family History	16.5 (59)	7.5 (11)	15.1 (21)	16.8 (27)	0.161
Insurance Type					0.105
Commercial	11.6 (52)	14.3 (21)	13.7 (19)	7.5 (12)	
Correction	2.0 (9)	2.7 (4)	1.4 (2)	1.9 (3)	
Medicaid	66.2 (296)	57.8 (85)	68.4 (95)	72.1 (116)	
Medicare	11.4 (51)	12.2 (18)	8.6 (12)	13.0 (21)	
None	8.7 (39)	12.9 (19)	7.9 (11)	5.6 (9)	
Smoking Status					0.111
Never	44.5 (198)	46.9 (69)	42.4 (59)	43.5 (70)	
Former	19.5 (87)	12.9 (19)	20.1 (28)	24.8 (40)	
Current	36.0 (160)	40.1 (59)	36.0 (50)	31.9 (51)	
BMI Category					**0.005**
Underweight	1.8 (8)	0.7 (1)	1.4 (2)	3.1 (5)	
Normal	18.6 (83)	23.1 (34)	12.9 (18)	19.3 (31)	
Overweight	19.1 (85)	26.5 (39)	13.7 (19)	16.8 (27)	
Obese	21.3 (95)	21.1 (31)	21.6 (30)	21.1 (34)	
Extremely Obese	39.2 (175)	28.6 (42)	49.6 (69)	39.8 (64)	
LTF	55.8 (249)	47.6 (70)	64.8 (90)	55.6 (89)	**0.014**

Treatments					
Surgical Excision	43.9 (196)	17.0 (25)	47.5 (66)	65.2 (105)	**<0.0001**
I&D	61.9 (276)	59.9 (88)	60.4 (84)	65.0 (104)	0.595
ILK	19.9 (89)	10.2 (15)	22.3 (31)	26.7 (43)	**0.001**
Antibiotics	89.6 (398)	84.3 (123)	89.1 (123)	95.0 (152)	**0.008**
Topicals	65.8 (294)	59.9 (88)	65.5 (91)	71.4 (115)	0.102
Biologics	19.5 (87)	4.8 (7)	13.0 (18)	38.5 (62)	**<0.0001**
Other Medications	53.0 (236)	48.6 (71)	52.5 (73)	57.5 (92)	0.299
Disease Status					0.104
Flaring	56.6 (253)	55.1 (81)	59.0 (82)	55.9 (90)	
Stable	21.3 (95)	27.9 (41)	18.0 (25)	18.0 (29)	
Well-Controlled	22.2 (99)	17.0 (25)	23.0 (32)	26.1 (42)	

Bold values indicate significance at an α=0.05 level. Years to treatment = time from symptom onset to first provider assessment for HS; Years to dermatology = time from symptom onset to first dermatologist assessment for HS; Acute onset = patients who first presented within 1 year of symptom onset; Chronic onset = patients who first presented >1 year after symptom onset; BMI = body mass index; LTF = lost to follow-up; patients with scheduled follow-up who lacked subsequent encounters/prescriptions for HS; I&D = incision & drainage; ILK = intralesional Kenalog.

Table 2B. Demographics by Disease Status

	Overall (n=473)	***Flaring (n=267)***	***Stable (n=102)***	***Well-Controlled (n=104)***	***p***
	Mean (SD)				
Age	41.8 (13.4)	41.0 (13.3)	42.8 (13.2)	42.9 (13.7)	0.307
Age of Onset	28.9 (13.4)	28.5 (13.4)	30.4 (13.3)	28.9 (13.6)	0.627
Dermatologist Visits	3.8 (7.8)	3.1 (6.2)	5.2 (9.1)	4.5 (9.7)	**0.045**
Years to Treatment	6.2 (8.4)	6.3 (8.6)	6.8 (8.1)	5.4 (8.2)	0.644
Years to Dermatologist	10.1 (10.1)	10.1 (9.8)	11.3 (10.8)	8.9 (10.4)	0.611
Average Household Income	62,419.7 (16,708.5)	63,331.9 (17,493.8)	59,495.0 (16,073.4)	62,886.4 (15,031.1)	0.145
Median Household Income	41,977.0 (11,979.6)	42,196.7 (12,008.0)	40,469.8 (12,155.7)	42,846.1 (11,727.1)	0.336
Percent High Income	3.8 (3.1)	4.0 (3.3)	3.4 (2.9)	3.8 (2.7)	0.325
Comorbidities Count	2.4 (2.0)	2.3 (2.1)	2.5 (1.8)	2.3 (2.0)	0.724
	% (n)				
Male Sex	32.4 (153)	33.7 (90)	36.3 (37)	25.0 (26)	0.173

Onset					0.078
Acute	11.6 (55)	14.2 (38)	10.8 (11)	5.8 (6)	
Chronic	86.7 (410)	85.0 (227)	85.3 (87)	92.3 (96)	
Family History	12.5 (59)	9.7 (26)	20.6 (21)	11.5 (12)	**0.013**
Insurance Type					0.948
Commercial	11.8 (56)	11.2 (30)	13.7 (14)	11.5 (12)	
Correction	2.1 (10)	1.9 (5)	2.0 (2)	2.9 (3)	
Medicaid	65.8 (311)	68.5 (183)	60.8 (62)	63.5 (66)	
Medicare	11.6 (55)	10.5 (28)	13.7 (14)	12.5 (13)	
None	8.7 (41)	7.9 (21)	9.8 (10)	9.6 (10)	
Smoking Status					**0.0003**
Never	44.4 (210)	44.6 (119)	36.3 (37)	51.9 (54)	
Former	19.2 (91)	15.0 (40)	20.6 (21)	28.9 (30)	
Current	35.9 (170)	39.7 (106)	43.1 (44)	19.2 (20)	
BMI Category					0.558
Underweight	2.3 (11)	2.6 (7)	2.0 (2)	1.9 (2)	
Normal	18.4 (87)	17.2 (46)	24.5 (25)	15.4 (16)	
Overweight	19.2 (91)	18.0 (48)	22.6 (23)	19.2 (20)	
Obese	21.1 (100)	20.6 (55)	17.7 (18)	26.0 (27)	
Extremely Obese	38.7 (183)	41.2 (110)	33.3 (34)	37.5 (39)	
LTF	55.5 (262)	58.3 (155)	57.8 (59)	46.2 (48)	0.094
Treatment					
Surgical Excision	44.0 (208)	34.1 (91)	34.3 (35)	78.9 (82)	**<0.0001**
I&D	61.2 (289)	66.5 (177)	49.0 (50)	59.6 (62)	**0.008**
ILK	19.1 (90)	19.9 (53)	20.8 (21)	15.4 (16)	0.545
Antibiotics	88.7 (416)	91.4 (243)	85.0 (85)	85.4 (88)	0.115
Topicals	64.0 (302)	61.8 (165)	75.3 (76)	58.7 (61)	**0.025**
Biologics	18.6 (88)	15.4 (41)	24.8 (25)	21.2 (22)	0.090
Other Medications	52.1 (245)	48.5 (129)	54.5 (55)	59.2 (61)	0.179
Hurley Stage					0.104
I	32.9 (147)	32.0 (81)	43.2 (41)	25.3 (25)	
II	31.1 (139)	32.4 (82)	26.3 (25)	32.3 (32)	
III	36.0 (161)	35.6 (90)	30.5 (29)	42.4 (42)	

Bold values indicate significance at an α=0.05 level. Years to treatment = time from symptom onset to first provider assessment for HS; Years to dermatology = time from symptom onset to first dermatologist assessment for HS; Acute onset = patients who first presented within 1 year of symptom onset; Chronic onset = patients who first presented >1 year after symptom onset; BMI = body mass index; LTF = lost to follow-up; patients with scheduled follow-up who lacked subsequent encounters/prescriptions for HS; I&D = incision & drainage; ILK = intralesional Kenalog.