Gender differences in hidradenitis suppurativa characteristics: A retrospective cohort analysis

Dear Editors,

What is known about this subject with regard to women and their families?
• Hidradenitis suppurativa disproportionately affects women and has a significant impact on quality of life.
• Few studies have characterized gender differences at length in a racially diverse cohort.

What is new from this article as messages for women and their families?
• In our racially diverse cohort, there were significant gender differences in epidemiology, disease manifestations, and comorbidities.
• Although hidradenitis suppurativa is known to disproportionately affect women overall, the proportions of men and women were significantly different across ethnicities in our cohort. However, sample sizes were small for many ethnic minorities.
• Women were less likely to present with severe disease but had slightly earlier disease onset than men.
• Further exploration of gender differences in underlying mechanisms is warranted, and future investigations may consider gender-tailored treatments.

Although previous studies of hidradenitis suppurativa (HS) have identified a female predominance and an increased disease severity in men (Schrader et al., 2014; Zimman et al., 2019), few characterized gender differences in HS characteristics at a single academic center.

We conducted a cross-sectional retrospective chart review to gather demographic, disease, and comorbidity data from all patients with HS who presented to the University of California, Los Angeles, HS clinic between August 2009 and March 2018. Comparative analyses between genders were performed using Wilcoxon rank sum and Fisher’s exact tests. Logistic regression was used to calculate gender differences at risk of presenting with severe disease (Hurley-III vs. Hurley-I and Hurley-II) and mean Dermatology Life Quality Index score after controlling for Hurley stage. A value of p < .05 was considered statistically significant.

Our cohort of 209 patients (140 women; 69 men) was racially diverse (30% white, 18% Hispanic, 17% black, and 12% Asian), with a significant gender difference in disease prevalence across ethnicities (p = .008; Table 1). Although women were more likely to have earlier disease onset (23 vs. 25 years; p = .046), men had 2.24 times the risk of presenting with Hurley-III (p = .004). Men had greater gluteal (52% vs. 25%; p = .002) involvement, versus greater breast/chest involvement in women (18% vs. 4%; p = .008). Men were also significantly more likely to have posterior neck (6% vs. 1%; p = .042) or scalp (6% vs. 1%; p = .042) involvement.

Men were disproportionately active smokers (28% vs. 12%; p = .005) and affected by acne conglobata (11% vs. 1%; p = .004), scalp folliculitis (21% vs. 4%; p = .0005), and dissecting cellulitis (12% vs. 0%; p = .0001; Fig. 1). Men trended toward having an increased rate of comorbid acne (70% vs. 56%; p = .073) and pilonidal cyst (29% vs. 18%; p = .076). Rate of systemic comorbidities did not differ by gender. There was no gender difference in mean Dermatology Life Quality Index score (14 vs. 14; p = .81), even after controlling for disease severity (p = .48).

Our study found significant gender differences in HS. HS disproportionately affects women, and men have increased disease severity, but impact on quality of life in both genders was similar. Although previous studies based in the United States or Europe have also reported a predominance of HS in women and increased disease severity in men, few have studied differences in age at the time of onset (Sartorius et al., 2009; Schrader et al., 2014). Although our study found a statistically significant difference in mean age of onset between genders, the difference is minor and likely not clinically significant. The proportions of men and women between ethnicities were significantly different in our cohort; however, sample sizes were small for many ethnic minorities. Further exploration of gender differences in age at the time of disease onset and ethnic groups is warranted.

HS lesions generally affected frontal anatomic regions in women versus posterior regions in men, supporting the results from prior studies (Schrader et al., 2014). Men had increased involvement of atypical locations, such as the face, neck, and scalp. Further studies may determine whether patients with atypical HS have an increased risk of misdiagnosis or differential treatment responses compared with those with classic intertriginous presentations.

More men have comorbid acne conglobata, dissecting cellulitis, and pilonidal cyst, consistent with male predominance of these conditions overall (Gasparic et al., 2017). The presence of a co-morbid disease within the follicular occlusion tetrad may implicate variable treatment responses (Patel et al., 2021). However, future prospective studies are needed to better capture comorbidities that may develop later in the HS disease course.
### Table 1: Patient demographics and disease characteristics

| Demographics and disease characteristics | Total (N = 209) | Women (n = 140) | Men (n = 69) | p-value |
|------------------------------------------|----------------|----------------|-------------|---------|
| Age at presentation to HS clinic, mean ± SD (range) (n = 209) | 34 ± 12 (15–75) | 34 ± 13 (15–75) | 34 ± 11 (17–62) | .94     |
| Duration of disease, mean ± SD (range) (n = 197) | 11 ± 9 (0–50) | 12 ± 10 (0–50) | 9 ± 8 (0–30) | .066   |
| Age at HS onset, mean ± SD (range) (n = 197) | 23 ± 12 (6–63) | 23 ± 12 (6–63) | 25 ± 11 (9–60) | .046†   |
| Race/ethnicity, n (%) (n = 196) |                          |                |             | .008†   |
| White                                   | 59 (30) | 43 (32) | 16 (25) |        |
| Hispanic                                | 35 (18) | 22 (17) | 13 (21) |        |
| Black                                   | 34 (17) | 29 (22) | 5 (8) |        |
| Middle Eastern                          | 13 (7) | 5 (4) | 8 (13) |        |
| East Asian                              | 13 (7) | 6 (5) | 7 (11) |        |
| South Asian                             | 10 (5) | 4 (3) | 6 (10) |        |
| Native American                         | 3 (2) | 2 (2) | 1 (2) |        |
| Bi- or multiracial                      | 29 (15) | 22 (17) | 7 (11) |        |
| Body mass index, mean ± SD (range)      | 31 ± 8 (19–60) | 31 ± 8 (19–50) | 31 ± 9 (19–60) | .93     |
| Family history of HS, n (%) (n = 195)   | 55 (28) | 41 (31) | 14 (23) | .31     |
| Active smoker, n (%) (n = 208)          | 35 (17) | 16 (12) | 19 (28) | .005†   |
| Former smoker, n (%) (n = 195)          | 44 (25) | 31 (25) | 13 (26) | 1.00    |
| Disability status, n (%) (n = 146)      | 20 (10) | 13 (10) | 7 (11) | .80     |
| Severity of HS, n (%) (n = 209)         | 70 (33) | 53 (38) | 17 (25) |        |
| Hurley stage I                          | 99 (47) | 68 (49) | 31 (45) |        |
| Hurley stage III                        | 40 (19) | 19 (14) | 21 (30) |        |
| Location of HS, n (%) (n = 209)         | 131 (63) | 89 (64) | 42 (61) | .76     |
| Axilla                                   | 103 (49) | 68 (49) | 35 (51) | .88     |
| Groin (including genitals)             | 71 (34) | 35 (25) | 36 (52) | .0002†  |
| Gluteal (including perianal)            | 57 (27) | 40 (29) | 17 (25) | .62     |
| Inner thigh                             | 28 (13) | 25 (18) | 3 (4) | .008†   |
| Breast/pectoral                         | 4 (2) | 1 (1) | 3 (4) | .11     |
| Scalp                                    | 5 (2) | 1 (1) | 4 (6) | .042†   |
| Face                                     | 2 (1) | 0 (0%) | 2 (3%) | .11     |
| Initial DLQI score, mean ± SD (range)   | 14 ± 9 (0–30) | 14 ± 9 (0–30) | 14 ± 9 (0–30) | .81     |

DLQI, Dermatologic Life Quality Index; HS, hidradenitis suppurativa; SD, standard deviation.

* Statistically significant (p < .05).
† Fischer’s exact test comparing proportions of patients with Hurley stage I, II, or III disease between genders.
‡ Excluding skin cancers.

Fig. 1. Patient comorbidities. HS, hidradenitis suppurativa; SAPHO, synovitis, acne, pustulosis, hyperostosis, osteitis. ‘p < .05 indicates statistically significant difference between genders.
Although this study is limited by its single-center cross-sectional retrospective design, our racially diverse cohort demonstrates significant gender differences in epidemiology, cutaneous comorbidities, and disease manifestations of HS. Future investigations may consider gender-tailored treatments by exploring mechanisms underlying the gender differences in HS, from hormonal influences to immune profiles.

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Study approval

The author(s) confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies.

Conflicts of interest

Dr Jennifer L. Hsiao is on the board of directors for the Hidradenitis Suppurativa Foundation and has served as an advisor for Novartis and a speaker for AbbVie. Dr Vivian Y. Shi is on the board of directors for the Hidradenitis Suppurativa Foundation and has served as an advisor, investigator, and/or speaker for Sanofi Genzyme, Regeneron, AbbVie, Burt's Bees, Dermira, Eli Lilly, Novartis, Pfizer, Galderma, Leo Pharma, SUN Pharma, Menlo Therapeutics, GpSkin, and Skin Actives Scientific. There was no financial transaction for the preparation of this manuscript. The other authors have no relevant disclosures.

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