
Systemic associations of hidradenitis suppurativa

John J. Kohorst, MD,^a Alexa B. Kimball, MD, MPH,^b and Mark D. P. Davis, MD^c
Rochester, Minnesota, and Boston, Massachusetts

Hidradenitis suppurativa (HS) is a progressive, inflammatory disease that affects mostly young women and appears to be caused by inflammation of hair follicles in areas of friction in the body (eg, the axillae, groin, perineum, and medial aspects of the thighs). Given this pathophysiology, one might expect comorbidities that contribute to inflammation and friction. Observed comorbidities fall into several categories: obesity and the metabolic syndrome, hormone-related disorders, deleterious health habits and mood, autoimmune disease, inflammatory disease and finally, the risk of skin cancer and sequelae of nonhealing wounds. The available literature on comorbid diseases of HS is limited but rapidly increasing. In this review, we summarize recent and major studies of HS disease association. (J Am Acad Dermatol 2015;73:S27-35.)

Key words: acne inversa; arthritis; depression; disease associations; hidradenitis suppurativa; inflammatory bowel disease; metabolic syndrome; smoking; spondyloarthritis.

OBSERVATIONS

The available literature on comorbid diseases of hidradenitis suppurativa (HS) is limited but rapidly increasing.¹⁻⁵³ Studies to date suggest that HS is most convincingly associated with the metabolic syndrome (MetS). Associations with many other conditions, including smoking, depression, autoimmune disease, and cutaneous oncology have been suggested, but the current evidence largely consists of retrospective reports and case series.

Obesity and the metabolic syndrome

For decades, HS has shown a predilection for obese patients. Recent controlled studies have confirmed a strong association between obesity and HS.

Obesity. Rates of obesity in HS range from 12% to 88%, depending on the population (Table 1).¹⁻⁵ Duration of HS disease has not been linked to obesity⁶; however, several studies suggest that HS disease severity is associated with an elevated body mass index (BMI).^{2,7-10} In addition, recent long-term follow-up data suggest that nonobese HS patients report more frequent HS remission.¹¹ Independent of BMI, central obesity has also been linked to HS.^{3,4} Investigators have suggested that overlapping skin folds in overweight patients may lead to HS

development, but the proinflammatory state associated with obesity and concomitant hormonal problems may also play a role.^{12,13}

Metabolic syndrome. MetS is defined as the presence of 3 of 5 physiologic alterations, including obesity, elevated fasting blood glucose level, hypertriglyceridemia, low high-density lipoprotein (HDL) cholesterol (HDL-C) level, and hypertension. As a distinct entity, MetS has higher rates in HS than in control subjects, which is not surprising given the higher rate of obesity observed.^{3,4,14} Of note, onset of HS has been reported at younger ages in patients with comorbid MetS; however, neither HS disease duration nor HS disease severity has been linked to increased rates of MetS in HS.^{3,4,14}

Diabetes mellitus. The association of diabetes mellitus and HS has been noted for >20 years,¹⁵⁻¹⁷ and recent studies support the finding.^{3,5,18} Reported rates of diabetes in HS have varied from 5% to 20%,^{3,5,18} whereas rates of hyperglycemia and glucose intolerance in HS have been reported at 26% and 39%, respectively.^{4,14} Diabetes in HS has not been significantly associated with increased HS disease severity, and the confounder of obesity is important to evaluate in assessing this risk.⁹

Lipid abnormalities. Recent studies have uniformly reported an association between

From the Mayo Clinic College of Medicine,^a Rochester; Department of Dermatology,^b Massachusetts General Hospital and Harvard Medical School, Boston; and the Department of Dermatology,^c Mayo Clinic, Rochester.

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Reprint requests: Mark D. P. Davis, MD, Department of Dermatology, Mayo Clinic, 200 First St SW, Rochester, MN 55905. E-mail: davis.mark2@mayo.edu.

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hypertriglyceridemia and HS, which similarly may be confounded by the presence of obesity and poor dietary habits.^{4,14} A study of HS patients at an outpatient clinic found an association in an HS population group with an odds ratio of 1.49 (95% confidence interval [CI], 1.18-1.87).³ Major reports have also found associations between low HDL-C levels and HS,^{3,14} and a single study found no relation.⁴ Rates of low HDL-C values in HS vary from 33.1% to 54%, depending on the study population.

Hypertension. The majority of reports have not found a significant association between HS and comorbid or past history of hypertension, although it is a component of MetS.^{3,4,18} In addition, hypertension has not been shown to be associated with increased HS disease burden.⁸

Hormone-related disorders

Given the predilection of HS for women, hormonal pathogenesis has been long suggested.^{11,45,46} A recent case control study reported a strong association between HS and polycystic ovary syndrome,⁵ which is also associated with obesity; however, the majority of information to date does not confirm this association.^{11,31,37,45,46}

Health habits and mood

HS is a painful disease with severe psychological morbidity. Recent studies have investigated an association with smoking, substance dependence, and depression.

Smoking. Reported rates of current smoking in HS patients range from 40% to 92%.^{2,5,9,11,18-20} An association between current smokers and HS prevalence has been found in 2 studies^{18,19} but has been refuted in a third investigation.⁹ Similarly, reports conflict on the association between ex-smokers and HS.^{9,18} Studies investigating tobacco use in HS found that HS clinic patients have increased cigarette consumption per day compared with controls,¹⁸ and increased HS disease burden was associated with significantly more smoking pack-years, indicating smoking may exacerbate disease.⁹ HS patients did not report starting to smoke at a significantly younger age than controls.¹⁸ Cigarette smoking has been linked to more severe HS disease^{2,7} and,

interestingly, a recent questionnaire reported lower rates of HS remission in smokers compared with nonsmokers.¹¹

Substance dependence. An association between HS and either drug or alcohol dependence has not been shown in any controlled studies to date, although a phase II therapeutic study reported a higher use of opioids than would be expected in the US population.^{5,18}

Depression. A controlled study involving 9619 patients found a higher prevalence of depression (5.9%) in HS patients relative to controls.²¹ In addition, reported mean Dermatology Life Quality Index scores in HS are higher than in many other debilitating diseases, including atopic dermatitis and moderate psoriasis, and range from a mean of 8.4 to 20.²²⁻²⁵ Reports to date are inconclusive with respect to the association between HS disease burden and the co-occurrence of depression.^{2,7,8,12}

Autoimmune disease

The inflammatory nature of HS and the observation of HS cases clustering with autoimmune diseases has motivated several case series.

Inflammatory bowel disease. A recent population-based incidence study found that patients with inflammatory bowel disease are 9 times more likely to develop HS than the general population, with an incidence rate ratio of 8.9 (95% CI, 3.6-17.5).²⁶ The largest case series reported rates of HS in Crohn's disease (CD) from 17% to 26%, whereas rates of HS in ulcerative colitis (UC) range from 14% to 18%.^{27,28} Of note, CD in the clinical setting of HS typically localizes to the large bowel and precedes HS onset by several years; HS in CD frequently arises in a perianal or perineal location.²⁹

Arthritis and spondyloarthropathy. Rates of spondyloarthropathy are reported to be significantly higher in HS than controls.^{5,30} Comorbid arthritis has been described predominantly in black men in peripheral rather than vertebral joints.³¹⁻³³ Typically, HS precedes arthritis by a number of years, but after it is present, the arthritis is chronic, flares in conjunction with HS flares, and often improves with effective HS treatment.³¹⁻³⁴ Of note, arthritic disease occurring in association with HS is HLA-B27 negative.^{32,33}

CAPSULE SUMMARY

- Recent studies have linked hidradenitis suppurativa to several diseases.
- This review summarizes systemic associations of hidradenitis suppurativa reported to date.
- The data suggest that hidradenitis is most convincingly associated with obesity and the metabolic syndrome, but continued investigation is needed.

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