Hidradenitis Suppurativa: A Treatment Challenge

NIPA SHAH, M.D., *University of Illinois College of Medicine, Chicago, Illinois*

Hidradenitis suppurativa is a chronic, recurrent, debilitating disease that presents with painful, inflamed lesions in the apocrine-gland–bearing areas of the body, most commonly the axillary, inguinal, and anogenital areas. Etiology traditionally has been attributed to occlusion of the apocrine duct by a keratinous plug; however, defects of the follicular epithelium also have been noted. Contributing factors include friction from axillary adiposity, sweat, heat, stress, tight clothing, and genetic and hormonal components. Multiple treatment regimens are available, including antibiotics, retinoids, corticosteroids, incision and drainage, local wound care, local excision, radiation, and laser therapy. However, no single treatment has proved effective for all patients. Radical excision of the defective tissue is the most definitive treatment. The psychological impact on the patient can be great, encompassing social, personal, and occupational challenges. This impact should be addressed in all patients with significant disease. (Am Fam Physician 2005;72:1547-52, 1554.)

✉ **Patient information:** A handout on hidradenitis suppurativa, written by the author of this article, is provided on page 1554.

Hidradenitis suppurativa (from the Greek *hidros*, sweat, and *aden*, glands), is also known as Verneuil's disease or acne inversa, and occasionally is spelled hydradenitis. It is a common disorder, but its exact prevalence in the United States is unknown. A Danish study[1] noted a prevalence of 4 percent in women. However, the diagnosis of hidradenitis suppurativa often is overlooked by physicians and therefore may be more common than is recognized. Hidradenitis suppurativa affects more women than men, with a female-to-male predominance as high as 4:1.[2] This painful, disfiguring, and at times debilitating disease is marked by periods of inflammation with occasional secondary infection, and intermittent remissions that can last several years. The disease almost always occurs after puberty and before age 40, leading to the theory that there is a hormonal component to the pathogenesis. Flare-ups have been linked with menses[3]; shorter menstrual cycles and longer duration of menstrual flow are associated with the disease.[1] There also seems to be a genetic component, and in one study[3] of 110 patients, 38 percent reported a family history of this disease. This may reflect a familial form with autosomal dominant inheritance.[4]

Diagnosis

The clinical presentation of hidradenitis suppurativa indicates the diagnosis. A thorough history and physical examination are recommended at the initial visit. Early symptoms may include discomfort, itching, erythema, burning, and hyperhidrosis. Hidradenitis manifests most commonly as tender, nodular lesions in the axillae *(Figure 1)*, although other parts of the body also may be affected *(Table 1 and Figure 2)*. If a single nodule appears, it may indicate one of several other skin lesions that manifest

Figure 1. Common initial presentation of axillary hidradenitis suppurativa, showing multiple symmetric deep-seated nodules, cysts, and sinuses.

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendations	Evidence rating	References
Antibiotics and surgery are recommended as standard treatment options.	C	1
Early, rather than delayed, wide excisional therapy is recommended because lower disease severity allows for more surgical options.	C	20

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, see page 1435 or http://www.aafp.org/afpsort.xml.

in a similar fashion, and distinguishing hidradenitis can be difficult. A differential diagnosis is given in *Table 2*.[5-7] Nodules may have malodorous, superinfected drainage. Rarely, the patient has a fever or is septic, or both. In these instances, further work-up is based on laboratory findings. Complete blood count, blood cultures, and routine chemistries should be considered. Culture of the drainage is a reasonable option to help direct treatment.

As the disease progresses, the diagnosis becomes more apparent, especially if the patient presents with frequent recurrences, scarring, fistulous tracks, and incomplete healing. The clinical course varies from occasional axillary lesions to diffuse abscess formations in multiple sites leading to chronic draining sinuses, as well as indurated, scarred skin and subcutaneous tissues. Some areas may coalesce to form tender, raised, violaceous dermis *(Figure 3)*.

Symptoms of hidradenitis may be associated with several other conditions *(Table 3)*.[8,9] In perianal hidradenitis, biopsies should be performed to exclude the possibility of coexisting cancer.[10] Crohn's disease should also be considered.

Figure 2. Perineal hidradenitis suppurativa with multiple painful cysts, violaceous nodules, and draining sinus tracts.

Complications

Potential complications of hidradenitis suppurativa include dermal contraction, local or systemic infection resulting from the spread of microorganisms, arthritis secondary to inflammatory injury, squamous cell carcinoma (in indolent sinus tracts), disseminated infection (rare), restricted limb mobility from scarring, lymphedema caused by lymphatic injury from inflammation and scarring, rectal or urethral fistulas, systemic amyloidosis, and anemia from chronic infection.[11]

TABLE 1
Areas of the Body Affected by Hidradenitis Suppurativa

Axillae (most common)
Genitofemoral
Gluteal folds
Infraumbilical midline
Intermammary zones
Perianal
Periareolar
Pubic

TABLE 2
Differential Diagnosis for Hidradenitis Suppurativa

Carbuncle
Epidermoid or dermoid cyst
Erysipelas
Furuncle
Granuloma inguinale
Lymphogranuloma venereum
Pilonidal cyst
Tuberculosis (tuberculous inflammation of the skin)

Information from references 5 through 7.

Treatment

There is no cure for hidradenitis suppurativa. However, several treatment options are available, including preventive, medical, surgical, and psychological strategies *(Table 4)*. Because of the variety of ways in which the disease can manifest and progress, treatment should be based on the patient's presentation and circumstances. Few high-quality randomized controlled trials or systemic reviews have addressed treatment of this condition.

Although an abundance of anecdotal advice for the prevention of hidradenitis suppurativa exists, few methods have proved to be effective for all patients. In one study,[3] 24 percent of patients found nothing to help their condition, despite an average disease duration of almost 19 years.

For unknown reasons, women are more affected than men. Deodorants, shaving, and depilation have not been supported as a cause for this discrepancy in at least one study.[12] However, these should be avoided if they cause irritation. Warm compresses, topical antiseptics, and antibacterial soap may help in patients with folliculitis. To help alleviate patient anxiety about the condition, physicians should emphasize that hidradenitis suppurativa is not caused by poor hygiene and is not contagious.

The progression of hidradenitis may be advanced by excessive underarm adiposity because this creates an ideal environment for bacterial growth and also produces friction. Therefore, one method of prevention may be weight loss. However, although losing weight improves symptoms, it does not provide a cure. Friction from clothing increases pain and discomfort, and patients should avoid wearing tight, synthetic clothing near the affected areas. Heat and humidity also have been associated with flare-ups, and prolonged exposure to hot, humid climates should be avoided if possible. Stress management methods may be useful because the disease can be aggravated during times of increased psychosocial stress.

MEDICAL TREATMENT

Initial treatment of hidradenitis suppurativa can begin with conservative measures such as warm baths, hydrotherapy, and topical cleansing agents to reduce bacterial load.[13] Nonsteroidal anti-inflammatory drugs may alleviate pain as well as inflammation. Antibiotics, although not proven to be effective, are the mainstay of medical treatment, especially for lesions suspected of being superinfected.

There is no evidence that chronic suppressive antibiotic therapy alters the natural history of hidradenitis. In a study[3] of 110 patients with hidradenitis, the average duration of painful nodules was 6.9 days—about the duration of an average course of antibiotics. Therefore, the perceived response of hidradenitis suppurativa to antibiotics may be explained

Figure 3. Advanced chronic axillary hidradenitis suppurativa, usually encountered after multiple failed treatments.

TABLE 3
Conditions Associated with Hidradenitis Suppurativa

Acanthosis nigricans
Arthritis (certain forms)
Crohn's disease
Down syndrome
Graves' disease
Hashimoto's thyroiditis
Herpes simplex
Hyperandrogenism
Irritable bowel syndrome
Sjögren's syndrome

Information from references 8 and 9.

TABLE 4
Treatment of Patients with Hidradenitis Suppurativa

Disease severity	*Characteristics*	*Treatment*
Mild	Early, solitary nodules with minimal pain; no abscesses	Avoidance of prolonged exposure to heat and humidity Avoidance of shaving if irritation occurs Avoidance of tight, synthetic clothing near affected area Nonnarcotic analgesics Stress management Topical antiseptics and antibacterial soap Warm compresses, warm baths, and hydrotherapy Weight loss NOT RECOMMENDED: Use of simple incision and drainage for lesions that are not fluctuant abscesses with purulent discharge
Moderate	Multiple, recurrent nodules with moderate pain; abscesses with purulent discharge	Antibiotics (topical, systemic, or both): Cephalosporins (if patient has concurrent cellulitis) Dicloxacillin (Dynapen) Erythromycin Minocycline (Minocin) Tetracycline Topical clindamycin (Cleocin) Cryotherapy Oral contraceptive agents, with high estrogen-to-progesterone ratio and low androgenicity of progesterone, in selected women CONSIDER: Referral to a dermatologist (for patients who do not respond to initial therapy) or an early referral to an experienced general surgeon (discuss risks and benefits of surgery)
Severe	Diffuse abscess formation in multiple sites; chronic draining sinuses; indurated scarred skin and subcutaneous tissues	Referral to an experienced surgeon

NOTE: *All patients also should be offered reassurance and psychosocial support.*

by the natural history of the condition itself, calling into question the routine use of antibiotics.[3] One option is to culture the drainage from a large nodule and treat based on the results. Staphylococcus commonly is isolated; other pathogens include *Escherichia coli* and β-hemolytic streptococcus. Enteric flora may be found in cultures from perianal regions. Multiple organisms, including anaerobic bacteria, also may be found.[8]

Empiric antibiotic treatment may be given when conservative measures with several days' observation have not improved symptoms. However, when superinfection is suspected it is best to treat based on culture results of drainage. Treatment can begin with topical or systemic antibiotics, or both. The only topical antibiotic that has been proven effective in a randomized controlled trial is clindamycin (Cleocin).[1] Antistaphylococcal agents are best for axillary disease, and more broad-spectrum coverage is better for perineal disease. Dicloxacillin (Dynapen; 1 to 2 g daily), erythromycin (1 g daily), tetracycline (1 g daily), and minocycline (Minocin; 1 g daily) have been used. Cephalosporins may be helpful for concurrent active cellulitis. For severe, recurrent disease, anecdotal evidence suggests that two months or more of antibiotic therapy

The Author

NIPA SHAH, M.D., is director of predoctoral education at the University of Illinois College of Medicine, Chicago, where she received her medical degree. She completed a family medicine residency at the University of New Mexico Department of Family and Community Medicine, Albuquerque.

Address correspondence to Nipa Shah, M.D., at e-mail: nipa.shah@jax.ufl.edu. Reprints are not available from the author.

may be needed to prevent progression and worsening of concomitant infection.

Other medical treatment options address the possible hormonal etiology of hidradenitis; these options include oral contraceptive agents that contain a high estrogen-to-progesterone ratio and low androgenicity of progesterone.[14] Two patients with severe, long-standing disease benefited from finasteride (Proscar) at a dosage of 5 mg daily.[15] In Europe, the antiandrogen cyproterone acetate (Cyprostat) has been successful in some studies,[16] but it currently is not approved for use in the United States.

Oral retinoids, which work by inhibiting sebaceous gland function and abnormal keratinization, also have been used. Pretreatment with isotretinoin (Accutane) at a dosage of 0.5 to 1.0 mg per kg daily for a few months before surgery has been recommended to reduce the inflammatory components.[17] No consensus on the dosing and duration of isotretinoin therapy has been reached by the few studies that have investigated it as a possible therapeutic option. Side effects of isotretinoin remain a major issue and include birth defects, hepatotoxicity, pseudotumor cerebri, and aggression.

Corticosteroids and immunosuppressants are other treatment possibilities. Topical triamcinolone (Aristocort) may be an option, but insufficient research has been conducted for it to be recommended routinely. Oral cyclosporine (Sandimmune) has shown some benefit, but chronic treatment can cause serious toxicity.[18]

SURGICAL TREATMENT

For early, limited disease that presents with a fluctuant abscess, incision and drainage may be a good first option. However, this procedure provides only short-term relief and has little impact on the disease course. When hidradenitis sinus tracks are well established but relatively superficial, they can be unroofed or laid open.[19] Because these tracks are lined by epithelium, the floor of the track can be preserved; this facilitates rapid healing and minimizes scarring.[10]

Early, rather than delayed, wide excisional therapy has been recommended by some experts as the treatment of choice because repeated failed treatments lead to the disease being more widespread and severe at presentation, making surgical options more difficult.[17,20] Patients should be advised that surgery treats only the disease that is present at the site of the excision; recurrence at a new site is possible. In one study[21] of 82 patients treated with wide excision, recurrence rates were zero percent for perianal disease, 3 percent for axillary disease, and 37 percent for inguinoperineal disease. Obesity, insufficient excision, significant skin maceration, and chronic skin infection may increase the incidence of recurrence.[21] In another study,[20] the overall complication rate was 17.8 percent; most complications were minor, such as suture dehiscence, postoperative bleeding, and hematoma. The rate of recurrence in this study was 2.5 percent and was related to the severity of the disorder.[20]

Obesity, insufficient excision, significant skin maceration, and chronic skin infection may increase the incidence of recurrence.

OTHER TREATMENT OPTIONS

Radiotherapy has been investigated as a potential treatment option. In a study[22] of the effects of radiotherapy in 231 patients, 38 percent had complete relief, and 40 percent showed clear improvement of symptoms. However, the possibility of long-term side effects must be discussed thoroughly with the patient.

Cryotherapy also has been considered. In one small study,[23] 10 patients who did not respond to systemic antibiotics were given one cycle of cryotherapy; eight patients reported improvement. However, patients also experienced significant pain, prolonged healing time (average, 25 days), and post-treatment infection. A carbon dioxide laser used in conjunction with second-intention healing provided relief for a few patients.[24]

Counseling

In addition to treating the physical illness, it is crucial that physicians acknowledge and treat the psychological burden associated with the disease. Because of the areas of the body that are affected, the malodorous discharge, the chronic discomfort, and the

general unsightliness of the disease, hidradenitis suppurativa poses many challenges for patients in their personal life. Sexuality can be negatively affected. Unforgiving societal attitudes regarding inappropriate body odor (especially for those who choose not to wear deodorants), as well as years of inadequate treatment, may lead to frustration, depression, and isolation. For patients at increased risk for these outcomes, early surgical intervention should be strongly considered.[17]

Final Comment

Hidradenitis suppurativa remains a challenging disease for patients and physicians. Because there has been no significant research comparing treatment options, the choice of therapy should depend on the patient's circumstances and preferences, the outcome of previous treatments, the experience of the physician, local expertise (e.g., a surgeon or dermatologist who specializes in treatment of the disease), and the chronicity and severity at presentation. Further research should be conducted not only on the etiology of this disease but also on the optimal treatment regimen.

The author thanks Patrick Tranmer, M.D., M.P.H., for help in reviewing the manuscript.

Members of various family medicine departments develop articles for "Practical Therapeutics." This article is one in a series coordinated by the Department of Family Practice at the University of Illinois College of Medicine at Chicago–Rockford. Coordinator of the series is Eric Henley, M.D.

Author disclosure: Nothing to disclose.

REFERENCES

1. Jemec GB. The symptomatology of hidradenitis suppurativa in women. Br J Dermatol 1988;119:345-50.
2. Galen WK, Cohen I, Roger M, Smith MH. Bacterial infections. In: Schachner LA, Hansen RC, eds. Pediatric dermatology. 2d ed. New York: Churchill Livingstone, 1996: 1206-7.
3. Von der Werth JM, Williams HC. The natural history of hidradenitis suppurativa. J Eur Acad Dermatol Venereol 2000;14:389-92.
4. Von der Werth JM, Williams HC, Raeburn JA. The clinical genetics of hidradenitis suppurativa revisited. Br J Dermatol 2000;142:947-53.
5. Wiltz O, Schoetz DJ Jr, Murray JJ, Roberts PL, Coller JA, Veidenheimer MC. Perianal hidradenitis suppurativa. The Lahey Clinic experience. Dis Colon Rectum 1990;33:731-4.
6. Church JM, Fazio VW, Lavery IC, Oakley JR, Milsom JW. The differential diagnosis and comorbidity of hidradenitis suppurativa and perianal Crohn's disease. Int J Colorectal Dis 1993;8:117-9.
7. Fite, Diana. Hidradenitis suppurativa. Emedicine 2001. Accessed online June 13, 2005 at: http://www.emedicine.com/emerg/topic259.htm.
8. Roberts JR, Hedges JR, eds. Clinical procedures in emergency medicine. 3d ed. Philadelphia: WB Saunders, 1998.
9. Barth JH, Ng LL, Wojnarowska F, Dawber RP. Acanthosis nigricans, insulin resistance and cutaneous virilism. Br J Dermatol 1988;118:613-9.
10. Townsend CM, Sabiston DC. Sabiston Textbook of surgery: the biological basis of modern surgical practice. 16th ed. Philadelphia: WB Saunders, 2001.
11. Jansen I, Altmeyer P, Piewig G. Acne inversa (alias hidradenitis suppurativa). J Eur Acad Dermatol Venereol 2001;15:532-40.
12. Morgan WP, Leicester G. The role of depilation and deodorants in hidradenitis suppurativa. Arch Dermatol 1982;118:101-2.
13. Paletta C, Jurkiewicz MJ. Hidradenitis suppurativa. Clin Plast Surg 1987;14:383-90.
14. Behrman RE, Kliegman R, Jenson HB, eds. Nelson Textbook of pediatrics. 16th ed. Philadelphia: WB Saunders, 2000.
15. Farrell AM, Randall VA, Vafaee T, Dawber RP. Finasteride as a therapy for hidradenitis suppurativa. Br J Dermatol 1999;141:1138-9.
16. Mortimer PS, Dawber RP, Gales MA, Moore RA. A double-blind controlled cross-over trial of cyproterone acetate in females with hidradenitis suppurativa. Br J Dermatol 1986;115:263-8.
17. Jansen T, Plewig G. Acne inversa. Int J Dermatol, 1998;37:96-100.
18. Gupta AK, Ellis CN, Nickoloff BJ, Goldfarb MT, Ho VC, Rocher LL. Oral cyclosporine in the treatment of inflammatory and noninflammatory dermatoses. A clinical and immunopathologic analysis. Arch Dermatol 1990;126:339-50.
19. Culp CE. Chronic hidradenitis suppurativa of the anal canal. A surgical skin disease. Dis Colon Rectum 1983;26:669-76.
20. Rompel R, Petres J. Long-term results of wide surgical excision in 106 patients with hidradenitis suppurativa. Dermatol Surg 2000; 26:638-43.
21. Harrison BJ, Kumar S, Read GF, Edwards CA, Scanlon MF, Hughes LE. Hidradenitis suppurativa: evidence for an endocrine abnormality. Br J Surg 1985;72:1002-4.
22. Frohlich D, Baaske D, Glatzel M. Radiotherapy of hidradenitis suppurativa—still valid today? Stranlenther Onkol 2000;176:286-9.
23. Bong JL, Shalders K, Saihan E. Treatment of persistent painful nodules of hidradenitis suppurativa with cryotherapy. Clin Exp Dermatol 2003;28:241-4.
24. Finley EM, Ratz JL. Treatment of hidradenitis suppurativa with carbon dioxide laser excision and second-intention healing. J Am Acad Dermatol 1996;34:465-9.