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HIDRADENITIS SUPPARATIVA MANAGEMENT: AN OVERVIEW

Introduction

Hidradenitis Suppurativa (HS) is a chronic debilitating inflammatory skin disease characterized by the formation of recurrent nodules, abscesses, sinus tracts, fistulas and scarring within apocrine gland-bearing areas.[1] HS affects up to 3.8% of the Canadian population with a higher prevalence among females.[2] The condition is thought to be secondary to occlusion of the pilosebaceous unit and subsequent inflammation.[1]

The diagnostic criteria for HS includes the following: 1) *classic lesion morphology*, 2) *characteristic distribution of lesions*, 3) *recurrence of lesions*.[2] The Hurley staging system is commonly used for assessing the severity of disease in HS; however, there are several other staging systems that can be used as well. The Hurley staging system classifies HS into 3 stages. Hurley stage I indicates mild disease, with single or multiple lesions in affected areas, without scar formation. Stage II is classified as moderate disease and is characterized by recurrent lesions with sinus tract formation and scarring in affected regions. Stage III is considered severe disease and involves interconnected inflammatory lesions and sinus tracts in affected areas.[1] HS has an average delay of diagnosis of 7.2 years; consequently, patients often have higher stages of the disease by the time they are seen by a dermatologist.[3]

Unfortunately, HS is associated with a high burden of disease, with lesions that are often painful and can discharge, which can limit mobility.

Medical management is warranted to minimize inflammation and to reduce the burden of disease. Patients can benefit from procedural and surgical management as an adjunct to medical therapy through 1) *symptomatic relief*, which includes incision and drainage (I&D) and intralesional injections of Triamcinolone acetonide, 2) *prevention of disease*, which includes laser therapy, and 3) *managing recurrent and refractory lesions*, which includes surgical procedures such as deroofing and excisions.

At present, the mainstay for procedural management in HS consists of I&D, intralesional Triamcinolone acetonide, laser-assisted devices, deroofing, and excisions. Herein, we will review these adjunctive procedures that can assist in the management of HS patients.

Symptomatic relief

Incision & Drainage

I&D can be performed for symptomatic relief of lesions in acute flares of disease (**Figure 1**); however, this treatment does not modify the disease and the recurrence rate of lesions is almost 100%.[4]

1a

1b

1c

Figure 1. *Incision and drainage performed on a painful fluctuant nodule* ***a)*** *before,* ***b)*** *intra operatively, and* ***c)*** *immediately after the procedure. Incision and drainage was performed by Jessica Asgarpour, MD.*

Intralesional Triamcinolone acetonide

Intralesional Triamcinolone acetonide can help with pain relief and can hasten the resolution of lesions. Studies have reported mixed results. Typically, a concentration of 10mg/mL to 40 mg/mL is used per session.[2]

Preventative Therapy

Laser and light therapy

Laser and light-based therapies can be used to prevent and treat HS lesions. These therapies work mostly by reducing the amount of hair follicles and sebaceous glands as well as debulking of lesions.[5]

A systematic review compared the effectiveness of different light and laser therapies used to treat patients with HS. The review looked at neodymium-doped yttrium aluminum garnet (Nd: YAG), carbon dioxide (CO2) laser, psoralen plus ultraviolet A (PUVA), targeted phototherapy, photodynamic therapy (PDT), and others.[6]

Both Nd: YAG laser and CO2 laser therapies have shown effectiveness in the treatment of HS and included the highest number of patients.[6] CO2 laser therapy works at a wavelength of 10,600 nm. As an HS treatment, CO2 laser therapy is used for fractional ablation of scars or vaporizing and excising tissue and can be used instead of a scalpel for procedures such as deroofing and excisions. In addition, over 75% of patients who had undergone CO2 laser therapy showed improvement in their symptoms, had low recurrence rates, and over 90% of patients stated that they would recommend the procedure.[6]

Nd: YAG acts as a non-ablative laser at a wavelength of 1,064 nm. This laser works well for treating HS patients, especially to destruct the hair follicle. Many randomized controlled trials support the use of long-pulse Nd: YAG laser hair removal for conservative management of HS.[2] In fact, 85% of patients who underwent Nd: YAG therapy demonstrated improvement.[6] Patients were reported to have fewer flares and a reduced severity of disease. Combining Nd:YAG laser therapy with CO2 laser therapy has demonstrated better outcomes.[6]

Several studies have shown that targeted phototherapy improved HS lesions in more than 75% of treated patients.[6] Intense pulsed light therapy (IPL), which acts at a wavelength range of 500–1200 nm, led to improvement in 65% of HS patients.[6] Photodynamic therapy (PDT) was reported to be effective in ~70% of HS patients; however,

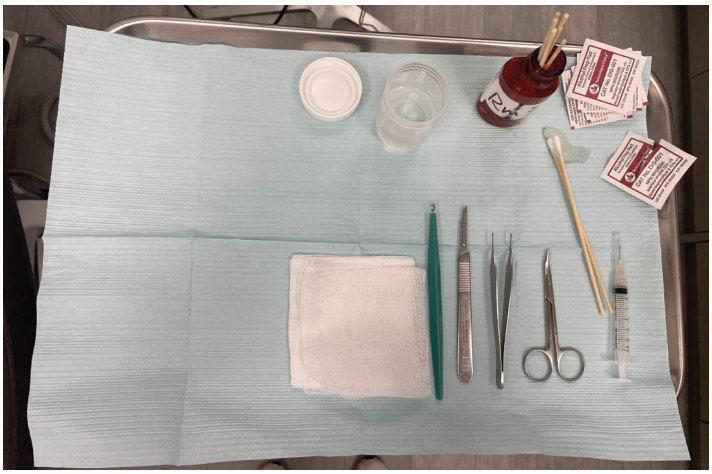

Figure 2. *Items included on the deroofing tray: Alcohol swabs for cleaning, lidocaine with epinephrine as an anesthetic, forceps and tenotomy scissors or scalpel to deroof, curette to remove the gelatinous tissue at the base, gauze and aluminum chloride for hemostasis, Vaseline for wound healing; image courtesy of Jessica Asgarpour, MD.*

several different photosensitizers were used.[6] PUVA was effective in 9/13 (69%) of HS patients in a single retrospective chart review.[6]

Overall, the systematic review noted that side-effects associated with all therapies were low.[6] PDT was associated with the highest proportion of adverse events (36%), followed by CO2 laser (26.2%), IPL (25%) therapies, targeted phototherapy (22.9%), and Nd:YAG laser (15%).[6]

Managing Static or Recurrent Lesions

Deroofing

Deroofing is a procedure that is typically performed in the clinic under local anesthetic (**Figure 2**). During this procedure, the surgeon removes the 'roof' of an inflammatory lesion or sinus tract along with curettage to remove the gelatinous granulation tissue (**Figure 3**).[3] Deroofing can be performed using blunt scissors, CO2 laser, or using electrosurgery.[4] Healing occurs through secondary intention because of higher rates of recurrence associated with primary closure.

A Canadian prospective study assessed efficacy and pain reduction in patients who underwent deroofing of HS lesions. The study included 43 patients and 123 lesions deroofed. After 3 months, only 7% of deroofed sites had one recurrence, 41% of patients reported no erythema, and 43% of patients reported no discharge at the surgical site. Of note, pain and Dermatology Life Quality Index scores were significantly reduced.[7] A meta-analysis of 22 articles

Figure 3. *Axilla deroofing images were taken at* ***a)*** *baseline,* ***b)*** *immediately after deroofing, and* ***c)*** *at week four of follow-up. Axilla deroofing performed by Jessica Asgarpour, MD.*

Prevention	Symptomatic relief	Management of static lesions
• Light therapy: IPL, PDT, targeted phototherapy, PUVA • Laser therapy: Nd:YAG	• Incision and drainage • Intralesional Triamcinolone acetonide	• Deroofing • Excision (scalpel vs CO2 ablation): the excision can be limited, wide or radical

Table 1. *Summary of procedural therapies useful as an adjunct to medical management for Hidradenitis Suppurativa; courtesy of Jessica Asgarpour, MD.*

Abbreviations: CO2*: carbon dioxide;* ***IPL****: intense pulsed light therapy;* ***Nd:YAG****: neodymium-doped yttrium aluminum garnet;* ***PDT****: photodynamic therapy* ***PUVA****: psoralen plus ultraviolet A.*

revealed an overall recurrence rate for deroofing of 27%; follow-up was variable.[8]

Excision

Excisions represent a more invasive surgery for patients. Depending on the extent of disease, local or general anesthetic may be used. Excisions can be defined as limited, wide, or radical. The intent of limited excisions is to leave clear margins. Wide excisions remove additional margins of skin. Radical excisions remove the entire hair bearing region down to the fascia.[3] There is limited data assessing recurrence rates for excisions in HS; however, the common perception is that more extensive procedures are associated with a lower recurrence.[3] A meta-analysis of 22 articles revealed an average of 22% recurrence with limited excisions and 13% for wide excisions.[8] Recurrence rates were highest with primary closure (15%); followed by flaps (8%) and grafts (6%). The rate of recurrence for excision with secondary intention was said to be the lowest; however, the rate was not reported.[8]

Conclusion

In conclusion, procedural management is key in the management of HS patients and serves as a useful adjunct to medical management. Procedural management aids in prevention and severity of disease, symptomatic relief, and in the treatment of static, recurrent, and refractory lesions. Furthermore, these procedures may all be conducted in a clinic setting under local anesthetic, and, notably, reports of adverse events are relatively low. Overall, these treatments are associated with success and high patient satisfaction.

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References

1. Scuderi N, Monfrecola A, Dessy LA, Fabbrocini G, Megna M, Monfrecola G. Medical and surgical treatment of hidradenitis suppurativa: a review. Skin Appendage Disord. 2017;3(2):95-110. doi: 10.1159/000462979
2. Johnston LA, Alhusayen R, Bourcier M, Delorme I, George R, O'Brien E, et al. Practical guidelines for managing patients with hidradenitis suppurativa: an update. J Cutan Med Surg. 2022;26(2_suppl):2S-24S. doi: 10.1177/12034754221116115
3. Ocker L, Abu Rached N, Seifert C, Scheel C, Bechara FG. Current medical and surgical treatment of hidradenitis suppurativa-a comprehensive review. J Clin Med. 2022;11(23):7240. doi: 10.3390/jcm11237240
4. Shukla R, Karagaiah P, Patil A, Farnbach K, Ortega-Loayza AG, Tzellos T, et al. Surgical treatment in hidradenitis suppurativa. J Clin Med. 2022;11(9):2311. doi: 10.3390/jcm11092311
5. Hamzavi IH, Griffith JL, Riyaz F, Hessam S, Bechara FG. Laser and light-based treatment options for hidradenitis suppurativa. J Am Acad Dermatol. 2015;73(5 Suppl 1):S78-S81. doi: 10.1016/j.jaad.2015.07.050
6. Mukovozov I, Mirali S, Khaslavsky S, Kalia S. (2021). Light and laser-based treatments for hidradenitis suppurativa: a systematic review. SKIN The Journal of Cutaneous Medicine. 2021;5(6):601-620. doi: 10.25251/skin.5.6.4
7. Vu TT, Soong L. Prospective study of deroofing in the management of hidradenitis suppurativa. JAAD. 2022;87(3) Supplement, AB4. doi: 10.1016/j.jaad.2022.06.052
8. Mehdizadeh A, Hazen PG, Bechara FG, Zwingerman N, Moazenzadeh M, Bashash M, Sibbald RG, Alavi A. Recurrence of hidradenitis suppurativa after surgical management: A systematic review and meta-analysis. J Am Acad Dermatol. 2015 Nov;73