Cryoinsufflation for Hurley Stage II Hidradenitis Suppurativa: A Useful Treatment Option When Systemic Therapies Should Be Avoided

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**Report of a Case**

A woman in her 30s presented with hidradenitis suppurativa (HS), Hurley stage II. She was treated with oral contraceptives (drospirenone/ethinyl estradiol), spironolactone (50 mg/d), topical clindamycin, and monthly intral- esional corticosteroids (triamcinolone acetonide, 10 mg/mL). Previously, she had received rifampicin (600 mg/d), first with minocycline (100 mg/d), then with clindamycin (300 mg/d), and finally with moxifloxacin (400 mg/d). After these treatments failed, she received isotretinoin (0.5 mg/kg/d) for 2 more years to achieve remission, but without success.

Because she had decided to become pregnant, she was searching for an alternative treatment, devoid of teratogenic effects, to safely replace oral contraceptives. Effective therapy was paramount because the HS seriously interfered with sexual intercourse and indirectly with her planned pregnancy. Surgical treatment was offered (local incision and drainage, deroofing, limited local or wide excision), which she declined.

**Therapeutic Challenge**

Both neonatal outcome and maternal health are important in this case; fetal exposure can occur prior to knowledge of pregnancy, and during the first trimester, the fetus is most susceptible to teratogenic damage. Because the patient decided to discontinue taking oral contraceptives to become pregnant, acitretin, which is more effective than isotretinoin, is contraindicated. Both treatments are highly teratogenic, and pregnancy should be avoided for at least 3 years following discontinuation of acitretin treatment.

Although antibiotics are widely used to treat HS, few are safe in pregnant women. Physicians are usually reluctant to prescribe a prolonged course of systemic antibiotics for women with HS who are trying to conceive. The teratogenicity of the treatment is often deemed to impart greater risk than the disease itself HS which is not thought to increase fetal morbidity, compared with hypertension or diabetes.

Finally, manufacturers of anti–tumor necrosis factor (TNF) advise discontinuation of treatment with these agents prior to a planned pregnancy, although anti–TNF therapies (infliximab, etanercept, adalimumab) are in fact pregnancy category B drugs. And even if systemic medications had been considered completely safe, our patient perceived them to be harmful, which ruled them out and restricted the treatment choices to surgical procedures, intral-esional corticosteroids, and less effective treatments such as cryotherapy and topical agents. The patient refused both minor (local incision and drainage, deroofing) and major surgical treatment (limited local or wide excision). While intral-esional cortico-

**Solution**

To control the HS symptoms for our patient and discontinue her systemic medical therapy, we proposed cryoinsufflation (CI), a modified spray cryotherapy performed by injecting liquid nitrogen (LN) through an ordinary needle directly into HS tracts.

After the patient provided written informed consent, she underwent local anesthesia with lidocaine hydrochloride, 1%. Abscesses and sinus tracts in the HS-affected areas were filled with LN using a 21-gauge needle mounted on a cryosurgical unit (CRY-AC; Brymill Cryogenic Systems Ltd) equipped with the CRY-AC Malleable Extension and Luerlok Adaptor for CRY-AC. The ossa of the sinocutaneous fistulas were cannulated, and LN was sprayed into the fistula track.

As the LN enters infected sinuses, it boils and vaporizes. Because of the large expansion ratio of liquid to gas, it quickly disperses into all communicating pockets and is expressed like a gey- ser. Pulsing each spray to avoid an overexpansion of the treatment site helps to prevent excessive pain and the formation of iceballs, recognized by the appearance of a white rim around the insertion point of the needle. We suggest a 5-second pulse followed by a 1-second pause, repeated 3 times for each lesion. Monthly treatment sessions allow for focused scarring to replace sinuses and cause minimal damage to the skin surface.

We treated the patient with 3 monthly treatment sessions. No recurrence was observed after 6 months. Of note, neither hypopigmentation nor scarring was observed and the patient was very satisfied with the results (Figure).

We also treated a second patient, a man in his 30s with HS, Hurley stage III, and myelodysplastic syndrome. He had previously been treated with local excision but experienced early recurrence and developed drug-induced leucopenia 1 month after starting treatment with rifampicin, 300 mg/d, plus minocycline, 50 mg/d. He declined further surgical treatment, and his hematologist advised against another course of antibiotics, acitretin, or TNF inhibitors. We treated him with monthly sessions of CI, achieving complete symptom control without the use of systemic drugs (Video).

All needles used in this procedure are disposable, and they are changed for every patient to prevent disease communication. Immediately after treatment, there was no blister formation, and the pain was acceptable. Paracetamol administered for the first 24 hours fully relieved any delayed discomfort; a vagal reaction with nausea, sweating, and weakness was the only adverse effect experienced.
by both our patients. As for any subcutaneous infiltration, caution is required while inserting the needle to avoid hematoma formation, air embolism, or delayed infection caused by poor needle placement. None of these complications were observed in our patients. Injecting outside the sinuses can produce subcutaneous emphysema, which often requires no treatment but can lead to ulceration or tissue necrosis.

Discussion

Hidradenitis suppurativa is a chronic, inflammatory skin disease usually presenting after puberty with painful deep cysts, nodules, and tracts in the apocrine gland-bearing areas of the body, most commonly the axillary and inguinal folds. Over time, sinus tracts and fistulas develop. This can be accompanied by malodorous and putrid discharge. Associations with smoking, obesity, and inflammatory bowel disease have been described. Medical and surgical therapeutic options are available, but satisfactory remission is difficult to obtain, and a cure is rarely achieved even with biological drugs. For treating symptoms caused by acute disease, minor surgical procedures such as local incision and drainage or marsupialization are performed, but recurrence is frequent. Wide excision of the affected site is the best surgical way to prevent recurrence, but it is recommended only for very severe disease.

Herein, we introduce CI as a useful adjunctive therapy that can be effectively combined with all other treatments to increase the chance of achieving rapid symptomatic relief and delaying recurrence. It could represent a valuable alternative as monotherapy in women who are planning to become pregnant or for those patients in whom systemic therapies should be avoided. Liquid nitrogen is inexpensive and widely available. Cryotherapy with spray techniques has been described as a potential treatment for HS, although most patients had significant pain during and after treatment. Notably, in the only study about spray cryotherapy for HS, 8 of 10 patients reported posttreatment ulceration, infection, or both.

To overcome these complications, cryosurgery to achieve ice-ball formation at depth with cryoneedles (ie, intralesional cryosurgery) was developed and used for keloid treatment. Since then, other intralesional cryotherapy devices have been described as effective for the treatment of keloids, with less pain during and immediately after treatment and a lower rate of permanent hypopigmentation.

We modified intralesional cryosurgery by using an ordinary needle to inject LN directly into HS tracts. We took advantage of the distinctive feature of compressed gas to easily fill the full extent of HS lesions and their multiple sinus tracts.

In conclusion, CI is a novel, easily conducted, well-tolerated, and inexpensive option to minimize both the poor appearance and discomfort of these challenging lesions. Further studies are needed to assess its effectiveness in comparison with topical and systemic treatments.

ARTICLE INFORMATION

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REFERENCES