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Hidradenitis suppurativa: Mammographic and sonographic manifestations in two cases

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Hidradenitis suppurativa is a chronic debilitating disorder of the skin manifested by recurrent, painful, inflammatory, subcutaneous nodules. The lesions occur most commonly in the apocrine-gland-bearing skin sites such as the axillae and inguinal regions; they cause scarring and disfigurement from the formation of multiple abscesses and fistulous tracts within the skin. We report the radiologic manifestations of two cases of hidradenitis suppurativa in women who presented for breast imaging.

Introduction

Hidradenitis suppurativa (HS) is a chronic debilitating skin disorder involving recurrent development of tender inflammatory subcutaneous nodules and occurring mainly in apocrine-gland-bearing skin sites. Most commonly affected locations are the flexural skin of the axillae, inguinal, anogenital, and submammary regions as well as the inframammary fold, chest, scalp, retroauricular, eyelid, buttock, and pubic areas (1-3). This condition often presents as recurrent comedones, abscesses, fistulous tracts, and scarring. Although HS affects only 1% of the population, it is important to understand, as patients with it can present for breast imaging evaluation of an axillary lump.

A limited number of case reports are available in the literature that review the imaging features of HS. We discuss the clinical and imaging manifestations of two patients with HS who originally presented to our women's imaging facility for evaluation.

Case report 1

A 42-year-old woman with systemic lupus erythematosus presented for followup after radical surgical excision of the bilateral axillae with flap reconstruction, approximately 17 years prior, for HS. She was concerned for recurrence of HS in her left axilla. On physical examination, she had severe acne affecting multiple locations: bilateral cheek acneiform eruptions, scattered scaly patches on the scalp, right axillary tender erythematous nodules with purulent drainage, and bilateral groin tender erythematous nodules.

Mammography demonstrated a 1.1-cm skin-based lesion in the left axilla (Fig. 1). Same-day sonography showed an intradermal, complex cystic lesion with prominent peripheral vascularity and a sinus tract leading from the cyst to the overlying skin surface. This lesion was felt to represent a recurrent HS lesion.

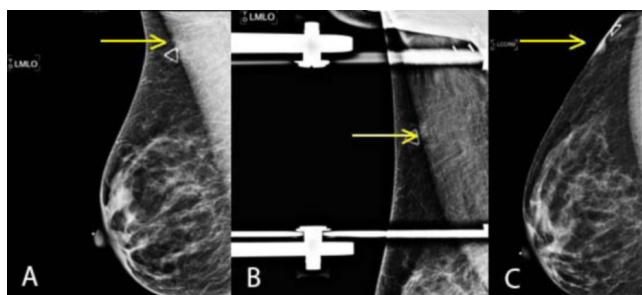


Figure 1. 42-year-old woman with hidradenitis suppurativa. A) Left MLO view shows an asymmetry in the region of the palpable marker. B) Spot compression of the area shows that the lesion persists. C) Tangential view demonstrates the subcutaneous locations of the lesion.

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Followup breast sonography three months later demonstrated a palpable hypoechoic, irregular, parallel lesion with central echogenic material and associated peripheral vascularity located within the skin, in the same area as a prior cyst (Fig. 2). A second new intradermal hypoechoic, oval, parallel, cystic lesion, possibly representing a sebaceous cyst or new HS lesion, was also identified adjacent to the known lesion (Fig. 3).



Figure 2. 42-year-old woman with hidradenitis suppurativa. Transverse color Doppler ultrasound shows a superficial oval mass in the left axillary region with evidence of peripheral blood flow.



Figure 3. 42-year-old woman with hidradenitis suppurativa. Transverse color Doppler ultrasound shows a hypoechoic superficial oval mass in the left axillary region with evidence of peripheral blood flow.

Additionally, a new subcutaneous cystic lesion with the same features as the other lesions was palpated and seen on ultrasound within the right axilla (Fig. 4).

Case report 2

A 24-year-old woman with a family history of HS in a sister presented with a tender, palpable, left axillary lump for the past 6 months with waxing and waning tenderness and erythema. She reported that the lump worsened with shaving, use of deodorant, and other forms of cutaneous

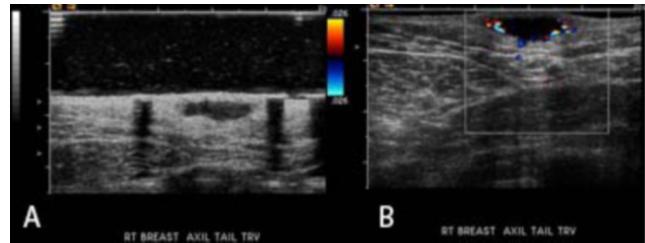


Figure 4. 42-year-old woman with hidradenitis suppurativa. A new subcutaneous mass was noted in the right axillary region. A) Transverse grayscale ultrasound shows a superficial oval hypoechoic mass with a parallel orientation. B) Color Doppler ultrasound shows evidence of flow at the periphery of the hypoechoic mass.

irritation. On physical examination, a sinus tract near a hair follicle in the area of concern within the left axilla was noted. Clinically, the physical exam findings were most consistent with recurrent infection. Mammography performed at that time was negative for malignancy. On ultrasound, a complex cystic mass with intrinsic echogenic material and mild increased peripheral vascularity was identified just beneath the left axillary dermis (Fig. 5). A sinus tract connecting the complex cystic mass to the superficial focally inflamed skin was suggested.

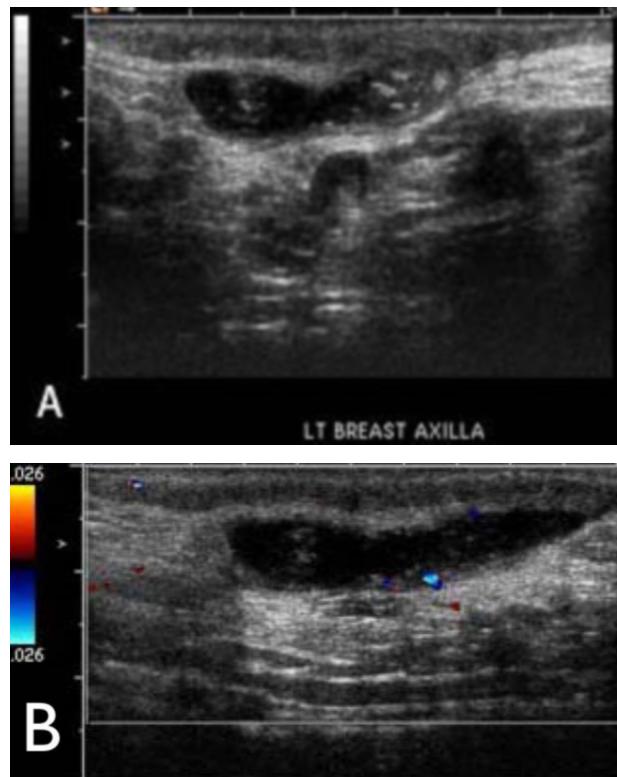


Figure 5. 24-year-old woman with hidradenitis suppurativa. Complex cystic lesion with peripheral blood flow in the left axilla with internal debris on longitudinal views using (A) grayscale and (B) color Doppler technique.

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Discussion

HS, also known as acne inversa, was first described by a French anatomist and surgeon named Velpeau in 1839. HS is a member of the follicular occlusion tetrad, which includes other conditions such as dissecting cellulitis of the scalp, pilonidal sinus/cysts, and acne conglobata (1, 4). HS is estimated to affect approximately 1% of the population and appears to be significantly more common in females, with a ratio of 3:1 (1). HS affects various apocrine-gland-rich locations, and certain anatomical locations have a sexual predilection. For example, perianal HS affects males more often than females (2, 4), and genitofemoral HS is more likely to develop in females. Typically, HS develops after puberty, most commonly in men and women in their early 20s, with the prevalence declining after age 50 (1).

Certain factors, such as smoking and obesity, can increase the risk and directly affect the severity of HS (1). Approximately one third of patients also report a family history of HS, with an autosomal dominant mode of inheritance identified in some families (1).

The disease process is thought to begin with the occlusion of a hair follicle secondary to hyperkeratosis. Follicular plugging results in occlusion and dilation of the pilosebaceous unit, with subsequent rupture and spillage of its contents onto the surrounding dermis. The extruded contents consist of corneocytes, bacteria, sebum products, and hair, which together elicit a chemotactic response and resultant inflammatory cell infiltrate (2, 4). Neutrophil, lymphocyte, and histiocyte influx results in abscess formation, and eventual infection and suppuration lead to sinus and fistula formation (2). Reepithelialization of the follicle then occurs, resulting in sinus-tract formation and entrapment of foreign material and bacteria (2). The tracts coalesce over time and can potentially dissect into deeper structures such as muscle, lymph nodes, and bowel, depending on location. The apocrine glands become secondarily involved (4), releasing purulent malodorous material that soils clothing and causes social embarrassment. Early symptoms of HS include burning, pruritis, warmth, hyperhidrosis, and pain.

A limited number of articles in the literature describe the imaging features of HS. Overall, the sonographic appearance of HS can vary in size and shape, but it typically consists of a dermal fluid collection ranging from simple to complex. To date, imaging features on mammography have not been described in the literature. On MRI, features of HS that have been described include skin thickening, subcutaneous T1-hypointense lesions that demonstrate hyperintensity on fluid-sensitive sequences, and rim-enhancement postcontrast within apocrine-gland-rich regions (4). One case report also describes HS as being FDG-avid on PET/CT (3).

Imaging features on PET/CT may include multifocal uptake of radiotracer within the superficial subcutaneous tissues with corresponding skin thickening on the CT component, as described in a case report (3). However, false-positive results in the subcutaneous tissue may occur at sites of increased metabolism such as those with infection, sar-

coidosis, subcutaneous or intramuscular injections, and surgical history (3).

MRI features include marked thickening of the skin and induration of the subcutaneous tissues. Lesions have low signal intensity on T1-weighted images and high signal on T2-weighted and STIR sequences; they typically demonstrate a rim with multiple abscesses located within the superficial dermis (4).

Real-time ultrasound of HS lesions demonstrates dermal fluid collections of varying sizes and echogenicity, depending on the age of the lesion (5). Active lesions can be indistinguishable from acne and appear as rounded hypoechoic structures deep to the dermis, extending to the subcutaneous tissues (6). Hypoechoic linear bands can sometimes be seen surrounding inflamed lesions in the epidermis and deeper dermis, most likely representing edema within the adjacent tissues (6).

While the typical features of HS have been described, these may be indistinguishable from other inflammatory lesions of the dermis and epidermis including carbuncles, erysipelas (a bacterial infection causing epidermal inflammation), or cellulitis (dermal inflammation) (4). Other differential considerations include lymphadenitis and infected Bartholin or sebaceous cysts (4). These entities are distinguished from HS by response to treatment, whereas HS ultimately fails to respond (1).

Complications of HS may be local or systemic, in that a localized infection can lead to septicemia and distant abscesses. The chronic inflammatory nature of the disease can result in permanent areas of scarring and fibrosis with strictures developing in the anus, urethra, and rectum; contractures and decreased mobility; and (in longstanding cases) development of squamous-cell carcinoma (4).

In the early stages of the disease, when it is considered localized and includes single or multiple abscesses without sinus-tract formation or scarring, topical treatment with antibiotics and estrogens has shown success by reduction of the number of lesions on followup evaluation (1, 5). Clinical experience with intralesional injection of steroids has also been helpful, although this method is not well studied in the literature (1). With more complex cases of recurring abscesses and sinus-tract formation that may be more widely separated, treatment involves a more systemic approach. Oral antibiotics and anti-inflammatory agents have shown to improve disease severity by 50% and quality of life significantly in two case series (1). With further progression of disease severity, there is often diffuse involvement of the affected region with formation of interconnecting tracts and abscesses, resulting in significant cosmetic disfigurement. Several studies have shown that severe cases can benefit from treatment with systemic immunosuppressive therapy; however, only a few of these studies actually demonstrate a significant benefit in their outcomes (1). Severe cases with extensive scarring have also been managed surgically, often a curative measure. Incision and drainage of lesions is discouraged, as lesions are likely to recur (1). Surgery may consist of a localized excision of the sinus tract and abscess, or a more extensive excision of all hair-

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bearing skin in affected areas with or without skin graft/flap reconstruction (1, 2). Instances of recurrence occur less often with more extensive surgical excision. Finally, though laser and radiation therapies have been described with low rates of recurrence, there are only limited comparative studies with surgical techniques (1, 7).

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