



## Non-healing, non-tender ulcer on shin

Our patient's history provided 2 important clues (one vascular, one not) to explain the painless ulcer that had been on his right shin for a year. A punch biopsy made the diagnosis clear.

A 63-YEAR-OLD MORBIDLY OBESE MAN presented to our clinic with a non-healing, slowly growing, painless ulcer on his right shin that he'd had for one year. It was not actively bleeding or draining, but the scab had come off one month earlier and the wound did not close. The patient denied any trauma to the area or foreign travel. Bacitracin and triamcinolone creams hadn't helped.

Our patient's medical history included diabetes, hypertension, hyperlipidemia, and worsening venous insufficiency. He was not currently using compression stockings, but they had helped him in the past.

On examination, we noted a 3 x 3.5 cm

well-demarcated, somewhat geometric, clean-based ulceration on the patient's right medial shin (FIGURE 1A). There was no significant erythema, purulence, tenderness, warmth, or drainage of the ulcer. The base had seemingly normal granulation tissue. Woody induration, verrucous plaques, and confluent erythematous, violaceous, indurated patches were adjacent to the ulcer (FIGURE 1B). The patient also had severe pitting edema on his lower legs.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

FIGURE 1

### Ulceration and verrucous plaques on shin



The patient had a 3 x 3.5 cm clean-based ulceration (A) on his shin accompanied by woody induration and brown verrucous plaques (B).

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It's not known whether squamous cell carcinoma or basal cell carcinoma arise independently—or secondary—to chronic leg ulcers.

### Diagnosis: Infiltrative basal cell carcinoma

In addition to our patient's history of venous insufficiency, he'd also had a melanoma removed from his right shoulder 6 years earlier, and a basal cell carcinoma (BCC) removed from his upper back 2 years earlier. The chronic, non-healing nature of the ulcer prompted us to perform a punch biopsy, which revealed infiltrative BCC. We also did a wound culture, which showed a secondary infection with methicillin-resistant *Staphylococcus aureus* (MRSA). The verrucous plaques next to the ulcer were the result of chronic venous stasis and lymphedema.

■ **BCC is the most common type** of cancer, estimated to comprise 80% of all skin cancers.<sup>1</sup> It typically presents on the head and neck, but can occur in other locations. Eight percent of BCCs occur on the legs.<sup>2,3</sup> Lower extremity BCC is more common in women, likely due to increased ultraviolet radiation exposure.<sup>2,4</sup>

BCC presents as erythematous and pearly macules, papules, nodules, ulcers, or scars, and can be pigmented. It may appear as a crusted ulcer (known as a "rodent ulcer") with a rolled, translucent border and telangiectases.<sup>5</sup> There are 5 major histologic subtypes of BCC: nodular, micronodular, superficial, morpheaform, and infiltrative.<sup>1,5</sup> Infiltrative BCCs are an invasive subtype<sup>1,5</sup> and may be more commonly associated with severe venous stasis,<sup>3</sup> as was the case with our patient.

Although considered uncommon, squamous cell carcinoma (SCC) and BCC have been discovered in chronic leg ulcers.<sup>4,6</sup> In fact, one report suggests that as many as 10% of chronic leg ulcers are malignant (31% BCC, 56% SCC).<sup>7</sup> Thus, it is important to maintain a high index of suspicion for malignancy in chronic leg ulcers.

### Ulcerating BCC can mimic other types of leg ulcers

The differential diagnosis of a chronic leg ulcer includes venous or arterial ulcers, malignancies (SCC, BCC, lymphoma, melanoma), infectious ulcers (bacterial, deep fungal), pyoderma gangrenosum, and traumatic or factitial wounds (TABLE).<sup>1,4,5,8,9</sup>

### Consider biopsy for ulcers that don't respond to treatment

The diagnosis of BCC in a leg ulcer is confirmed histologically. A punch or incisional biopsy should be taken at the edge of the ulcer, including the base.<sup>5,6</sup> (For a Watch & Learn video that demonstrates how to perform a punch biopsy, go to [http://bit.ly/punch\\_biopsy](http://bit.ly/punch_biopsy).) Providers may be concerned that biopsies could worsen a chronic wound; however, biopsy sites usually heal with no substantial complications.<sup>2,6,7</sup> There are no guidelines on when to biopsy an ulcer, but it is reasonable to biopsy a leg ulcer that has not responded to 3 months of conservative treatment.<sup>2,7</sup>

■ **Factors associated with malignancy** in chronic leg ulcers include older age, abnormal excessive granulation tissue at wound edges, high clinical suspicion of cancer, and number of previous biopsies.<sup>7</sup> The size and duration of the ulcer do not directly correlate with malignancy.<sup>7</sup> The threshold for performing a diagnostic biopsy in a chronic leg ulcer should be lower for a patient who has any of the risk factors noted above. Be aware that ulcerating skin cancers may lack the classic appearance of typical skin cancers.<sup>6</sup>

### For most BCCs, surgical excision will be required

Each BCC must be thoroughly evaluated for size, location, and histologic subtype. Surgical excision is the preferred treatment in most cases.<sup>5</sup> Indications for Mohs micrographic surgery include skin cancers with aggressive histologic subtypes, such as infiltrative BCC, and tumors larger than 2 cm that are located on the extremities.<sup>1,5</sup> Due to the limited amount of excess skin on the lower leg, skin flaps or grafts may be required.

Electrodessication and curettage, topical therapy with 5% imiquimod or 5-fluorouracil, and cryotherapy are reserved for certain low-risk superficial and nodular BCCs.<sup>1,5</sup> Radiation therapy is an option for tumors that are not amenable to surgery. Treatment is tailored to the patient's needs based on age, medical history, and the characteristics of the skin cancer.

Inadequate treatment of BCCs can re-

TABLE

## Differential diagnosis of chronic leg ulcers

Diagnosis	Clinical presentation	Comments
Venous stasis ulcer	<p>Variable discomfort, shallow irregular ulcers with fibrinous base</p> <p>Located near the medial malleolus</p> <p>Surrounding area has leg varicosities, edema, and fibrosis, with or without stasis dermatitis<sup>5</sup></p> <p>May have concomitant allergic contact dermatitis or cellulitis<sup>8</sup></p>	<p>Comprises up to 80% of leg ulcers<sup>8</sup></p> <p>Elevation, compression stockings, and leg wraps improve symptoms</p> <p>Patients refractory to conservative management may benefit from systemic therapy (eg, diuretics, aspirin, pentoxifylline)<sup>5,8</sup></p> <p>Biopsy is used to definitively rule out malignancy</p>
Arterial ulcer	<p>Punched-out ulcer with sharply demarcated borders, necrotic eschar present<sup>8</sup></p> <p>Bone or tendon may be exposed<sup>8</sup></p> <p>Located over sites of pressure, trauma, or bony prominences</p> <p>Skin is atrophic and cool with associated hair loss; absent or decreased pedal pulse<sup>5</sup></p>	<p>Claudication symptoms</p> <p>Ankle/brachial index &lt;0.7<sup>8</sup></p> <p>Risk factors include diabetes, hypertension, hyperlipidemia, peripheral vascular disease, cigarette smoking<sup>5,8</sup></p>
Cutaneous malignancies	<p><b>Squamous cell carcinoma (SCC)</b></p> <ul style="list-style-type: none"> <li>Slowly evolving, nodular plaques at the margin of a chronic venous ulcer<sup>5</sup></li> <li>Hyperkeratotic, crusted, elevated, indurated margin</li> <li>Exuberant granulation tissue<sup>4</sup></li> <li>Usually located in areas exposed to the sun</li> </ul> <p><b>Basal cell carcinoma (BCC)</b></p> <ul style="list-style-type: none"> <li>Rolled, pearly or indurated borders with central ulceration</li> </ul> <p><b>Melanoma</b></p> <ul style="list-style-type: none"> <li>Pigmented, dome-shaped, fungating, ulcerated, friable<sup>9</sup></li> <li>Amelanotic melanoma has lack of pigmentation and can resemble BCC<sup>9</sup></li> </ul>	<p>SCC tumors &gt;2 cm have increased risk of metastasis<sup>1</sup></p> <p>Biopsy for definitive diagnosis</p>
Infectious ulcer	<p>Surrounding erythema, nodules, papules, crust, pseudomembranes, granules<sup>5</sup></p> <p>Systemic symptoms (fever, chills, lymphadenopathy)</p>	<p>Consider secondary infection in all ulcers</p> <p>Travel or exposure history</p> <p>Perform bacterial wound culture, KOH for fungal elements</p> <p>Perform tissue cultures for deep fungal infections and atypical mycobacteria<sup>5,8</sup></p>
Pyoderma gangrenosum	<p>Starts as a pustule, then ulcerates and expands</p> <p>Cribriform pattern with undermined edges and purplish borders<sup>5</sup></p> <p>Painful</p>	<p>Diagnosis of exclusion; must be sure to exclude infectious causes<sup>5</sup></p> <p>Two-thirds of cases are associated with inflammatory bowel disease, rheumatoid arthritis, or hematologic malignancy<sup>8</sup></p>
Traumatic or factitial wounds <sup>5</sup>	<p>Multiple distinctive lesions may be present, mainly excoriations</p> <p>Geometric, bizarre shapes</p> <p>Located on sites easily reached by hands</p>	<p>Generally heal quickly unless repeated trauma to area</p> <p>Psychiatric evaluation recommended</p> <p>Lesions resolve with occlusive, protective dressings</p>

KOH, potassium hydroxide preparation.

CONTINUED

sult in recurrences, which may appear 4 to 12 months after treatment.<sup>5</sup> Close follow-up with regular full body skin exams is indicated.

■ **Our patient** was treated with Bactrim DS (800 mg sulfamethoxazole and 160 mg trimethoprim) one tablet PO BID for 10 days and acetic acid soaks for the MRSA. While it was clear that the patient needed Mohs surgery, it was important to first address his lower extremity edema. He was evaluated by a vascular surgeon and resumed using compression stockings regularly.

The patient then underwent Mohs surgery.

After 2 stages of the surgery, the patient's ulcer healed partially by secondary intention. After 5 months, the ulcer was covered with a split-thickness skin graft. Nine months after diagnosis, the patient had no clinical recurrence.

Physicians subsequently identified 2 BCCs on his face and scalp that were also treated with Mohs surgery. Our patient continues to have regular skin examinations. **JFP**

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Richard P. Usatine, MD



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