

Hemorrhagic Crescent Sign in Pseudocellulitis

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PRACTICE POINTS

- Pseudocellulitis is common in patients presenting with cellulitislike symptoms.
- A hemorrhagic crescent at the medial malleolus should lead to the suspicion on bursa or joint pathology as a cause of pseudocellulitis.

To the Editor:

Cellulitis is the most common reason for skin-related hospital admissions.¹ Despite its frequency, it is suspected that many cases of cellulitis are misdiagnosed as other etiologies presenting with similar symptoms such as a ruptured Baker cyst. These cysts are located behind the knee and can present with calf pain, peripheral edema, and erythema when ruptured. Symptoms of a ruptured Baker cyst can be indistinguishable from cellulitis as well as deep vein thrombosis (DVT), both manifesting with lower extremity pain, swelling, and erythema, making diagnosis challenging.² The hemorrhagic crescent sign—a crescent of ecchymosis distal to the medial malleolus and on the foot that results from synovial injury or rupture—can be a useful diagnostic tool to differentiate between the causes of acute swelling and pain of the leg.² When observed, the hemorrhagic crescent sign supports testing for synovial pathology at the knee.

A 63-year-old man presented to an outside hospital for evaluation of a fever (temperature, 101 °F [38.3 °C]), as well as pain, edema, and erythema of the right lower leg of 2 days' duration. He had a history of leg cellulitis, gout, diabetes mellitus, lymphedema, and peripheral neuropathy. On admission, he was found to have elevated C-reactive protein (45 mg/L [reference range, <8 mg/L]) and mild leukocytosis (13,500 cells/μL [reference range, 4500–11,000 cells/μL]). A venous duplex scan did not demonstrate signs of thrombosis. Antibiotic therapy was started for suspected cellulitis including levofloxacin, piperacillin-tazobactam, and linezolid. Despite broad-spectrum antibiotic coverage, the patient continued to be febrile and experienced progressive erythema and swelling of the right lower leg, at which point he was transferred to our institution. A new antibiotic regimen of vancomycin, cefepime, and clindamycin was started and showed no improvement, after which dermatology was consulted.

Physical examination revealed unilateral edema and calor of the right lower leg with a demarcated erythematous rash extending to the level of the knee. Furthermore, a hemorrhagic crescent sign was present below the right medial malleolus (Figure). The popliteal fossa was supple, though the patient was adamant that he had a Baker cyst. Punch biopsies demonstrated epidermal spongiosis and extensive edema with perivascular inflammation. No organisms were found by stain and culture. Ultrasound

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A demarcated erythematous rash on the right lower leg extending to the knee with marked swelling of the right calf and foot. A hemorrhagic crescent sign was present distal to the right medial malleolus, which aided in the diagnosis of pseudocellulitis secondary to a Baker cyst rupture.

records confirmed a Baker cyst present at least 4 months prior; however, a repeat ultrasound showed resolution. A diagnosis of pseudocellulitis secondary to Baker cyst rupture was made, and corticosteroids were started, resulting in marked reduction in erythema and edema of the lower leg and hospital discharge.

This case highlights the importance of early involvement of dermatology when cellulitis is suspected. A study of 635 patients in the United Kingdom referred to dermatology for lower limb cellulitis found that 210 (33%) patients did not have cellulitis and only 18 (3%) required hospital admission.³ Dermatology consultations have been shown to benefit patients with inflammatory skin disease by decreasing length of stay and reducing readmissions.⁴

Our patient had several risk factors for cellulitis, including obesity, lymphedema, and chronic kidney disease, in addition to having fevers and unilateral involvement. However, failure of symptoms to improve

with broad-spectrum antibiotics made a diagnosis of cellulitis less likely. In this case, a severe immune response to the ruptured Baker cyst mimicked the presentation of cellulitis.

Ruptured Baker cysts have been reported to cause acute leg swelling, mimicking the symptoms of cellulitis or DVT.^{2,5} The presence of a hemorrhagic crescent sign can be a useful diagnostic tool, as in our patient, because it has been reported as an indication of synovial injury or rupture, supporting the exclusion of cellulitis or DVT when it is observed.⁶ Prior reports have observed ecchymosis on the foot in as little as 1 day after the onset of calf swelling and at the lateral malleolus 3 days after the onset of calf swelling.⁵

Following suspicion of a ruptured Baker cyst causing pseudocellulitis, an ultrasound can be used to confirm the diagnosis. Ultrasonography shows a large hypoechoic space behind the calf muscles, which is pathognomonic of a ruptured Baker cyst.⁷

In conclusion, when a hemorrhagic crescent sign is observed, one should be suspicious for a ruptured Baker cyst or other synovial pathology as an etiology of pseudocellulitis. Early recognition of the hemorrhagic crescent sign can help rule out cellulitis and DVT, thereby reducing the amount of intravenous antibiotic prescribed, decreasing the length of hospital stay, and reducing readmission.

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