

Case Letter

Osteomyelitis in Association With Pyoderma Gangrenosum and Ulcerative Colitis

To the Editor:

Chronic osteomyelitis is associated with localized palmoplantar psoriasis, psoriasis vulgaris, Sweet syndrome, and pyoderma gangrenosum (PG).¹ We report a rare case of osteomyelitis-associated PG and ulcerative colitis (UC) that improved with oral corticosteroids.

A 49-year-old man presented with a fever and an ulcer with small pustules on the lower right leg of 2 years' duration followed by recurrence of diarrhea and bloody stool. His medical history was remarkable for UC, which had been treated with systemic azathioprine and corticosteroids for more than 10 years. A biopsy specimen and laboratory findings were compatible with PG. An increased dosage of systemic corticosteroids and readministration of azathioprine therapy along with granulocyte apheresis improved the cutaneous and bowel manifestations. One year later, fever, diarrhea, and bloody stool recurred, and numerous small pustules with erythema developed and enlarged, forming ulcers on the lower left leg, lower abdomen, and left second finger (Figures 1 and 2). Skin and blood cultures were negative. A skin biopsy taken from the lower left leg demonstrated numerous and diffuse infiltrated neutrophils and exocytosis of red blood cells from the upper dermis to subcutaneous fat. Fibrinoid deposits surrounded small vessel walls, but there was a lack of necrosis and polymorphonuclear leukocytes in the vessel walls, which was compatible with PG (Figure 3). Laboratory examinations showed highly elevated C-reactive protein levels (170 mg/L [reference range, 0.08–3.1 mg/L]) and slightly elevated neutrophils (5400/ μ L [reference range, 1720–5000/ μ L]), but the white blood cell count was within reference range. Serum myeloperoxidase and cytoplasmic

antineutrophil cytoplasmic antibodies were within reference range. An ulcer on the patient's left second finger reached the periosteum. A plain radiograph showed periostitis and radiolucent areas in the left second finger, and magnetic resonance imaging demonstrated osteomyelitis (Figure 4). Colonoscopy revealed diffuse mucosal erythema and superficial ulcers with bleeding. A biopsy of the colonic mucosa showed crypt abscesses, and the diagnosis of UC was



Figure 1. Erythema with pustules and bullae on the lower left leg.



Figure 2. An erythematous plaque discharging pus on the left second finger.

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The authors report no conflict of interest.

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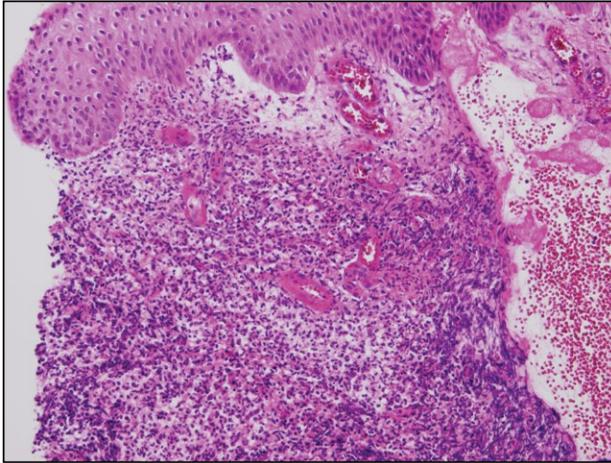


Figure 3. A skin biopsy taken from the lower left leg showed extensive infiltration of the dermis and subcutaneous tissues with polymorphonuclear leukocytes. There was a large amount of fibrinoid deposits in small blood vessel walls but a lack of destruction of vessel walls (H&E, original magnification $\times 100$).



Figure 4. Magnetic resonance imaging showed osteomyelitis (arrow) in the left second finger with high intensity on the T2-weighted image.



Figure 5. After the prednisolone dose was increased, the ulcers epithelialized and healed as a scar.



Figure 6. Osteomyelitis had disappeared on magnetic resonance imaging (T2-weighted image).

made, with a UC activity index score of 341.5 (values >220 correspond with severe disease).² Several kinds of antibiotics and granulocyte apheresis did not improve the bowel disease, osteomyelitis, and skin manifestations. An orthopedic surgeon performed surgical debridement of the left second finger under local anesthesia, but the periosteum was normal. A culture from the excised tissue was negative. The final diagnosis was sterile osteomyelitis with PG and UC. Treatment with an increased dose of oral prednisolone (60 mg daily) was effective for the bowel and skin manifestations (UC activity index, 191.5 [moderate disease]) as well as the osteomyelitis (Figures 5 and 6).

Osteomyelitis usually is induced by bacterial infection; sterile osteomyelitis, which has been previously associated with PG and inflammatory bowel disease, is rare.^{1,3} The most frequent cause of bone disease in PG has been chronic recurrent multifocal osteomyelitis, but osteomyelitis in a bone also has been reported.⁴ Our case was one osteomyelitis with underlying PG ulcers, and the skin biopsy showed fibrinoid deposits in small vessels that developed microangiopathy. Magnetic resonance imaging revealed osteomyelitis with abscess formation in the subcutaneous tissue. Although ulcers or secondary bacterial infection with ulcers could result in the setting of osteomyelitis, we considered that PG ulcers did not directly develop into osteomyelitis. Firstly, bony erosions have only rarely been described in direct contiguity to a PG ulcer.¹ Secondly, the periosteum was normal at debridement, and cultures from PG ulcers, the blood, and excised tissues were negative. Several antibiotics were not effective in treating osteomyelitis in our case, but an increased dose of prednisolone (60 mg daily) improved both the skin and bowel manifestations. The clinical course and laboratory examination

supported a diagnosis of osteomyelitis associated with PG and UC.

Osteomyelitis associated with PG and inflammatory bowel disease is rare, and its origin is unknown; however, it is possible that cryptantigens released after infection or trauma cause an autoimmune response.⁵ The typical osseous changes of osteomyelitis noted on radiography may not appear for days or even weeks, and computed tomography and magnetic resonance imaging are useful for early diagnosis.³ In one study, computed tomography revealed that 2 of 80 patients with Crohn disease had unsuspected osteomyelitis.⁶ We consider that sterile osteomyelitis is a complication of PG along with UC.

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