Rare complications of Pseudomonal sepsis present as ecthyma gangrenosum at the site of COVID-19 vaccine and pyomyositis

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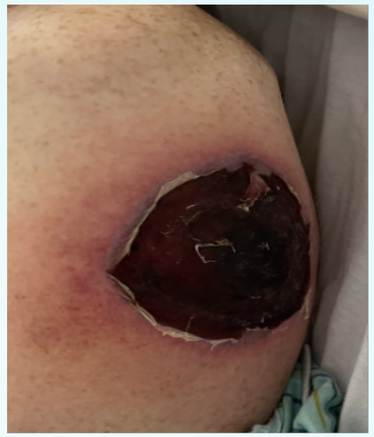
Introduction

A review of the medical literature shows that hematological malignancies are a risk factor for pyomyositis, with most cases being due to Staphylococcus aureus. In contrast, Pseudomonas aeruginosa (PA) appears to be a rare causative organism. This case report illustrates how a severely neutropenic chronic lymphocytic leukemia (CLL) patient can rapidly become moribund with Pseudomonas septicemia with several of its complications, including pyomyositis.

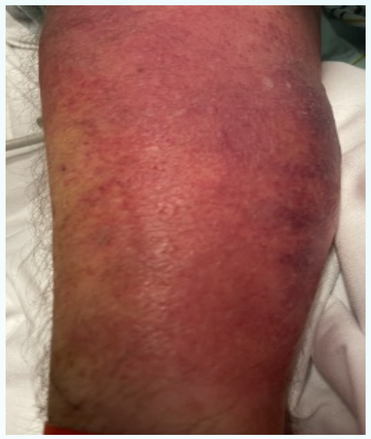
Case Description

A 66-year-old-male with diabetes and CLL, who completed chemotherapy (bendamustine and Rituximab) six months prior to admission, presented to the hospital with dizziness and weakness for three weeks and an eschar at the Covid-19 vaccine site for two weeks. Associated symptoms included non-bloody diarrhea and polyuria and polydipsia for three days. He denied fevers, chills, recent travel, tick bites, sick contacts, or pets at home. Upon presentation, he was febrile (Tmax 100.5F), tachycardic, and hypotensive. On physical examination, he appeared lethargic and diaphoretic. A 2 X 2 cm dry necrotic lesion was noted on the left arm with surrounding erythema and tenderness without drainage **(Figure 1)** and one 1 X 1 cm tender erythematous "bulls-eye" rash in his right inner thigh. Labs were notable for WBC of 1000/UL with ANC of 460, BUN 86 MG/DL, Creatinine 5.04 MG/DL, lactate 2.5 mmol/L, glucose of 522 MG/DL, anion gap 22, Bicarb 14 mEq/L. He was admitted to the ICU for DKA and sepsis and was started on IV fluids, insulin drip, IV Cefepime, Vancomycin, and Clindamycin for neutropenic fevers and suspected necrotizing fasciitis. Admission blood cultures (both sets) grew gram-negative rods. CT scan of left arm without contrast showed necrosis of the soft tissues in the left arm without any reported extension into fascia or muscle.

(1)



(2a)



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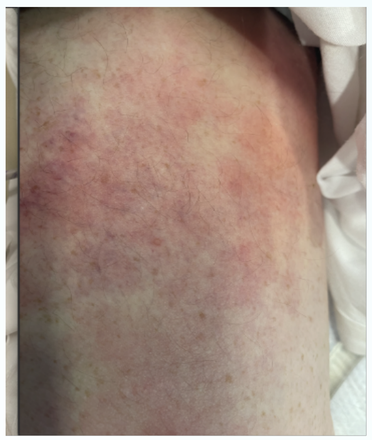

Case Description (Cont'd)

He underwent left arm wound debridement, and intraoperative findings showed necrotizing soft tissue infection with intraoperative cultures growing PA. Diagnosis of ecthyma gangrenosum was made and IV Vancomycin and Clindamycin were discontinued. He was treated with IV Cefepime for pseudomonal sepsis. Filgrastim was initiated for count recovery, and on day three of this therapy, he developed erythema, swelling, warmth, and tenderness of the right arm **(Figure 2a)** with a patchy macular rash on the right leg **(Figure 2b)**. MRI of the right lower extremity w/o showed myositis with an intramuscular abscess within the anterior tibialis and peroneus longus muscles. MRI of the right forearm w/o showed large confluent subcutaneous abscesses. CPK levels at this time were 35 U/L. He was taken to the OR for incision and abscess drainage, cultures from which grew PA. He received IV Cefepime for four weeks via the PICC line with resolution of symptoms and neutropenia.

Discussion

Ecthyma gangrenosum has been reported to occur in up to 30% of patients with Pseudomonas septicemia, and mortality rates range from 38% to 96%. It is thought that pseudomonas invades the media and adventitia of small vessel walls which leads to subsequent infarction and necrosis of the surrounding tissue. Pyomyositis is caused by transient bacteremia rather than local extension of a contiguous infection. Pyomyositis due to PA is very rare. Diagnosis requires a high index of suspicion and is confirmed with ultrasound, CT scan, or MRI. Early diagnosis enables complete drainage of purulent materials and successful treatments with IV antibiotics and leads to resolution in vast majority of cases.