Recurrent Bilateral Culture Negative Abscesses Mimicking a Diabetic Foot Infection

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Statement of Purpose

The aim of this study is to present the first case within the current literature of recurrent bilateral culture negative pedal abscesses mimicking a diabetic foot infection as a rare extra-intestinal manifestation of previously undiagnosed ulcerative colitis. Culture negative abscesses may develop as a rare sequela of ulcerative colitis, with less than 40 cases documented within current literature. They often demonstrate a large neutrophilic predominance, negative cultures, and negative serology testing. The diagnosis was achieved utilizing a multi-specialty team approach with podiatry serving as the primary service coordinating the patients' care.

Methods

Patient Characteristics and Treatment

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Gender	Female
Age	79
Comorbidities	Anemia, DVT, Inflammatory arthritis, Diabetes Mellitus II, MTHFR mutation, ?Rheumatoid on chronic corticosteroids
Procedures	12/7/2018: I&D 5/2/2019: I&D 7/12/2019: I&D 7/25/2019: Colonoscopy 16s rDNA Rheumatology Panel
Consults	Infectious Disease Rheumatology Gastroenterology Internal Medicine

Clinical Images

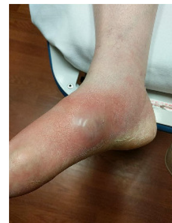

Figure 1: Presenting clinical image of the abscess

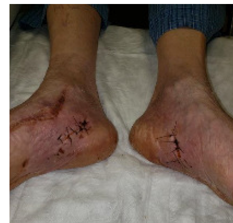

Figure 2: Post-operative images after incision and drainage procedures

Rheumatology Results

Immunologic Test	Result (Ratio)
Rheumatoid Factor	Negative (<10.0 IU/mL)
Anti-Cyclic Citrullin Peptide (CCP)	Negative (3 units)
pANCA	Negative (<1:20 titer)
cANCA	Negative (1:20 titer)
Antinuclear Antibody (ANA)	Positive
Antinuclear Antibody Ratio	8.88 ratio
Anti ds-DNA	Negative (32)
Anti Histone Ab	Negative (0.5 units)
Anti-Jo-1 Ab	Negative (0.28 ratio)
SCL-70 Ab	Negative (0.19 ratio)
Anti-SSA (RO)	Negative (0.04 ratio)
Anti-SSB (LA)	Negative (0.07 ratio)
Anti-Smooth Muscle (SM)	Negative (0.10 ratio)
Anticardiolipin IgM Ab	Positive (37.13 MPL)
Beta-2 Glycoprotein	Negative
HLA B27	Negative
Calprotectin	403 ug/g

Culture/Microbiology Results

Culture	Result
Blood cultures, Deep Tissue/Purulence x3: Aerobic, Anaerobic, Acid-Fast, Fungal, Viral	All culture results negative (held for 14 days)
Frozen Sections 16s rDNA	Negative for evidence of bacterial DNA

Abscess and Colonic Pathology Results

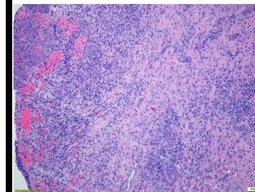

Figure 3: Benign fibrous tissue with severe acute inflammation, granulation tissue, and large amount of fibrinopurulent exudate

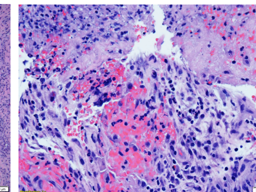

Figure 4: Large neutrophilic predominance and evidence of severe acute inflammation

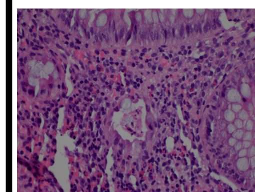

Figure 5: Crypt injury with crypt abscess

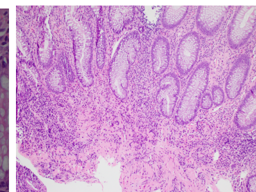

Figure 6: Crypt branching, shortfall and basal lymphoplasmacytosis

Analysis and Discussion

Aseptic abscesses may develop as a rare extra-intestinal manifestation of ulcerative colitis, with less than 40 cases documented within the literature. [1,2] They all demonstrate a large neutrophilic predominance, negative cultures, and negative serology testing. [3,4] Of the reported cases, all showed no systemic signs of infection but were found to have local clinical signs of an abscess, failed to resolve with antibiotics, and often showed response to corticosteroids or disease modifying anti-rheumatic drugs (DMARD). [1]

Multiple incision and drainage procedures were performed with copious purulence expressed from the plantar medial compartment. The patient was started on broad spectrum antibiotics post-operatively without a clinical response. All cultures and advanced infectious disease testing remained negative for bacterial, viral, and fungal infection.

Rheumatology work-up consisted of a broad range of autoimmune testing resulting in a colonoscopy for confirmation of the diagnosis of ulcerative colitis after identifying severely elevated levels of calprotectin. Patient was then placed on remicade and has remained free of recurrent abscesses.

The differential diagnosis of a culture negative abscess is broad and a multi-specialty team approach must be considered. Andre et al. proposed criteria for the diagnosis of a culture negative abscess, including: deep abscess with neutrophilic features, negative serologic testing, failure of broad spectrum antibiotic therapy, and rapid improvement on steroids or other DMARDs with subsequent radiologic evidence of abscess resolution. [2]

References

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3. H. Hara, F. Wakui, A. Fujitsuka, T. Ochiai, and T. Morishima, "Subcutaneous abscesses in a patient with ulcerative colitis," *Journal of the American Academy of Dermatology*. 2000;42(2): 363–365.
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