Reactive Arthritis Caused by *Clostridioides difficile* Enterocolitis

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### Introduction

- Reactive arthritis is an inflammatory arthritis that develops in response to an infection in a different part of the body.
- Though most commonly associated with infections caused by *Chlamydia, Salmonella, Shigella, Campylobacter, and Yersinia*, a small number of reports have shown association with *Clostridioides difficile*.

### Case Description

- 40-year-old man with a history of gout presented to the ED with swelling and pain in his right knee and ankle.
- Earlier that day, he presented to the ED with five days of diarrhea and abdominal pain and was diagnosed with *Clostridioides difficile* enterocolitis by stool PCR.
- He was discharged on metronidazole only to return to the ED with sudden onset of right knee and ankle swelling and pain. He was admitted to the hospital a month ago for suspected cellulitis over his right knee and was treated with clindamycin. His joint pain felt different from past gout episodes.
- On physical exam, the patient was febrile and tachycardic with erythematous, warm, and swollen right knee and ankle, which were exquisitely tender to palpation.

### Notable Initial Labs

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC/BMP</td>
<td>Elevated WBC</td>
</tr>
<tr>
<td>C-reactive protein</td>
<td>Elevated</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>Negative</td>
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</tbody>
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### Imaging

- X-rays of right knee and ankle: Soft tissue swelling; no fractures

### Hospital Course

- **Day 1**: Treated with metronidazole for *C. difficile* and possible septic joint
- **Day 3**: New onset pain and swelling of right elbow
- **Day 4**: New onset pain and swelling of left elbow, wrist, and knee
- **Day 7**: Right knee and ankle pain improving
- **Day 8**: Complete resolution of right knee and ankle pain
- **Day 9**: Right elbow pain improving
- **Day 11**: Discharged: diarrhea significantly improved; remaining joint pain improving

### Synovial fluid

- Yellow/hazy, 17,905 WBCs, 93% PMNs, no crystals or organisms, no growth on culture

### Infectious workup

- **RPR** Non-reactive
- **HIV** Negative
- **Parvo-B19** Negative
- **Chlamydia** Negative
- **Hepatitis A/B/C** Negative
- **N. gonorrhoeae** Negative

### Rheumatologic workup

- **Anti-streptolysin O** Within normal limits
- **Rheumatoid factor** Within normal limits
- **anti-CCP antibody** Within normal limits
- **ANA** Within normal limits
- **HLA-B27** Negative

### Discussion

This case illustrates the importance of including reactive arthritis due to *C. difficile* in the differential diagnosis for a patient with otherwise unexplained acute inflammatory arthritis in the setting of recent antibiotic use and diarrhea. *C. difficile* reactive arthritis is often polyarticular and not related to the patient’s underlying HLA-B27 status.1 The most commonly affected joints are the knee and wrist.1 Though uncommon, multiple cases of reactive arthritis due to *C. difficile* infection have been reported.

The hypothesized pathogenesis of reactive arthritis due to *C. difficile* is considered to be an immunological response in joints to bacterial antigens which gain access into the bloodstream via increased intestinal permeability.2

Early diagnosis and management focusing on eradication of *C. difficile* in addition to supportive therapy can reduce unnecessary hospital work-up and improve patient outcomes.

### Teaching Points

- Internists should consider the diagnosis of reactive arthritis in patients with acute inflammatory arthritis in the setting of *C. difficile* infection
- Reactive arthritis due to *C. difficile* can occur in patients who are HLA-B27 negative

### References