

PedsCases Podcast Scripts

This podcast can be accessed at www.pedscases.com, Apple Podcasting, Spotify, or your favourite podcasting app.

Pediatric Reactive Arthritis

Developed by Nicholas J. Yee and Dr. Lillian Lim for PedsCases.com.

January 4, 2020

Introduction:

Hello, my name is Nicholas J. Yee, a third-year medical student at the University of Alberta. With the help of Dr. Lillian Lim, an Assistant Professor in Pediatric Rheumatology at the Stollery Children's Hospital of the University of Alberta, this podcast was developed to discuss an approach to reactive arthritis.

This podcast will review the following learning objectives:

1. Review the clinical presentation of reactive arthritis in pediatric patients including key features on the history and physical examination;
2. Review the differential diagnosis of reactive arthritis in the Pediatric population;
3. Identify key investigations and management steps for a child presenting with reactive arthritis;
4. Discuss contingency planning and possible complications of reactive arthritis.

Let's consider a clinical case. You are in the emergency department for your pediatric core clerkship rotation. Your preceptor asks you to see David, a 15-year-old male, presenting with a one week history of progressive left knee pain and now also pain at the right ankle. The pain feels sharp and localized, and is present all day long but worse in the morning. Both his eyes appear slightly red. What do you think is going on?

This case is an example of an acute oligoarthritis. Arthritis is defined as synovial joint inflammation that can manifest as pain, swelling, erythema, warmth, and/or possible decreased range of motion. Oligoarthritis refers to four or fewer involved joints. An acute oligoarthritis indicates that the duration of symptoms is less than 6 weeks. Chronic arthritis lasts greater than six weeks.

Let us review an approach to oligoarthritis. While taking a history, you want to ask your typical open-ended questions and follow-up with targeted questions. Remember to consider:

1. Is this patient stable or unstable?

In the emergency department, especially, it is important to identify medical emergencies, such as septic arthritis. David appears unwell but stable.

Developed by Nicholas J. Yee and Dr. Lillian Lim for PedsCases.com.

January 4, 2020.

You asked David to tell us a little bit more about his joint pain. At the start of last week, David remarks that the left knee started to feel slightly painful. It was sharp and was present all day. Over the next few days, he got worse and worse to the point where it was unbearable. The pain remains localized to his left knee, however, his right ankle started to hurt in a similar pattern as his knee. He is limping due to pain. He has tried taking some over-the-counter pain medication, such as Advil. He received minimal pain relief. His pain does not radiate. When we asked what times of the day the pain is worse, he emphasizes that he wakes up with this terrible pain, and that he has a few hours of associated morning stiffness. This is the first time this has happened to him.

2. Remember to evaluate for constitutional symptoms to rule out serious diagnoses, such as malignancies.

David denies any fever, unexpected weight loss, night sweats, or chills.

Further along your review of symptoms reveal that David does not have any changes in bowel habits (which may suggest inflammatory bowel disease), back pain (which may suggest ankylosing spondylitis), rashes, trauma, or recent travel. He denies respiratory symptoms including coughs, sore throats, rhinorrhea, dyspnea, or any nausea/diarrhea.

After you have asked about the history of the presenting illness, constitutional symptoms, and review of symptoms, **proceed to review his medical and surgical history.**

David has been otherwise healthy with no surgeries or recent injuries.

The medication history may provide details about a patient's diagnosis. For example, patients who have taken a prolonged course of oral steroids may indicate a greater severity of their disease. Medications have side effects. Systemic use of steroids may put a patient at risk for fractures, which can also present as pain.

In David's case, he takes no medications other than a daily multivitamin.

In certain cases, the family history can be an important part of the history. Patients may develop hemarthrosis from hemophilia or vaso-occlusive pain from sickle-cell disease, which patients may describe similarly to an oligoarthritis presentation. It is also important to ask about a family history of any autoimmune conditions, including juvenile idiopathic arthritis, rheumatoid arthritis, lupus, and inflammatory bowel disease.

In our case, David has a family history of hypertension and type II diabetes.

3. It is important to consider how does this environment affect my patient's comfort in disclosing information

Pediatric patients may be uncomfortable disclosing information, such as their sexual history and safety concerns, when their parents are around. Consider asking the patient's family to step out of the room so that you may discuss sensitive topics with the patient. Sometimes a patient may be more willing to divulge information when you remind them of the patient-physician confidentiality agreement, in which the entire conversation will remain confidential within the

circle of care of their involved healthcare professionals, unless there are concerns of harm to the patient themselves or to others.

In this case, David's mom is in the room. She is concerned about the swelling at his heels and the left third toe. You explore these findings as a part of the review of symptoms. Afterwards, you politely ask David's mom to step out of the room to ask a few more questions, to which she agrees. You explain to David and his mother that it is standard procedure to speak to all adolescent patients with and without their parent present.

David discloses that for the last two weeks, he has noticed pain when urinating prior to onset of the joint pain. When prompted, he admits to having unprotected sexual intercourse prior to the dysuria.

Be sure to screen for trauma or domestic abuse. It may be as simple as asking, "how safe do you feel at home? Who do you talk to when you need help?" to assess for safety at home and social support. When you suspect the patient has been abused, you should ask that question directly. You should also take this time to take a thorough sexual history, while reviewing principles for safe sexual behaviour. In this case, there were no concerns of abuse or safety.

After completing the history taking, it's a good habit to try to formulate a working diagnosis and differential diagnosis. Let's recap:

We were asked to see David, a 15-year-old healthy male, presenting with a suspected inflammatory acute oligoarthritis of the left knee and right ankle, with possible extra articular involvement of his feet. He has dysuria that began prior to the joint pain. He admits to having unprotected sexual intercourse.

At this point, the differential diagnoses for joint pain include infection-related processes such as septic arthritis, reactive arthritis, and other post-infectious arthritic conditions. Autoimmune arthritis such as juvenile idiopathic arthritis (JIA) is also a major consideration in this case, including the oligoarticular and enthesitis-related subtypes, as well as juvenile spondyloarthropathies. His history, especially with an otherwise unremarkable review of systems, does not suggest a systemic condition like lupus. He also has not had any recent trauma or malignant features, so these diagnoses are less likely. While common in adult patients, crystal-induced arthritis, such as gout, is extremely rare in pediatric patients.

After history taking, let's proceed to taking a physical exam, where we can confirm the extent of joint and extra-articular involvement.

Start with the vital signs. David has a HR 86, RR 15, BP 110/68, and temp of 37.2°C. In terms of his general appearance, David appears unwell, alert, responsive, and able to cooperate with the physical exam.

For the MSK exam, you want to examine the affected joint, including the joints above and below. It is good practice to compare to the contralateral side. Be sure to expose the body part being examined, with appropriate draping and removal of clothing, shoes, and socks. David's left knee was erythematous and warm on palpation. He was hesitant to move his left knee, and had decreased active and passive range of motion limited by pain. For special tests to assess for a knee effusion, the fluid ballottement, patellar tap, and fluid displacement tests were

negative. He was able to weight-bear on the left leg, but had an antalgic gait. His right ankle was noticeably swollen, and he also had limited and painful range of motion moving this joint. Furthermore, you confirm his mother's worries about his feet by palpating exquisite pain to both heels and pain at the base of his left third toe. For the remaining MSK exam, David had full power on extension and flexion of both lower extremities, and both limbs were neurovascularly intact with normal 2+ reflexes. The remainder of his musculoskeletal pGALS (which stands for pediatric gait, arms, legs, and spine) exam was normal.

For the rest of his physical examination, you note that there were no obvious nail changes or rashes that may be suggestive of psoriasis or infection. There were no signs of trauma such as bruising, abrasions or lacerations. He had mild bilateral conjunctivitis. His pupils were equal bilateral and reactive to light. His head and neck exam were otherwise normal, with no lymphadenopathy. The chest exam was unremarkable with good air entry bilaterally, no adventitious sounds, and normal cardiac S1 and S2 sounds. His abdomen was soft, non-distended, and non-tender, with no organomegaly, masses, or lesions was appreciated.

You ask for a nurse or staff member to be present for the genital exam and explain to David what you are looking for. You notice green discharge from the penis.

Let's review our findings so far, as the physical exam should narrow your differential diagnosis.

David had reduced passive range of motion in his left knee and right ankle, the latter of which was also swollen. This suggests intra-articular involvement. A joint is considered actively inflamed when a patient has at least two of the following: pain, limited range of motion, or an effusion. Although he has pain, he can weight-bear and walk and does not have fever, which makes you less suspicious for septic arthritis. Additionally, you identified bilateral conjunctivitis and green penile discharge. Based on your history and exam, you should be concerned about reactive arthritis.

You review your history and physical exam with your preceptor. They commend you on your information gathering.

What investigations do you want to do now?

You order a complete blood count and differential, inflammatory markers like CRP, and a urine culture using nucleic acid amplification technique. The CBCd gives you the white blood cell count to look for a possible infection. The CRP will suggest an inflammatory or infectious process and may correlate with inflammatory disease activity. The urine culture may be helpful in detecting a *Chlamydial trachomatis* infection. If there was a history of diarrhea, a stool sample for *Salmonella*, *Shigella*, *Campylobacter*, and *Yersinia*, can sometimes confirm a previous or active infection. Only consider ordering testing for tuberculosis and Lyme disease if there are risk factors, such as travel to endemic areas. It is important to note that in most cases, an infectious process will not be identified in reactive arthritis, so negative infectious results do not exclude the diagnosis. If there is suspicion for an autoimmune arthritis like juvenile idiopathic arthritis, an ANA can be ordered. Only order a rheumatoid factor and anti-CCP if you have strong suspicion for a polyarticular autoimmune arthritis, which is not this case.

Would you like to order any imaging?

There is no history of trauma. It is unlikely that an acute inflammatory joint presentation without trauma will have radiographic findings early on. More severe and unremitting cases of reactive arthritis may benefit from x-ray imaging to show joint destruction and erosions, though this is uncommon. Sometimes, patients with chronic joint diseases such as JIA may benefit from ultrasound and MRI to corroborate signs of peripheral synovitis and enthesitis with clinical findings. In our case, David does not require any imaging at this time as it would not change our management plan.

If you are concerned about an infected joint effusion like in septic arthritis, remember to do an arthrocentesis and examine the synovial fluid for white blood cell count, crystals, bacterial culture, and Gram stain.

David's lab results came back. The bloodwork showed a hemoglobin of 138, white blood cells of 18 with 15 neutrophils and platelet count of 299, and a CRP of 134. The urine culture was positive for *Chlamydia trachomatis*.

What is your diagnosis?

The patient has the classic presentation of reactive arthritis with large joint involvement, conjunctivitis, and urethritis. The elevated white blood cell count indicates an infectious process with a positive chlamydia urine culture. David likely has reactive arthritis because he has the typical musculoskeletal presentation and a *Chlamydia trachomatis* infection. In addition to reactive arthritis, your differential diagnoses for acute oligoarticular arthritis should include viral arthritis including transient synovitis, septic arthritis, post-streptococcal arthritis, acute rheumatic fever, Lyme disease, juvenile idiopathic arthritis, juvenile spondyloarthropathies, systemic lupus erythematosus, injuries or trauma, and malignancy-related arthritis. It is also important to consider non-inflammatory orthopedic diagnoses such as Legg-Calve-Perthes disease and Osgood-Schlatter disease, though these conditions were not high on the differential for David.

Your preceptor is impressed at your clinical ability to make a diagnosis and a list of differential diagnoses based on the history, physical exam, and investigations. You decide to challenge yourself one step further.

What is your initial management?

When possible, you want to treat the etiology and the symptoms. The first-line treatment for *Chlamydia trachomatis* is doxycycline or azithromycin. There is often a concomitant gonorrhea infection, so you may consider adding ceftriaxone. You also discuss STI testing and safe sex practices with David.

Next you want to treat the joint inflammation. The initial therapy suggested is a treatment of NSAIDs such as naproxen, diclofenac, or indomethacin for at least two weeks. Reactive arthritis is most frequently self-limited, therefore, DMARDs, which are disease-modifying anti-rheumatic drugs usually given to prevent erosive joint changes, are not required. Patients on NSAIDs, even children, should be cautioned about the risk of gastrointestinal bleeding. In some cases, the joint symptoms may last for up to six months or more. As second line treatment, patients

that are unresponsive to NSAIDs may benefit from intra-articular glucocorticoids or, in this case, DMARDs such as Sulfasalazine.

Your preceptor explains your recommended treatment plan of addressing the Chlamydia infection and joint pain. David understands and agrees to the treatment. He is reassured that his symptoms will likely resolve without complications. You explained to him that the typical disease duration is 3 to 6 months, where most patients have minimal symptoms 6 to 12 months after the initial presentation. Most patients with reactive arthritis have only a single episode. There is a 15 to 20% chance of developing a chronic persistent arthritis. He appears concerned so you reassure him that you'll want to follow up in two weeks.

That concludes the visit with David. Congratulations on your approach to reactive arthritis. Let us review some key points in this podcast:

- The classical presentation of reactive arthritis includes conjunctivitis, urethritis, and large joint arthritis. It might help to think of the rhyme “can’t see, can’t pee, can’t climb a tree”. Also keep in mind that while David had urethritis preceding his arthritis, other patients with reactive arthritis may have bacterial diarrhea as a preceding infection instead.
- Laboratory investigations may include CBC D, CRP, and bacterial cultures to look for the infection. Imaging studies, such as plain x-rays and ultrasounds, are not usually warranted for early investigations, as arthritis is often clinically detected by history and exam instead. It is very important to remember that in most reactive arthritis cases, an infectious cause may not be identified, so do not exclude the diagnosis based on negative results.
- Most presentations self-resolve by six months. Patients with a treatable etiology should receive antibiotics. All patients may benefit from anti-inflammatory such as NSAIDs to treat their joint symptoms.

That concludes that PedsCases podcast on reactive arthritis. Thank you for joining in and stay tuned for more PedsCases podcasts.

References:

Carter JD, Hudson AP. Reactive arthritis: clinical aspects and medical management. *Rheum Dis Clin North Am.* 2009;35(1):21-44. doi:10.1016/j.rdc.2009.03.010

Hannu T. Reactive arthritis. *Best Pract Res Clin Rheumatol.* 2011;25(3):347-357. doi:10.1016/j.berh.2011.01.018

Morris D, Inman RD. Reactive arthritis: developments and challenges in diagnosis and treatment. *Curr Rheumatol Rep.* 2012;14(5):390-394. doi:10.1007/s11926-012-0280-4

Ozgül A, Dede I, Taskaynatan MA, Aydogan H, Kalyon TA. Clinical presentations of chlamydial and non-chlamydial reactive arthritis. *Rheumatol Int.* 2006;26(10):879-885. doi:10.1007/s00296-005-0094-z

Sieper J, Rudwaleit M, Braun J, van der Heijde D. Diagnosing reactive arthritis: role of clinical setting in the value of serologic and microbiologic assays. *Arthritis Rheum.* 2002;46(2):319-327. doi:10.1002/art.504