Migratory Arthritis & Fever

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A 55-year-old Caucasian female presented to the emergency department with fever and flu-like symptoms for the past three days. Review of symptoms was positive for shortness of breath, non-productive cough, sneezing, sore throat, body aches, nausea, vomiting, and a temperature of 103°F at home. She called her primary care office a few days prior to her ER visit and was empirically prescribed oseltamivir for influenza. After treatment with oseltamivir, symptoms did not resolve, and she developed new onset symptoms of red, swollen, painful joints and a new subcutaneous nodule on the lateral left foot. Her pain originated in her left MCP joint and then spread to her right elbow and right knee.

On physical examination, vital signs were T 102.8°F, HR 117, RR 20, BP 119/59, and SpO2 93% RA. The patient was in mild distress and frail appearing. On HEENT exam, the patient was normocephalic with a slightly erythematous oropharynx. She had a midline uvula and no other lesions. Eyes showed reddened sclera without any exudate or drainage. Lung sounds were diminished bilaterally, but otherwise clear to auscultation. Her heart rate was regular and rhythm, without any murmurs, rubs or gallops. Extremities revealed decreased range of motion, redness, edema, and tenderness to palpation of the right elbow (Figure 1) and right knee (Figure 2). She also had an erythematous and tender 3 cm circular nodule on the left metatarsal/tarsal joint (Figure 3).

Urinalysis was suspicious for UTI. Remaining lab work was unremarkable. The patient was admitted to the hospital and started on empiric ceftriaxone IV daily for UTI.

QUESTIONS

1. What was the most likely diagnosis?
   a) Acute rheumatic fever
   b) Reactive arthritis
   c) Lyme disease
   d) Rheumatoid arthritis
   e) Septic arthritis

2. Based on the diagnosis criteria, how is infection with Group A Streptococcus confirmed in a patient with the suspected disease?
   a) Positive blood cultures
   b) Elevated ESR
   c) Rising anti-strepolysin O titers
   d) Elevated CRP
   e) All of the above

3. Which of the following is considered a major criterion for the presumed diagnosis?
   a) Fever > 38.5 C
   b) Arthritis
   c) ESR > 60mm in the first hour
   d) Prolonged PR interval
   e) Carditis

FIGURE 1: Right elbow
FIGURE 2: Right knee
FIGURE 3: Left lateral foot

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Acute rheumatic fever (ARF) is characterized by a systemic inflammatory response secondary to group A streptococcus. This typically develops two to three weeks after a throat infection. The most common manifestations are carditis (50% – 70%) and arthritis (35% – 66%). Other common clinical manifestations are chorea (10% – 30%), subcutaneous nodules (< 10%), and erythema marginatum (< 6%).

Skin manifestations include erythema marginatum and subcutaneous nodules. Erythema marginatum is rare and occurs in less than 6% of cases. It is described as a pink rash with central clearing that blanches with pressure and may worsen with heat. Raised boarders with outward-spreading macules and papules are also characteristic. It is usually located on the trunk and proximal extremities, sparing the face. Subcutaneous nodules are also rare findings and usually appear during the first few weeks of the inflammatory phase. They are firm protuberances typically found on the extensor surfaces of joints close to boney protuberances. They are approximately 1 cm in size and can be singular or clustered.

Fever accompanying acute rheumatic fever commonly exceeds 38.5°C orally and can be treated with antipyretics. Elevated C-reactive protein and/or erythrocyte sedimentation rates are lab values consistent with ARF. Normal CRP and ESR should cause a clinician to seriously rethink the diagnosis of ARF. First degree heart block can be used as a minor criteria for diagnosis in the absence of carditis. PR interval of 0.16 seconds in children younger than age 12 and 0.18 seconds in children 12 years of age and older are considered prolonged.

Antibiotic treatment of acute rheumatic fever is usually penicillin. Symptoms such as fever and arthritis can be treated with salicylates or NSAIDS as mentioned above. Oral Penicillin VK 250 mg twice daily in children or 500 mg twice daily in adolescents for 10 days is recommended. Another option is a one-time dose of intramuscular benzathine penicillin. Erythromycin is the recommended for patients with penicillin allergy. Prophylaxis is recommended to help prevent recurrent episodes of acute rheumatic fever. The World Health Organization recommends intramuscular benzathine penicillin injections every three to four weeks for prophylaxis. The timeframe is debatable on the duration of prophylaxis treatment, but the consensus is a minimum of 10 years.
HOSPITAL COURSE:
The patient's signs and symptoms of migrating polyarthritis, fatigue, sore throat, fever, and subcutaneous nodules were consistent with ARF. Her blood cultures were positive for streptococcus pyogenes (group A B-hemolytic streptococcus). CRP, ESR and anti-streptolysin-O titers were all markedly elevated. A throat culture was obtained 3 days after starting antibiotics, but was negative for Group A Streptococci. Echocardiogram obtained showed mild mitral and tricuspid regurgitation, but no valvular vegetations were noted. The patient had an allergy to penicillin and was continued on IV ceftriaxone for bacteremia. She improved and was discharged home on hospital day 7 with 1 more week of IV ceftriaxone and oral azithromycin 250 mg daily for 8 weeks after completing her IV antibiotic course.

CONCLUSION:
Acute rheumatic fever is usually not initially considered in the differential diagnosis for adults with fever and arthralgia. Though uncommon, adult-onset ARF is not rare in developing countries as sporadic incidences of small endemic areas have been reported in the United States since 1980. From these incidences in the United States, carditis and arthritis were the main complaints, whereas throat pain was rare. Therefore, ARF should be considered in older patients with new onset arthritis and fevers.

AUTHOR DISCLOSURES:
No relevant financial affiliations

REFERENCES:


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