

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

Author: Alexandra Gastesi | Editor: Ajith Susai D.O.

Volume 5 Issue 25

Septic Arthritis

A 75 year old male with a history of hypertension presented to Broward Health Medical Center with knee pain and swelling for 1 day. He states the pain and swelling was gradual in onset, and worsening in severity. The patient denies fall injury or trauma. Of note the patient states he was given a knee injection 8 days prior to onset of pain and swelling. He endorses subjective fevers and chills for 1 day, denies chest pain, shortness of breath, or paresthesias. On physical exam, the patient presents with swelling to the anterior knee, and hot to touch. There was no calf tenderness or swelling, pedal pulses +2 bilaterally, sensation and motor function in tact. ROM limited due to pain. Cardiopulmonary and Neurologic exam were normal. Which of the following is the most likely intervention needed in the ED to diagnose ?

- A. Radiograph of the joint affected
- B. U/S Doppler of the lower extremity
- C. Aspiration and analysis of affected joint
- D. Magnetic resonance imaging of the joint affected

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316

Correct answer: C. Aspiration and analysis of affected joint.

Septic arthritis in patients > 35 y/o is most commonly caused by Staphylococcus species, and often a destructive form of acute arthritis. Predisposing factors include: age > 80 y/o, DM, RA, Prosthetic joint, recent intraarticular corticosteroid injection, skin infection, or IV drug abuse, alcoholism. Pathogenesis: bacteria entering the joint produce an acute inflammatory cell response in the synovial membrane. Because synovial tissue has no limiting basement plate, bacterial organisms can quickly gain access to the synovial fluid, creating acute-onset joint inflammation with purulence. This causes hyperplasia of the cells lining the synovial membrane within 7 days. Inflammatory cells release cytokines and proteases that cause cartilage degradation and inhibit cartilage synthesis.

The definitive diagnostic test is identification of bacteria in the synovial fluid. If a joint infection is suspected, aspiration should be performed prior to administration of antibiotic treatment. If fluid cannot be obtained with closed needle aspiration, the use of US, CT or fluoroscopy should be used. The fluid should be sent for Gram stain and culture, leukocyte count with differential, glucose and assessment for crystals. The synovial fluid is usually purulent, with a typical leukocyte count of 50,000 - to 150,000 cells/mm³ (mostly neutrophils). The likelihood of septic arthritis increases with increasing fluid leukocyte count. WBC and RBC count can also occur in noninfectious conditions so a clinical correlation must be made. Gram stain is positive in the majority of patients, sensitivity is 30 to 50 percent.

The patients fluid studies were as follows: Color: yellow, Appearance: Turbid, WBC: 64,140/cumm, RBC: 20,000/cumm, Neutrophils: 94%, Lymphocytes: 3%, Monocytes: 3%. Gram stain/ Culture: Staphylococcus lugdunensis isolated.

Inflammatory markers, CRP and ESR, are frequently elevated in patients with septic arthritis. Radiographs should be obtained, in order to rule out associated osteomyelitis or concurrent joint disease which can be present in rare cases.

For a list of educational lectures, grand rounds, workshops, and didactics please visit BrowardER.com and **click** on the **"Conference"** link.

All are welcome to attend!

In the setting of *S. Aureus*, echocardiography to evaluate for infective endocarditis is warranted in patients with known valvular heart disease and/or polyarticular involvement, in the absence of a clear source of infection. Echocardiography is not needed in patients with negative blood cultures and no clinical signs and symptoms of infective endocarditis.

Differential Diagnoses to consider in this patient include: Gonococcal arthritis, Tuberculous arthritis, Fungal arthritis, Gout or psuedogout, and reactive arthritis.

Treatment includes antibiotics, and othropedic consultation for surgical wash out should be considered based on severity and fluid aspiration.

Initial empiric treatment with Vancomycin IV (dose of 15 to 20 mg/kg/dose IV Q 8 to 12 hrs), was started on the patient.

Initial antibiotic regimen should be tailored to culture and susceptibility results when available. There is no role for intraarticular antibiotics, parenteral and oral antibiotic therapy produce therapeutic levels in the joint fluid for adequate treatment.



ABOUT THE AUTHOR

This month's case was written by Alexandra Gastesi. Alexandra is a 4th year medical student from NSU-COM. She did her emergency medicine rotation at BHMC in November 2018. Alexandra plans on pursuing a career in Internal Medicine after graduation.

REFERENCES

Borzio R, Mulchandani N, Pivec R, et al. Predictors of Septic Arthritis in the Adult Population. *Orthopedics* 2016; 39:e657.

Sharff KA, Richards EP, Townes JM. Clinical management of septic arthritis. *Curr Rheumatol Rep* 2013; 15:332.

UpToDate: Septic Arthritis in adults

Stutz G, Kuster MS, Kleinstück F, Gächter A. Arthroscopic management of septic arthritis: stages of infection and results. *Knee Surg Sports*

