

Chest Pain in a Young Male

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**CHIEF COMPLAINT:** Chest Pain

HISTORY OF PRESENT ILLNESS: 30 y/o M with a past medical history of IVDU who presents to the ED with chest pain for 4 days. Patient describes the pain as constant, sharp, radiating to the left mid-back, worse with inspiration and improved with lying flat. Patient reports his pain has been associated with fever, shortness of breath, non-productive cough and a 20 lb weight loss over the past 2 weeks. Out of concern, the patient presents to the ED for further evaluation.

PHYSICAL EXAM:

VS: HR 66, BP 131/70, O2 Sat 100% RA, RR 16, T 36.7 C

General: Ill-appearing, NAD**HEENT:** NCAT, EOMI, PERRLA**Neck:** neck supple, no meningismus**Pulm:** CTAB; no wheezing, no rales, no rhonchi; effort normal**CV:** RRR, normal heart sounds, no tenderness to palpation**Abdomen:** soft, non-tender, non-distended, bowel sounds present**Skin:** warm, dry, intact. No rash or erythema.**Neuro:** AAOx3, no gross deficits. CN II-XII intact.

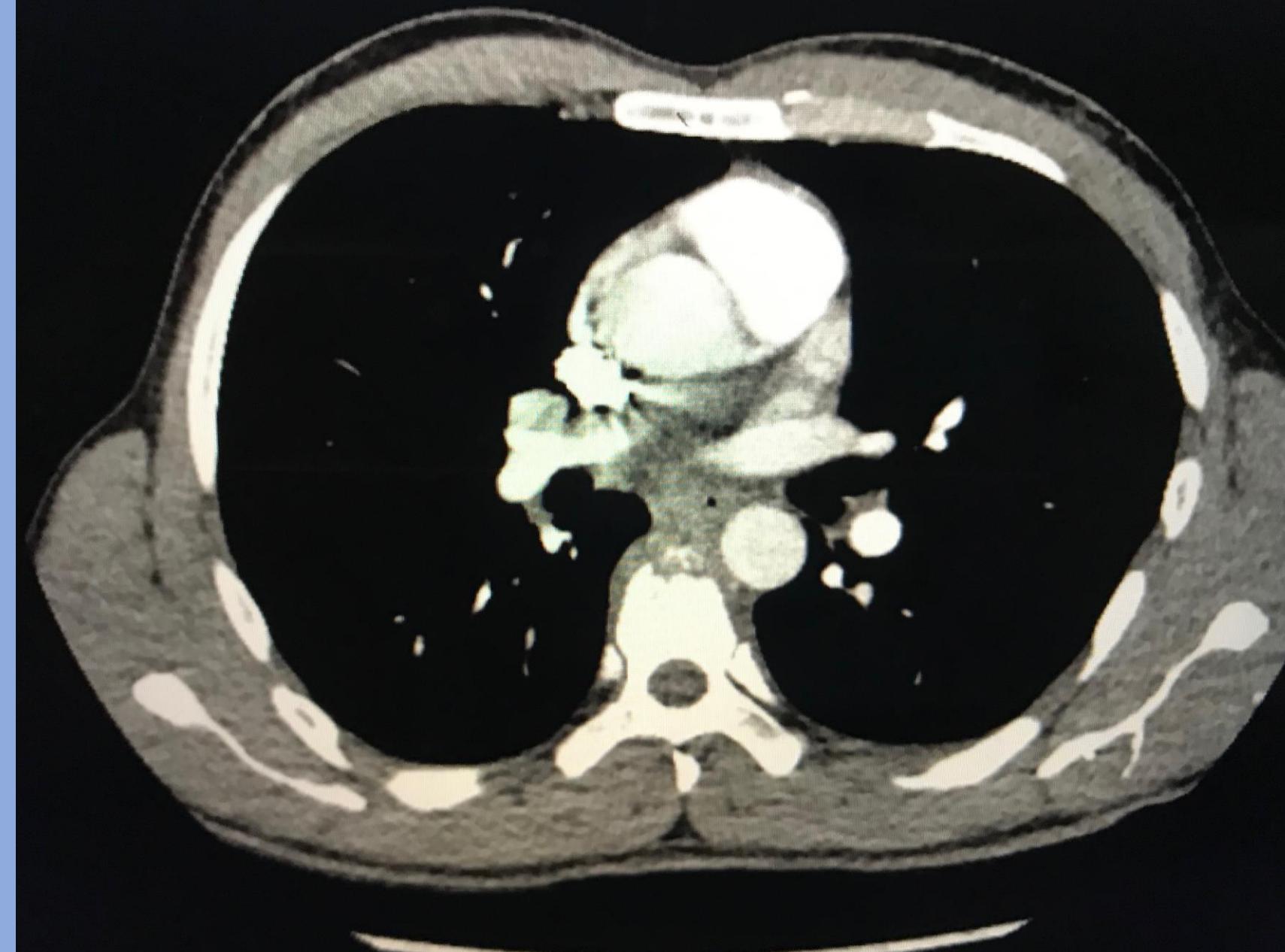
Strength normal.

Back: Tenderness to left thoracic spine**MSK:** normal range of motion, no deformity, distal pulses intact**LABORATORY DATA:****EKG:** SR 66 BPM without ST or T wave changes.**WBC:** 9.16 **Hgb:** 13.4 **Hct:** 42.6 **Platelets:** 310**Na:** 137 **K:** 4.7 **Cl:** 103 **CO2:** 30 **Glucose:** 87**BUN:** 16 **Cr:** 0.77 **Troponin:** <0.015**PT:** 13.1 **PTT:** 31.6 **INR:** 0.97**UA:** Negative **Procalcitonin:** 0.14 **TSH:** 0.402**Lactate:** 0.8 **ESR:** 55**Blood cultures:** pending**QUESTIONS:**

- What is the diagnosis in images 1, 2 and 3?
- What is the best type of imaging modality for this condition?

ANSWERS:

- Osteomyelitis/Discitis
- MRI of spine w/wo contrast

Image 1**Image 2****Image 3****CLINICAL COURSE:**

Based on the patient's history and physical exam, a CT angiogram chest (CTA) was ordered out of concern for possible pulmonary embolism. The findings on the CTA were negative for pulmonary embolism but significant for lucency and cortical disruption of the anterior endplate of T6-T7 with some paravertebral soft tissue swelling concerning for possible osteomyelitis/discitis. A STAT consult was placed to neurosurgery who recommended MRI of the thoracic spine with and without contrast for further evaluation. The patient was then started on empiric antibiotics and admitted for further work up. On review of the admission records, MRI thoracic spine was significant for osteomyelitis/discitis of T6/T7. Infectious disease was then consulted, and it was recommended to order a NM gallium scan and obtain an IR guided tissue biopsy. NM Gallium Scan was suspicious for discitis/osteomyelitis and IR guided biopsy was found to be positive for staph aureus. Additionally, 2D Echocardiogram was negative for Endocarditis and PICC line placed for long term IV antibiotics. Patient was discharged after 6 days of admission and received daily infusions of IV antibiotics and weekly labs: CBC, CMP, ESR, CRP and CK for 6 weeks.

CASE DISCUSSION:

- Osteomyelitis is an infection of vertebral body while discitis is an infection of the intervertebral space. These infections often occur together, and the incidence of osteomyelitis/discitis is 5.4 per 100,000 patients. Osteomyelitis/discitis is primarily a disease of adults with men being affected greater than women. Risk factors include pediatric patients, post-op patients, immunocompromised patients, history of infective endocarditis and history of IV drug abuse. Osteomyelitis/discitis is caused by either hematogenous seeding into vertebral body from distant or focal infectious source, direct inoculation from trauma, spinal procedure or surgery or contiguous spread from adjacent soft tissue infection. The most common organism is *Staph aureus* (50% cases), followed by *Streptococcus*, *Pseudomonas* and *E. Coli*.

- Patients can present in a variety of different ways but typically will report unremitting neck or back pain that awakens them at night with tenderness to palpation on exam. Patients pain is usually associated with fever (60-70%), neuro deficits (10-50%), elevated ESR and CRP (80%) and positive blood cultures (50%). As emergency physicians, it is critical to obtain an appropriate work up including essential labs and imaging such as an MRI. When osteomyelitis/discitis is suspected a patient should be started on empiric IV antibiotics and admitted for further workup including IR guided tissue biopsy, the gold standard for diagnosis.

TAKE HOME POINTS:

- Osteomyelitis/discitis is an emergent diagnosis and one that cannot be missed by emergency physicians.
- The incidence of IVDU is increasing given the recent opioid epidemic leading to the increase in the incidence of discitis/osteomyelitis.
- MRI of the spine is the preferred initial imaging study while IR guided tissue biopsy is the gold standard for diagnosis.