

## INTRODUCTION

- Osteomyelitis usually starts from a nearby infected tissue, a contaminated open wound, or a spread through the bloodstream. We present a case of osteomyelitis that presumably started from a nearby empyema.

## CASE PRESENTATION

- 83-year-old male with BPH presented with mild back pain and severe bilateral flank pain for three days
- He was hemodynamically stable, afebrile, and on room air
- Initial lab work showed an elevated white blood count (WBC) of 17,900, a creatinine of 2.42 mg/dL, lactate of 2.9mMol/L
- CT Abdomen/Pelvis showed bladder outflow obstruction that was drained with a Foley
- Urine cultures grew E.Coli, and the patient was started on ceftriaxone.
- The WBC continued to uptrend despite antibiotics. Due to concerns about another source of infection, further imaging was pursued, and the antibiotics were broadened to vancomycin, cefepime, and metronidazole.
- CT chest showed an area of pneumonia of the right lower lobe along with empyema.
- The empyema was drained, but the patient had a persistently elevated WBC of 30000 despite broad-spectrum antibiotics.
- A repeat CT chest was ordered on day 10 of hospitalization, showing an incidental finding of subtle progression of endplate erosions and disc space narrowing at T7-8 consistent with discitis
- A follow-up MRI spine showed osteomyelitis of the T7 vertebrae
- Due to the location and imaging findings of the osteomyelitis, it was presumed that the empyema contiguously spread to cause the infection

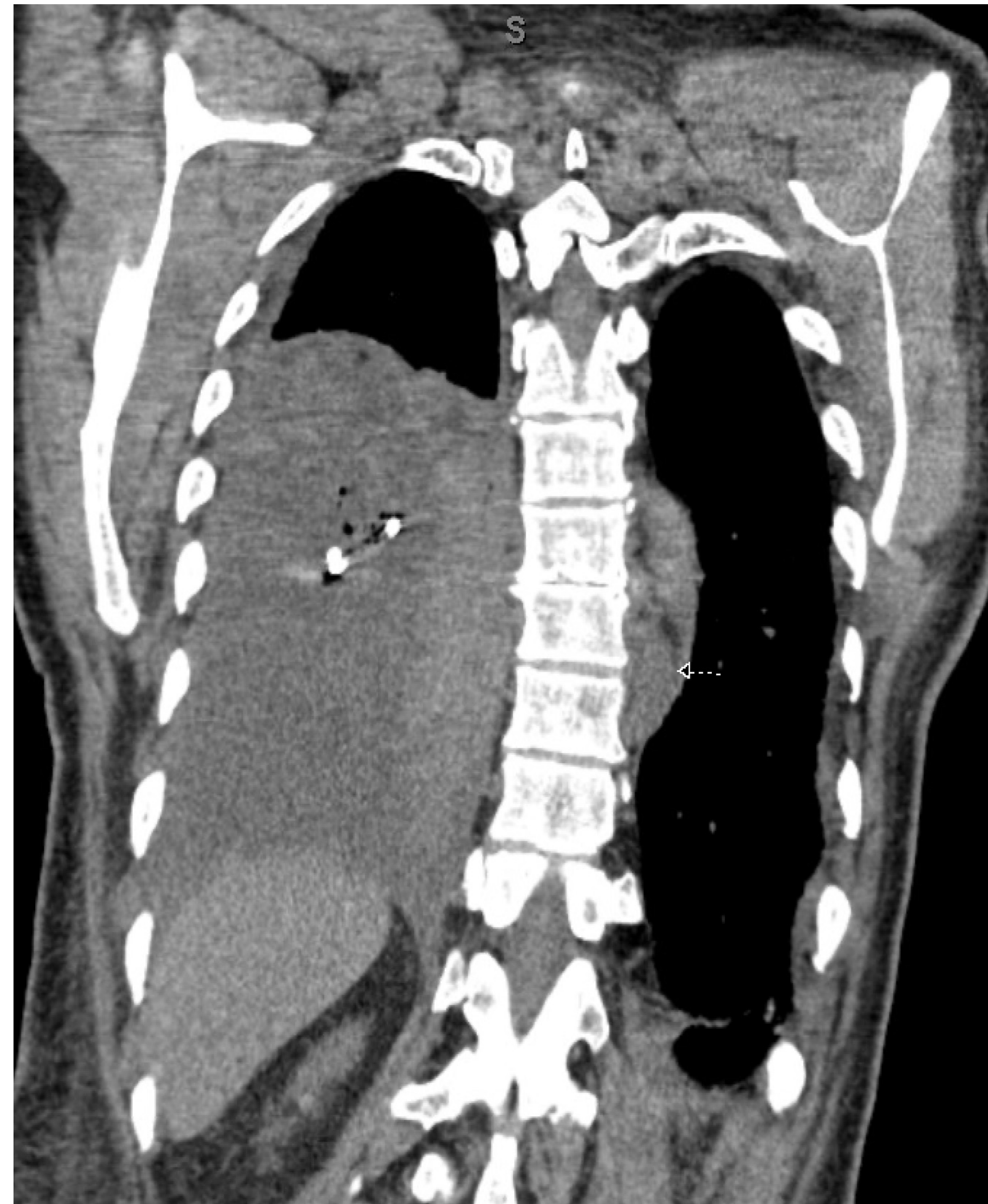


Figure 1: Computed tomography of chest showing endplate erosions and disc space narrowing at thoracic 7 and 8 vertebrae consistent with discitis. An arrow points to the small left paravertebral fluid collection at the same level.

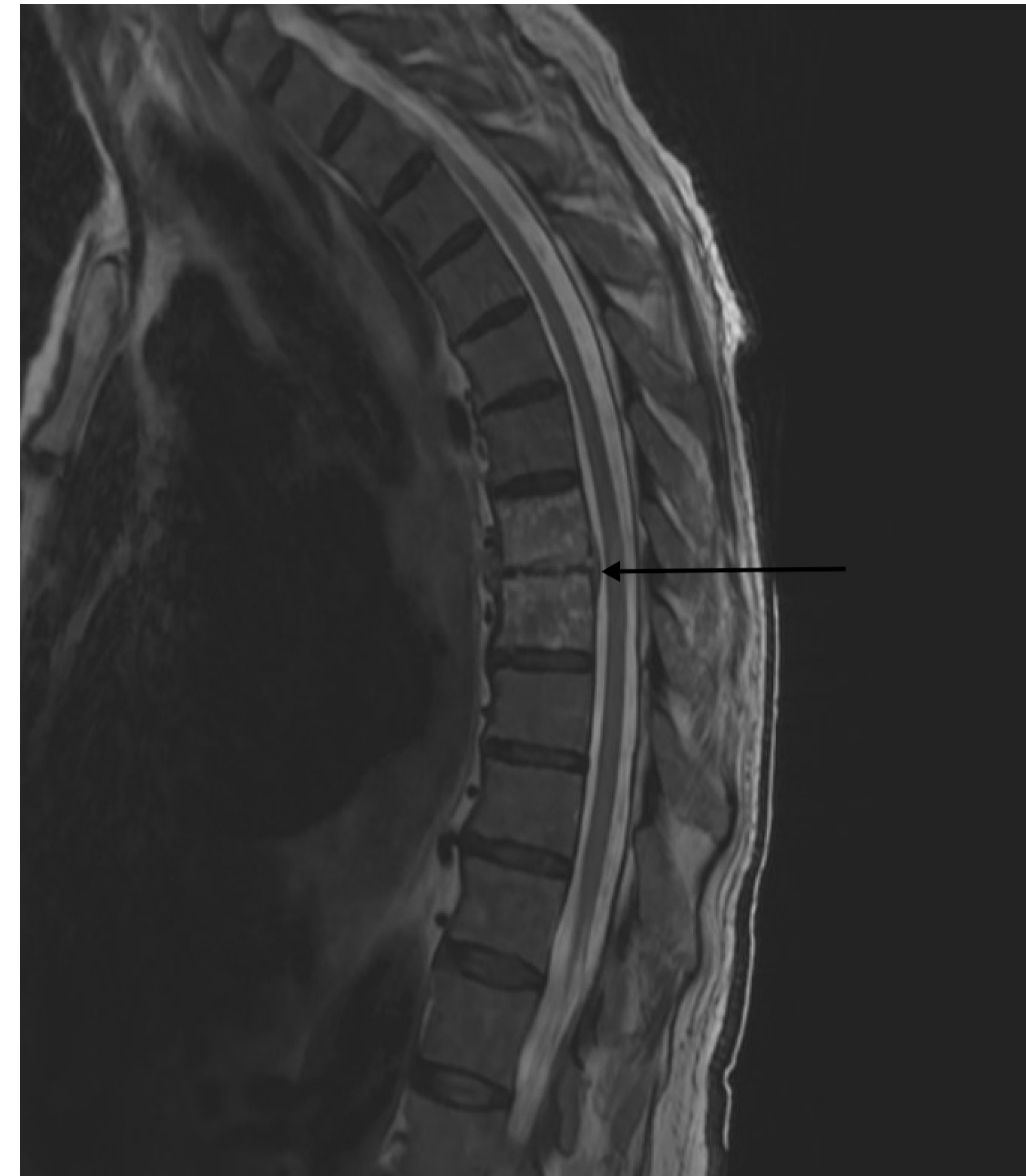


Figure 2: MRI demonstrating marrow signal changes and enhancement of the thoracic 7 and 8 vertebral bodies with mild marrow signal abnormality extending to the posterior elements. Paraspinal soft tissue signal change is seen with edema, minimal fluid and enhancement, and extending to the ventral epidural space. The arrow points to the area of discitis/osteomyelitis

## DISCUSSION

Empyema is very unlikely to spread to the spine to cause osteomyelitis due to:

1. Anatomical barriers such as parietal pleura, endothoracic fascia, and vertebral bodies
2. Vertebral osteomyelitis typically arises due to hematogenous dissemination. The lymphatic and vascular drainage of the pleura and spine are also distinct
3. An empyema is usually confined to the pleural space and does not enter the bloodstream due to the immune response in the pleural space.

## CONCLUSION

- Our case was difficult to manage as the patient was already on broad-spectrum antibiotics prior to the diagnosis of vertebral osteomyelitis.
- We deferred obtaining further microbiological data as we believed there would be low yield at the time of diagnosis.
- This led to the patient being prescribed a very broad antibiotic regimen consisting of vancomycin, cefepime, and metronidazole for a six-week duration.
- This case underscores the importance of keeping a high suspicion for infectious etiologies in individuals who present with back pain in the setting of leukocytosis.