

Spinal Pseudogout: Expanding the Differential for Back Pain in the Elderly

Deeksha Sarma, MD,¹ Rasha Abdulmassih, MD²

¹ Department of Medicine; ² Division of Infectious Diseases,, Allegheny Health Network, Pittsburgh, PA



Introduction

Calcium pyrophosphate disease (CPPD), or pseudogout, is a crystal arthropathy most often affecting the knees and wrists, and associated with prior joint trauma and elderly age. Here, we describe a case of CPPD of the spine, a clinical entity rarely described in the literature.

Case Presentation

- A 75 year old female with a history of lumbar spinal stenosis status post L4-L5 laminectomy 8 years ago presented to the hospital with worsening lower back pain with radiation to her legs bilaterally. She had been following with neurosurgery as an outpatient for lower back pain, with plans for a repeat L4-L5 laminectomy as an outpatient, but unfortunately developed severe and debilitating pain requiring admission.
- Preoperative laboratory workup revealed an elevated erythrocyte sedimentation rate (ESR).
- MRI done soon after admission revealed L3-L4 dorsal epidural space focal enhancement concerning for abscess, and edema of L4-L5 intervertebral disk (Figure 1), along with severe foraminal stenosis at several levels. She first underwent CT-guided aspiration of L4-L5 disk space, and soon thereafter underwent L3-L4 decompressive laminectomy and resection of epidural fluid collection.
- Unfortunately, cultures of this fluid collection were placed in antibiotic impregnated bottles, and so bone samples were sent to pathology for review. Rapid sequencing of bacterial ribosomal subunit 16S was negative for bacteria.
- Pathologic analysis of the samples revealed calcium pyrophosphate crystals within the disk space (Figure 2), consistent with pseudogout. Empiric antibiotics were discontinued and the patient was started on colchicine for pseudogout, with improvement in her symptoms.

Discussion

- CPPD is often idiopathic, however known risk factors include joint trauma, surgical history, and age
- Osteomyelitis and discitis are common misdiagnoses due to the edema and enhancement seen on imaging studies and associated elevated inflammatory markers.
- There are unfortunately no approved medications to prevent the deposition of calcium pyrophosphate crystals into tissues. Treatment is restricted to symptomatic control.

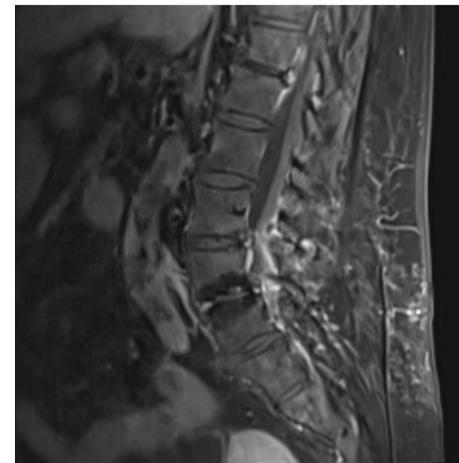


Figure 1. Disc space narrowing with edema and abnormal enhancement at the L4-L5 intervertebral disc, seen via magnetic resonance imaging.

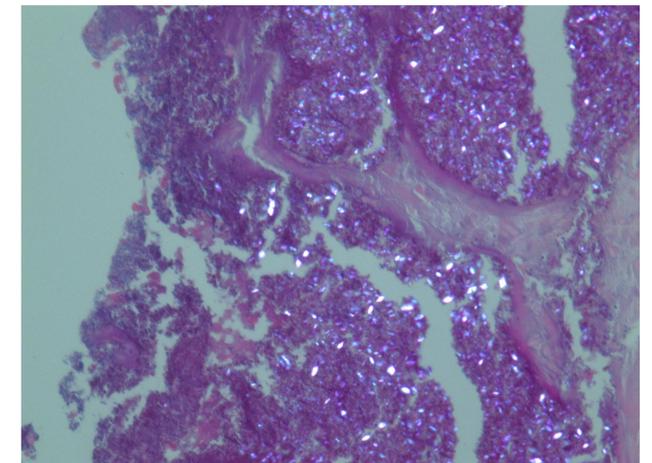


Figure 2. Fibrocartilage with CPPD is shown here between crossed polarizers. Note the bright rhomboid-shaped crystals embedded in a granular/basophilic background, resulting from hematoxylin binding to calcium.

Conclusion

Though published cases of spinal pseudogout are rare, they have noted similar imaging findings and typical course of initiation of empiric antibiotics despite sterile cultures. These isolated reports can facilitate the eventual establishment of clinical guidelines based on imaging findings for the diagnosis of spinal CPPD. Although rare, pseudogout should be considered in the differential diagnosis of LBP, radiculopathy or CES.

References

1. Greca I, Ben Gabr J, Perl A, Bryant S, Zaccarini D. Trauma Induced Calcium Pyrophosphate Deposition Disease of the Lumbar Spine. *Case Rep Rheumatol*. 2020;2020:3218350. doi:[10.1155/2020/321835](https://doi.org/10.1155/2020/321835).
2. Bridges KJ, Bullis CL, Wanchu A, Than KD. Pseudogout of the cervical and thoracic spine mimicking infection after lumbar fusion: case report. *Journal of Neurosurgery: Spine*. 2017;27(2):145-149. doi:[10.3171/2016.12.SPINE16979](https://doi.org/10.3171/2016.12.SPINE16979)
3. Lee J, Cho K-T, Kim E-J. Cauda equina syndrome caused by pseudogout involving the lumbar intervertebral disc. *J Korean Med Sci*. 2012;27(12):1591-1594. doi:[10.3346/jkms.2012.27.12.1591](https://doi.org/10.3346/jkms.2012.27.12.1591)