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Case Report

Pseudogout mimicking cervical spine osteomyelitis and ventral epidural abscess: A case report and literature review

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ABSTRACT

Background: Calcium pyrophosphate deposition disease (CPPD), also known as "pseudogout," is a crystal deposition arthropathy involving the synovial and periarticular tissues. Pseudogout rarely presents in the axial spine. Here, we present the case of an 80-year-old female patient admitted after a mechanical fall, initially misdiagnosed on computed tomography (CT)/magnetic resonance studies with cervical osteodiscitis/ventral epidural abscess that proved to be pseudogout.

Case Description: An 80-year-old female was admitted after a mechanical fall. The initial cervical CT scan showed multilevel degenerative changes with an acute C6 anterior wedge compression fracture, focal kyphosis, C5-6 disc space collapse, and endplate destruction. The magnetic resonance imaging showed marked contrast enhancement of the C5-6 vertebral bodies and disc space. An interventional radiology-guided biopsy of the C5-6 vertebral bodies and disc space was consistent with calcium pyrophosphate deposits, was diagnostic for pseudogout, and was negative for infection. She was managed conservatively with a rigid collar and seven days of oral prednisone.

Conclusion: CPPD involvement in the axial spine is rare. Prompt pathologic diagnosis should be pursued to rule out an infectious process.

Keywords: Cervical spine, Osteomyelitis, Pseudogout

INTRODUCTION

Calcium pyrophosphate deposition disease (CPPD) is a crystal deposition arthropathy involving the synovial and periarticular tissues.[4] Most patients affected by acute CPPD are over the age of 65 years, with 30–50% of patients over 85 years.[3]

Here, we describe a rare case in which a female patient presented after a mechanical fall with neurological deficits and imaging findings mimicking cervical osteomyelitis with ventral epidural abscess, found to be CPPD.

CASE PRESENTATION

An 80-year-old female was admitted after a mechanical fall. On examination, she only exhibited pain-limited weakness in the right lower extremity. The cervical computed tomography scan

showed an acute anterior wedge compression fracture at C6, causing focal kyphosis, with associated C5-6 disc space collapse and endplate destruction concerning possible osteomyelitis/discitis [Figure 1]. The magnetic resonance imaging with contrast showed marked enhancement of the C5-6 vertebral bodies and disc space, ventral epidural space, and posterior soft tissues [Figure 2]. Bloodwork showed an absence of leukocytosis, normal erythrocyte sedimentation rate, and slightly elevated C-reactive protein of 14.2. Blood cultures were negative.

She was started on empiric antibiotics and underwent interventional radiology (IR)-guided biopsy of the C5-C6 vertebral bodies and disc space that revealed calcium pyrophosphate deposits without evidence of infection. Her antibiotics were stopped, and she was treated with a 7-day course of oral prednisone, 40 mg daily. Her fractures were managed conservatively with a rigid collar. At 1-month follow-up, she remains without new symptoms or signs of myelopathy.

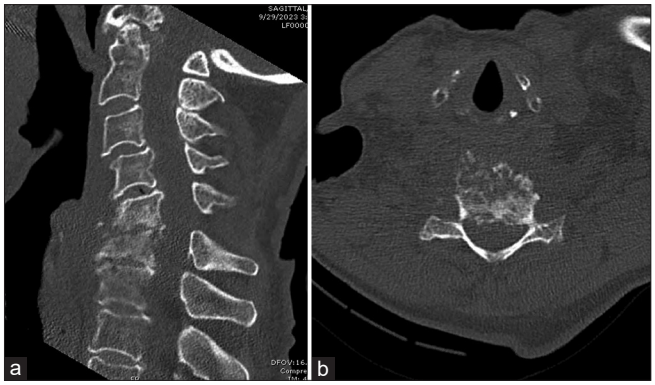

Figure 1: (a) A sagittal computed tomography scan of the cervical spine shows an acute anterior wedge compression fracture at C6 with associated C5-6 disc space collapse and endplate destruction. Kyphotic alignment and chronic C3-4 anterolisthesis are noted. (b) An axial computed tomography scan of the cervical spine at the C5-6 disc space level shows endplate destruction.

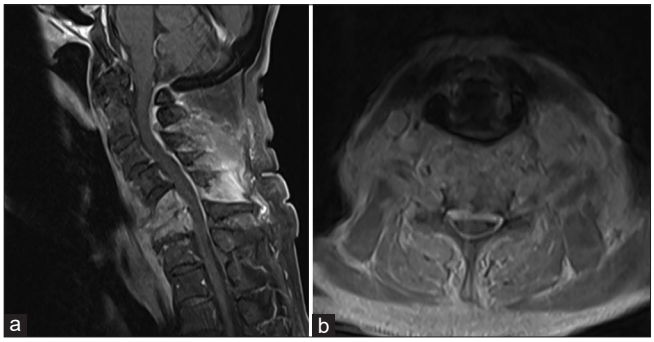

Figure 2: (a) Sagittal T1-weighted magnetic resonance imaging (MRI) of the cervical spine with contrast showing avid homogenous enhancement of the C5-6 vertebral bodies and disc space, ventral epidural space, and posterior soft tissues from C2-C6. (b) Axial T1-weighted MRI of the cervical spine with contrast at the C5-6 disc space level, showing ventral epidural enhancement and severe spinal canal stenosis.

DISCUSSION

The presence of pseudogout in the cervical spine causing neurologic symptoms is rare, with few cases reported in the literature. Ehioghae *et al.* reviewed a total of 20 clinical studies, including 69 patients with cervical spinal cord compression secondary to the presence of CPPD in the ligamentum flavum.[1] The vast majority of patients were treated with laminectomy ± instrumented fusion or laminoplasty. For surgical patients, those treated within five months of symptom onset had the greatest neurological recovery, with patients treated after 24 months failing to return to their presymptomatic baseline. Fye *et al.*[2]

Table 1: Reference summary table, adapted from Ehioghae *et al.*[1] and Fye *et al.*[2] reviews of calcium pyrophosphate deposition disease cases involving the cervical spine.

Variable	*n* (%)
Studies reviewed	27
Total patients	83
Gender	
Male	34 (41.0)
Female	49 (59.0)
Age (average)	
Male	74.2 years
Female	72.5 years
Comorbidities	
Diabetes mellitus	23 (50)
Hypertension	18 (39.1)
End-stage renal disease	3 (6.5)
Cardiovascular disease	2 (4.3)
COPD	2 (4.3)
Cervical segment	
C1-2	2 (2.5)
C2-3	8 (9.9)
C3-4	32 (39.5)
C4-5	43 (53.1)
C5-6	43 (53.1)
C6-7	24 (29.6)
C7-T1	5 (6.2)
Tissue involved	
Ligamentum flavum	79 (95.2)
Facet joint	2 (2.4)
PLL, transverse ligament	2 (2.4)
Intervention	
Laminectomy alone	50 (60.2)
Laminoplasty	27 (32.5)
Laminectomy+Fusion	4 (4.8)
Transoral pannus resection	1 (1.2)
Conservative (steroids, NSAIDs)	5 (6.0)

PLL: Posterior longitudinal ligament, NSAID: Nonsteroidal anti-inflammatory drug , COPD: Chronic obstructive pulmonary disease

additionally reviewed 26 patients with cervical myelopathy secondary to ligamentum flavum CPPD. Patients were treated with posterior decompression, and the vast majority saw clinical improvement. The patient demographics and interventions from these reviews are summarized in Table 1.

Pseudogout involvement of the anterior spinal column has seldom been reported. Mikhael *et al*. reported a 60-year-old male with intractable low back pain and bilateral lower extremity radiculopathy.[5] The MRI showed increased signal intensity within the L5-S1 disc space with extensive erosive changes and surrounding soft-tissue contrast enhancement. Following surgical intervention for presumed infection, cultures were negative, and pathology revealed the presence of CPPD.

The radiographic findings of endplate destruction and avid contrast enhancement of the disc space and vertebral bodies on MRI in our patient are often classic signs of osteodiscitis. Our patient underwent an IR-guided biopsy revealing CPPD that was effectively treated with nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids.

CONCLUSION

CPPD involvement in the axial spine is rare. We present an 80-year-old female patient with radiographic findings mimicking cervical osteodiscitis/ventral epidural abscess that proved to be CPPD following an IR-guided biopsy. She was effectively treated with steroids and NSAIDs.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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