

Chronic Cervical Compression Deformity in the Absence of Common Risk Factors: A Case Report

Adam Betcher, MD, Spencer Brodsky, MD, Moorice Caparo, MD, Sayed Wahezi, MD

Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY, Physical Medicine and Rehabilitation



BACKGROUND

Spontaneous cervical vertebral compression deformities are rare, and a clear understanding of their natural course remains incomplete.

- Unclear etiology in the absence of trauma or risk factors like osteoporosis or rheumatologic disease
- Vertebral height loss contributes to cervical kyphosis, worsening spinal alignment, and function
- Loss of lordosis leads to abnormal load distribution, increasing stress on spinal structures

This case presents a rare example of a severe cervical compression deformity in a patient with no history of trauma, cancer, osteoporosis, or metabolic disease.

CASE STUDY

A 51-year-old male presented to pain clinic with chronic neck pain that gradually worsened over one year.

Physical exam

- Limited passive range of motion in the neck in all planes except flexion
- No focal neurological findings or radicular pain

Diagnostic Modality

- MRI of the cervical spine to assess extent of vertebral involvement

Treatment

- Conservative medical management
- Limited treatment options for refractory pain

FINDINGS



Figure 1: Sagittal T1-Weighted MRI

- C6 Vertebral body: 70% height loss centrally with straightening of normal cervical lordosis
- No prevertebral soft tissue edema or effusion to suggest acute compression fracture
- Horizontal orientation of the marrow edema centered along the C5-C6 vertebral endplates favors degenerative endplate marrow edema.
- No prevertebral soft tissue edema or effusion to suggest an acute compression fracture deformity.
- C4 and C7 vertebral bodies: Mild chronic compression deformities with less than 20% height loss
- No spinal canal or foraminal narrowing

CASE CONTINUED

Management: Patient received course of physical therapy focused on posture correction and range-of-motion exercises

- Minimal improvement in pain
- No improvement in range of motion

Further workup: endocrinologic and rheumatologic evaluations ordered to investigate possible metabolic causes of the deformity

Future considerations: Orthopedic referral for Anterior Cervical Discectomy and Fusion (ACDF) to restore alignment and address compressive pathology

CONCLUSION

This case of cervical compression deformity with significant height loss in the C6 vertebral body, combined with the loss of cervical lordosis in a patient without metabolic disease or history of trauma, illustrates a rare and poorly understood cause of neck pain. Although the imaging findings in this case may be confused with a compression fracture, this is rare in the cervical region and the degenerative end plate changes suggest an insidious cause. Workup for metabolic disease and tailored management strategies are needed to address both the deformity and its biomechanical consequences.

REFERENCES

1. Beier G, et al. Determination of Physical Data of the Head I. Center of Gravity and Moments of Inertia of Human Heads. Munich, University of Munich, 1979.
2. Fehlings MG, et al. A Clinical Practice Guideline for the Management of Patients With Degenerative Cervical Myelopathy. Global Spine J, 2017.
3. Maki Y, Takayama M, Kawasaki T, & Miyakoshi A. Progressive Spontaneous Cervical Compression Fracture After Long-Term Corticosteroid Use. Cureus, 2023.
4. Patwardhan AG, et al. Cervical Sagittal Balance: A Biomechanical Perspective. European Spine J, 2018.