Case Report

Cervical Spine Osteochondroma: Rare Presentation of a Common Lesion

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Abstract

Objective: This case report describes the rare presentation of an osteochondroma arising from the anterior body of C4. This is the first known reported case of an osteochondroma arising from the anterior vertebral body of C4.
Clinical Features: A 24-year-old male sought consultation with his primary care physician for neck pain. The patient was then referred for cervical radiography and for chiropractic evaluation and treatment. An osseous lesion was noted arising from the C4 vertebra. Osteochondroma was suspected; however, chondrosarcoma could not be ruled out. After orthopedic consultation, osteochondroma was the confirmed diagnosis with the lesion likely incidental to the chief complaint.
Intervention and Outcome: The patient underwent 12 chiropractic treatments for 8 weeks including thoracic and cervical high-velocity, low-amplitude spinal manipulation, interferential current, therapeutic ultrasound, stretching, and therapeutic exercise of the paraspinal musculature. Reevaluation revealed the patient experienced no pain with occupational duties, activities of daily living, and improved sleep quality. He was discharged with a home stretching and strengthening regimen targeting the thoracic and cervical paraspinal musculature. Follow-up at 6 months revealed no return of symptoms.
Conclusion: We described the first case of an osteochondroma arising from the anterior aspect of the C4 vertebral body. The clinical evaluation, differential diagnosis, imaging workup, and treatment are addressed. This case also demonstrates that an asymptomatic osteochondroma of the cervical spine may be a relative, not an absolute, contraindication for high-velocity, low-amplitude spinal manipulation. (J Manipulative Physiol Ther 2010;33:711-715)
Key Indexing Terms: *Chiropractic; Osteochondroma; Cervical Vertebrae; Bone Neoplasms; Spinal Manipulation*

Osteochondroma, or osteocartilaginous exostosis, is the most common skeletal neoplasm. Osteochondromas are benign and may be solitary or multiple.[1] There is potential for malignant degeneration, estimated at approximately 1%. Solitary osteochondroma may occur spontaneously or after irradiation or accidental injury.[2] When multiple, there is a strong familial incidence and is known as *hereditary multiple exostoses* (HME), an autosomal dominant disorder with variable penetrance.[1] Osteochondroma is most commonly located in the appendicular skeleton and most often involves the long bones.[2] Only 1% to 4% of cases involve the spine, of which half involve the cervical spine, making cervical spine osteochondroma a rare entity.[3-5] Two cases of solitary osteochondroma arising from the anterior aspect of the vertebral bodies of C2 and C7 have been reported[4,6]; however, none have been reported for C4. We report the first case of solitary osteochondroma arising from the anterior body of C4.

Case Report

A 24-year-old male was referred by an internist for chiropractic evaluation and radiographic examination at a local imaging center for a chief complaint of cervicalgia and pain in the left trapezius of 1-month duration. The onset of pain was gradual with range of motion (ROM) limitations and pain during active and resisted ROM. A pain rating of 8 of 10 on the Numeric Pain Scale was recorded. The pain was constant with no relief and interfered with occupational and recreational activities. Vital signs were within normal limits. The Valsalva maneuver was negative. The cranial nerves II to XII were

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Fig 1. *Neutral lateral radiograph demonstrated a broad-based (sessile) exostosis containing cartilaginous matrix arising from the anterior aspect of C4 vertebral body. There is the suggestion of subtle cortical disruption at the anteroinferior aspect of C4. There is minimal displacement of the prevertebral soft tissues at C3/C4.*

Fig 2. *Sagittal T2-weighted MRI findings included a left parasagittal bony protuberance with well-defined T2 hyperintensity anteriorly, which represented the cartilaginous cap (white arrowhead). Hyperintensity on T2 is characteristic of hyaline cartilage. Again noted is prevertebral soft tissue swelling. Also noted is a disk herniation at C6/C7.*

intact. Upper extremity deep tendon reflexes were 2+ and symmetric bilaterally. An orthopedic examination revealed provocation of pain with cervical distraction maneuver. Testing for neural compression and vascular signs was negative. Before the initial chiropractic visit, radiography was ordered by the internist. Radiography revealed a broad-based exostosis with chondroid (cartilaginous) matrix arising from the mid and anterior aspect of the C4 vertebral body (Fig 1). The exostosis extended anteriorly and effaced the prevertebral soft tissues. There was cortical disruption suggested at the anteroinferior aspect of the lesion. The remainder of the examination was unremarkable. A differential diagnosis of osteochondroma and secondary chondrosarcoma was considered. Because of the concern raised by the cortical disruption, malignant degeneration, although unusual in this age group, could not be ruled out. A primary osseous lesion was suspected, and magnetic resonance imaging (MRI) with and without contrast was ordered to further characterize the lesion.

Magnetic resonance findings included a left parasagitally located bony protuberance arising from C4 (Figs 2 and 3) with an adjacent, well-defined rim lesion of T2 hyperintensity, which measured 8.0 mm in maximum anteroposterior dimension (Fig 4). This area of T2 hyperintensity was consistent with the appearance of a hyaline cartilage cap, characteristic of an osteocartilaginous neoplasm. The area noted on the T2 hyperintense lesion was enhanced after administration of gadolinium (Fig 5). Differential diagnoses again included osteochondroma and chondrosarcoma. The patient was seen by an orthopedic surgeon who determined that the lesion was consistent with an osteochondroma, established by virtue of his clinical experience. The lesion was considered an incidental finding, and for the patient's presenting complaint, the diagnosis of cervical disk displacement (Fig 2) (confirmed with MRI), cervicalgia, myospasm, and accompanying vertebral segmental dysfunction was given. The patient was informed about the rarity of malignant transformation