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Cortical Osteoid Osteoma of the Right C4 Transverse Process: An Unusual Cervical Localization

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ABSTRACT

Osteoid osteoma is a benign osteogenic tumor that predominantly affects the long bones of adolescents and young adults. Spinal involvement is less common, and cervical localization remains rare.
We report the case of a 19-year-old patient presenting with chronic right-sided cervical pain evolving over several months, predominantly nocturnal and resistant to conventional analgesics. Clinical examination was unremarkable, with no fever, cervical stiffness, or neurological deficit.
Computed tomography revealed a small intracortical lesion involving the right C4 transverse process, containing a central calcified nidus surrounded by marked reactive sclerosis, without extension into the spinal canal.
Magnetic resonance imaging demonstrated a nidus appearing hypointense on both T1- and T2-weighted sequences, associated with extensive bone marrow edema and paravertebral inflammatory changes, with intense enhancement following gadolinium administration.
These imaging findings were consistent with cortical osteoid osteoma.

KEYWORDS :

Osteoid osteoma; Cervical spine; Transverse process; Magnetic resonance imaging; Computed tomography

MAIN ARTICLE

INTRODUCTION

Osteoid osteoma is a benign osteoblastic tumor accounting for approximately 10–12% of benign bone tumors and predominantly affecting adolescents and young adults [1,2]. The lesion is characterized by a small nidus surrounded by reactive sclerosis.

Spinal involvement occurs in approximately 10–20% of cases, most commonly affecting the posterior elements [3]. Cervical localization is less frequent and may pose diagnostic challenges due to marked inflammatory reaction on magnetic resonance imaging, which can obscure the nidus and mimic infection or aggressive lesions [4]. Computed tomography remains the most reliable modality for identifying the nidus and establishing the diagnosis [4].

CASE REPORT

A 19-year-old patient presented with persistent right-sided cervical pain evolving over several months. The pain was progressive, predominantly nocturnal, and resistant to conventional analgesics. There was no history of trauma. Clinical examination revealed no fever, cervical stiffness, or neurological deficit.

Magnetic resonance imaging of the cervical spine was initially performed. It demonstrated a rounded cortical-based nodular lesion centered on the right transverse process of C4. The lesion showed a central hypointense nidus on both T1- and T2-weighted sequences. Extensive surrounding bone marrow edema was observed on T2-weighted and STIR sequences, extending to adjacent osseous structures and associated with inflammatory changes in the ipsilateral paravertebral soft tissues. Following gadolinium administration, intense and homogeneous enhancement of the lesion and surrounding reactive changes was noted (Figure 1).

A complementary computed tomography scan was performed. It revealed a small, well-defined intracortical lucent lesion measuring less than 1 cm, centered on the right C4 transverse process, with a central calcified nidus surrounded by dense reactive sclerosis. There was no cortical destruction, aggressive periosteal reaction, or extension into the spinal canal or neural foramina (Figure 2).

The imaging findings were consistent with cortical osteoid osteoma.

The combined imaging findings were diagnostic of a cortical osteoid osteoma of the right C4 transverse process.

DISCUSSION

Osteoid osteoma is a benign bone-forming tumor predominantly affecting adolescents and young adults [1]. Although it most commonly involves long bones, spinal localization accounts for approximately 10–20% of cases, usually affecting the posterior elements [2]. Cervical spine involvement is uncommon and may lead to diagnostic delay.

The typical clinical presentation includes nocturnal pain relieved by nonsteroidal anti-inflammatory drugs, related to prostaglandin production within the nidus [5].

Magnetic resonance imaging may be misleading due to extensive bone marrow edema and inflammatory changes, potentially mimicking infection or neoplastic lesions [4].

Computed tomography remains the gold standard for identifying the nidus, which appears as a small intracortical lucent lesion with central mineralization and surrounding sclerosis [4,5].

The main differential diagnosis includes osteoblastoma and Brodie abscess. Minimally invasive treatment, particularly CT-guided radiofrequency ablation, is currently the preferred therapeutic option [7].

CONCLUSION

Cortical osteoid osteoma of the cervical spine is a rare entity that may present with misleading MRI findings. Computed tomography is essential for diagnosis. Awareness of this entity allows accurate diagnosis and appropriate management.

FIGURES:

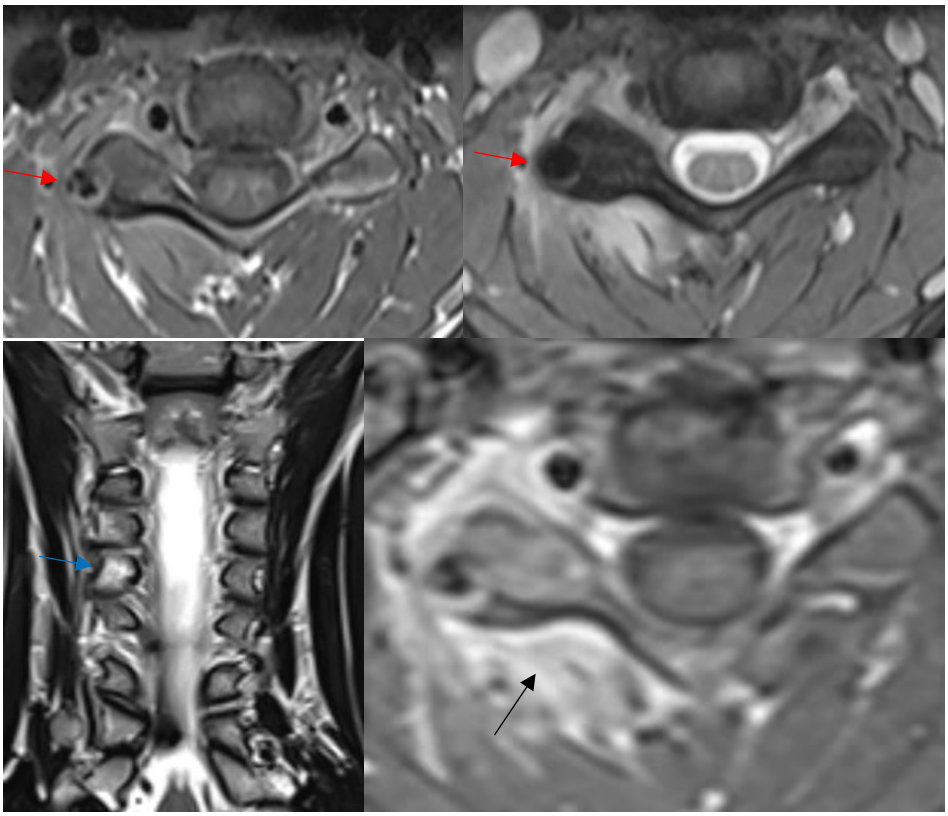

Figure 1: Cervical spine MRI showing a hypointense cortical nidus in the right C4 transverse process on T1- and T2-weighted images (red arrow), with surrounding bone marrow edema on STIR (blue arrow) and enhancement after gadolinium (black arrow).

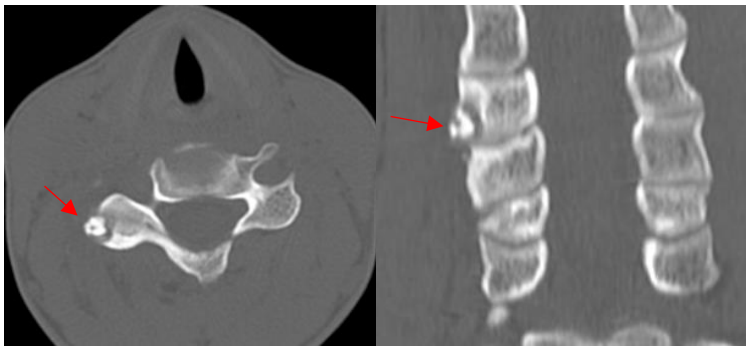

Figure 2: Coronal and axial CT images showing a small intracortical lesion of the right C4 transverse process with a central calcified nidus and surrounding sclerosis, without spinal canal extension.

ACKNOWLEDGEMENTS

The authors declare that they have no conflicts of interest.

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