Osteoid Osteoma of the Cervical Spine in Nine Years Female Child: A Case Report and Review of Literature

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ABSTRACT
Osteoid osteoma is a rare bone tumor initially described by Jaffe in 1935. It is a bone-producing tumor that is most frequently observed in the lower extremities of children or young adults (11–22 years). Osteoid osteoma is differentiated from osteoblastoma according to size. Osteoid osteoma is smaller than 1.5 cm in diameter. Ten percent of cases involve the spine. Lumbar spine is the commonest site (59%) with the neural arch being the usual location (75%). The tumor is observed in the vertebral column with a predilection for posterior elements of the vertebrae. The atypical MR imaging features and the importance of CT scan in the diagnosis are highlighted.

Keywords: Cervical spine, Decompressive laminectomy, Nidus, Osteoid osteoma.

INTRODUCTION
Osteoid osteoma is a rare bone tumor initially described by Jaffe in 1935. It is a bone-producing tumor that is most frequently observed in the lower extremities of children or young adults (11–22 years). Osteoid osteoma is differentiated from osteoblastoma according to size. Osteoid osteoma is smaller than 1.5 cm in diameter. Ten percent of cases involve the spine. Lumbar spine is the commonest site (59%) with the neural arch being the usual location (75%). The tumor is observed in the vertebral column with a predilection for posterior elements of the vertebrae. The atypical magnetic resonance (MR) imaging features and the importance of computed tomography (CT) scan in the diagnosis are highlighted.

CASE REPORT
Nine years female patient came with complain of right upper limb radiculopathy since one and a half year with neck pain over right side which is very severe in night. Radiculopathy was increased in nature since last 15 days. Examination reveals no visible neck deformity, no scar, no swelling, no local warmth, tenderness diffuse over back of the neck region, no motor weakness but sensory loss up to 50% over C5 to C6 dermatome, normal reflex. Patient was treated out side our health center with anti-tubercular treatment since one year but no improvement in symptom. Patient was referred to us for further management. We went for some diagnostic examination in like MRI and CT scan of cervical spine region. Magnetic resonance showing an axial section through the cervical spine in a T2 sequence fat supression image and T2 sequence, demonstrating the tumor niche and the sclerosis halo (nidus) (Figs 1A and B). Magnetic resonance showing a sagittal section through the cervical spine in a T2 sequence image, demonstrating the affected posterior neural arch from C3 to C6 (Fig. 1C). Magnetic resonance showing a coronal section through the cervical spine in a T2 sequence image, demonstrating the affected posterior neural arch (Fig. 1D). After showing those images she was miss diagnosed with Koch spine and given ATT as a treatment. We have done CT scan of this patient which shows CT scan showing (Fig. 2) a axial section through the cervical spine C5 to C6 level, demonstrating the tumor niche and the sclerosis halo (nidus). Computed tomography report came with several differential diagnosis like osteoblastoma, heal TB, osteoid osteoma, etc. We have plan for decompressive right side hemilaminectomy at C3 to C6 level and tissue biopsy. Patient went under surgery came out without any complication. Postoperative follow-up was very satisfactory without any radiculopathy. Histopathology report shows irregular masses of eosinophilic osteoid (thin arrow); densely—staining bone (mineralized osteoid) (thick arrow); many osteoblasts (curved arrow) in the vascular connective tissue between the sheets of osteoid and bone, this picture s/o osteoid osteoma (Fig. 3).

DISCUSSION
Described by Jaffe in 1935, osteoid osteoma is a benign skeletal neoplasm consisting of a highly vascularized...
Figs 1A to D: (A) Magnetic resonance showing a axial section through the cervical spine in a T2 sequence fat suppression image, demonstrating the tumor niche and the sclerosis halo (nidus), (B) magnetic resonance showing a axial section through the cervical spine C5 to C6 level in a T2 sequence, demonstrating the tumor niche and the sclerosis halo (nidus), (C) magnetic resonance showing a sagittal section through the cervical spine in a T2 sequence image, demonstrating the affected posterior neural arch from C3 to C6 and (D) magnetic resonance showing a coronal section through the cervical spine in a T2 sequence image, demonstrating the tumor affected right-side posterior neural arch.

Fig. 2: Computed tomography scan showing a axial section through the cervical spine C5 to C6 level, demonstrating the tumor niche and the sclerosis halo (nidus).

Fig. 3: Irregular masses of eosinophilic osteoid (thin arrow); densely-staining bone (mineralized osteoid) (thick arrow); many osteoblasts (curved arrow) in the vascular connective tissue between the sheets of osteoid and bone. This picture s/o osteoid osteoma.

nidus of connective tissue surrounded by sclerotic bone. The nidus is usually less than 15 mm and when larger is classified as osteoblastoma. There have been only six previously reported cases of osteoid osteoma of cervical vertebral body. In our case, the lesion was involving the lamina. Patients with osteoid osteoma are usually
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younger and rarely present after 30 years of age. Approximately, half of all cases present between the ages of 10 and 20 years. The male:female ratio is 2:4:1. Local pain and tenderness is the presenting symptom in over 95% of cases. Scoliosis and torticollis may be presenting features in thoracolumbar and cervical spine regions. The complex spinal anatomy may make osteoid osteoma almost impossible to visualize on conventional radiography. Radio-isotope bone scanning is more reliable than conventional radiography. The intense osteoblastic activity within the nidus results in a focal uptake surrounded by a decreased uptake owing to the sclerotic bone creating the ‘double density’ sign that is typical. Computed tomography is the most reliable imaging modality in the diagnosis. Typically, dense sclerosis surrounding a lytic lesion that may have a central calcific nidus is noted. On MRI, osteoid osteoma demonstrates a heterogeneous appearance. The calcification within the nidus and surrounding bony sclerosis are of low signal intensity on short repetition time (TR) and long TR images. Hence, the nidus is usually less conspicuous on MR images than CT scans depending on the extent of calcification. In contrast, marrow edema and soft tissue inflammation are usually well depicted by MR imaging as high signal intensity on long TR images.

CONCLUSION

Osteoid osteoma of cervical spine is a rare entity. Computed tomography scan is the imaging modality of choice for the diagnosis. However, in the given clinical context of patients presenting with neck pain, MRI is more commonly performed to rule out disk disease. Therefore, it is imperative to recognize the important but atypical MR imaging features of this entity. Computed tomography scan will then be the most valuable complimentary investigation to confirm the diagnosis.

REFERENCES