A rare case of osteoid osteoma of the cervical vertebral body

Clinical History:

A 21-year-old female patient presented to the orthopaedic outpatient department with complaints of non-traumatic neck pain relieved by analgesics. The local and neurological examination was normal. Laboratory investigations were within normal limits. The patient was referred for radiograph of the cervical spine and later MRI was done.

Imaging Findings:

Plain radiograph of cervical spine lateral view showed straightening of cervical spine [Fig. 1]. MRI of cervical spine revealed altered signal intensity of C5 vertebral body in the form of T2/STIR hyperintensity and T1 hypointensity suggestive of marrow oedema [Fig. 2]. No evidence of abnormal post contrast enhancement noted in the lesion. Rest of the vertebrae, intervertebral discs and cervical cord were normal. Correlative CT study showed a well-defined hypodense lesion (7mm) with central sclerotic nidus and perilesional sclerosis in right postero-lateral aspect of C5 vertebral body [Fig. 3].

Discussion:

Osteoid osteoma is a benign osteoblastic lesion containing a small nidus of highly vascular connective tissue with varying amounts of osteoblastic elements and surrounding sclerotic bone [1, 2]. Clinically patients present with localised pain over months which aggravates with movement and promptly relieves by analgesics [1, 3, 4]. The response to salicylates has recently been found to be equivocal (between 30%-75%) [5]. Majority of the cases occur during 5-25 years of age, with a male to female ratio of 2-3:1 [1, 2, 3]. There are two types of osteoid osteoma—cortical (common) and cancellous/medullary variety [5, 6]. Commonest sites of occurrence are the long bones [1, 2]. Involvement of vertebra is uncommon (in 10% of cases). If involved, however, posterior elements are the common sites [2] with only around 7% involving the vertebral body [1, 4].

Conventional radiography is helpful in visualising the radiolucent/sclerotic nidus of the lesion but most of the times it fails to show the same in a spinal lesion due to the complex spinal anatomy [1, 6, 7]. Radionuclide scan (Tc 99 MDP) is a more sensitive and reliable modality than radiography as it is invariably positive and shows the characteristic “double density” sign [1, 5, 8]. CT helps in localising the nidus of the lesion with consistency, making it an accurate and reliable investigation (gold standard) particularly in lesions located in the spine [1, 8, 9]. The nidus is seen as a well-defined, smooth-margined, hypodense region with surrounding sclerosis. MRI shows a variable appearance depending upon the extent of calcification of nidus, presence of reactive sclerosis.
and size of the fibrovascular zone [1]. Predominantly the lesion is of low to intermediate signal intensity on T1 and low to high signal intensity on T2 weighted images [7, 8, 10]. Osteoid osteoma’s variable appearance on MRI has led to various misdiagnoses such as malignant tumour, osteomyelitis and stress fracture [9]. In majority of cases the actual nidus is not defined on MRI, but it is sensitive in detecting reactive marrow oedema [1, 2, 9] and effects on the spinal cord [7].

CT with or without radionuclide scintigraphy is the best modality and MRI is never interpreted without a radiograph/CT evaluation [9]. Surgical excision of the nidus is the definitive therapy especially in case of children and adolescents in order to prevent structural deformity [5]. Other options include medical management - NSAIDs with observation, CT guided percutaneous ablation techniques [5].

**Differential Diagnosis List:** Osteoid osteoma of the cervical vertebral body., Osteoblastoma, Stress fracture, Osteoblastic metastasis

**Final Diagnosis:** Osteoid osteoma of the cervical vertebral body.

**References:**


Description: Lateral view of the neck showing straightening of the cervical spine

Origin: Department of Radio Diagnosis Father Muller Medical College Mangalore, India
Description: T1 weighted sagittal MRI of cervical spine showing hypointense signal in body of C5 vertebra (which is hyperintense on T2WI) suggestive of reactive marrow oedema. Origin: Department of Radio Diagnosis Father Muller Medical College Mangalore, India
Description: T2 weighted sagittal MRI of cervical spine showing hyperintense signal in body of C5 vertebra (which is hypointense on T1WI) suggestive of reactive marrow oedema. Origin: Department of Radio Diagnosis Father Muller Medical College Mangalore, India
Figure 3

*Description:* Axial CT at the level of C5 vertebra showing a hypodense lesion with central sclerotic nidus in the right posterolateral aspect of the body. *Origin:* Department of Radio Diagnosis Father Muller Medical College Mangalore, India
**Description:** Reformatted sagittal CT image of cervical spine showing hypodense lesion with central sclerotic nidus and perilesional sclerosis along the superior margin of body of C5 vertebra. **Origin:** Department of Radio Diagnosis Father Muller Medical College Mangalore, India
Description: Coronal reformatted CT image showing a hypodense lesion with central sclerotic nidus in the superior aspect of the body of C5 vertebra on the right side. Origin: Department of Radio Diagnosis Father Muller Medical College Mangalore, India