Unusual manifestation of vertebral osteoid osteoma: case report

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Abstract We report the case of a 64 year-old man with a clinical history suggesting a low thoracic-cord involvement, in which an unexpected vertebral osteoid osteoma was discovered. The patient underwent MRI of the thoraco-lumbar spine, which included sagittal and axial T1-weighted images, and sagittal double-echo T2-weighted images. Subsequently, CT scan was carried out with 2-mm-thick axial sections, aimed at T10 vertebra. Magnetic resonance imaging disclosed an extra-axial mass at T10 level. Computed tomography scan suggested an osteoid osteoma of the tenth thoracic vertebra, involving the lamina with marked sclerosis and prevalently endocanal extension. Histology following surgical resection confirmed the diagnosis. In the reported case CT scan provided the correct pre-operative diagnosis of osteoid osteoma despite its unusual clinical–anamnestic presentation. Magnetic resonance imaging was useful in establishing the relationship of the neoplasm with the spinal cord.

Keywords Spine · Osteoid · Osteoma · Imaging

Introduction

We present the case of a vertebral osteoid osteoma typically located in the posterior elements characterized by unusual clinical manifestation and imaging features.

Clinical history was not as distinctive as it generally is because the patient suffered no pain. Magnetic resonance imaging could not differentiate between a calcified meningioma and a bone tumor. Conventional spinal X-ray film was normal. Computed tomography allowed the correct diagnosis, even in the presence of some unusual findings.

Case report

A 64-year-old man was admitted into the Division of Neurology because of a 1-year history of slowly progressive weakness, paraesthesia of the left lower limb, and impotentina erigendi. On admission, neurological examination showed monoparesis of the...
lower left limb and hypoesthesia below T10, particularly on the left side. He had a long history of arterial hypertension, diabetes mellitus, and dyslipidemia on treatment.

Spinal thoracolumbar MRI showed a large extra-dural mass dorsally located in the spinal canal at T10 level, pressing the cord forward and to the right. The lesion showed a signal intermediate-to-low on T1-weighted images (Fig. 1a) and low on T2-weighted (Fig. 1b) images, as did the adjacent sclerotic lamina. Contrast-enhanced images showed a mild partial impregnation of the mass (Fig. 2). These MR appearances were thought to be consistent with a calcified meningioma accompanied by bone changes. Plain X-ray film did not show abnormalities. In particular, there was no evidence of scoliosis. Thin-section CT scan (Fig. 3) detected a dense mass entering the spinal canal at T10 level with a partially ossified central nidus surrounded by marked sclerosis involving the surface of the adjacent lamina. Neither lytic alteration nor expansion of the bone was present. The diagnosis of an unusual osteoid osteoma was suggested.

At surgery, a very hard lesion was found, which was not dissectable from the lamina and firmly adhered to the dura mater. By marginal drilling, the whole mass/lamina was separated from the sound arch portion, then resected piece by piece using rongeurs, and totally excised together with the involved dura. The procedure afforded excellent decompression of the cord. A dural patch was inserted. Immediately after the operation, worsening of the left lower limb paresis and weakness in the right limb occurred but they resolved rapidly in a few days. Histological examination revealed the presence of an osteoid osteoma. The tumor consisted of trabeculae of mature bone in an irregular pattern (Fig. 4). The osteoblastic activity was scant. The stroma consisted of small and congested thin wall blood vessels surrounded by connective tissue rich in fibroblasts. Scattered lymphocytes and plasmacells had occasionally been noted. On discharge, good recovery of neurological deficit was noted. At 3-month follow-up neurological examination was normal.

**Discussion**

Osteoid osteoma (OO) is a common bone disease, making up 2.6% of all bone tumors and 11% of all benign tumors, seen in infants and young adults (first two decades of life) predominantly male.

This neoplasm affects mostly the long bones and is occasionally situated in the spine, where it usually involves the lumbar segment and the posterior elements [1, 2]. Osteoid osteoma is characterized by a central nidus of osteoid tissue with variable degree of mineralization containing richly vascularized connective tissue, surrounded by a variable amount of sclerotic reaction. Some authors regard this tumor as closely related to, but different from, osteoblastoma. Whereas OO is a lesion of finite growth, osteoblastoma has unlimited growth potential. Other authors consider OO and osteoblastoma as the same entity because of their striking histopathological similarity and keep these two lesions separate by size. Osteoid osteoma is the smaller neoplasm, rarely exceeding 1 cm. Osteoblastoma is the larger tumor, usually