

Ossification of the Yellow Ligament in thoracic spine: a case report

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Abstract: Ossifications of yellow ligament (OYL) and calcification of yellow ligament are relatively rare clinical entities, and can make severe morbidity surgical evaluation can relieve the sign and symptom and improve life quality we present a patient with ossification of yellow ligament in level of T9 and T10 of thoracic spine.

Key words: yellow ligament, thoracic spine, canal stenosis

Ossifications of yellow ligament (OYL) and calcification of yellow ligament are relatively rare clinical entities that have characteristics of lesions generally seen at lower thoracic and lumbar levels.(1) The incidence of these lesions is most frequent in East Asian patients (Japanese and Korean), however, these lesions also have been reported in patients of other ethnicities(1,2). OYL is commonly detected in the lower thoracic spine where it is a primary cause of slowly progressive myeloradiculopathy.

Case presentation

A 54 years old woman with chief complaint of back pain and lower limbs paresthesia from 9 months ago, past medical history was negative

and in drug history only she used pain relief agent like NSAIDs or acetaminophen in clinical evaluation upper motor neurons sign is positive (plantar reflex double extensor, deep tendon reflex in knee and achille reflex significantly increased +4) and no episode of bladder or anal dysfunction, in MRI of thoracic we found stenosis in level of T9- T10 from posterior element compression, extradural lesion which was isosignal in T1 hypo signal in T2 without enhancement with gadolinium (figure 1), for future evaluation CT of vertebral column with 3d reconstruction show a tiny ossification in interlamina space which bulged to central canal (figure 2), patient admitted to operation room in prone position under general anesthesia standard

laminectomy was done bony yellow ligament was removed thecal sac was decompressed, 2 days after surgery patient discharged back pain and paresthesia was improved after 3 month lower limbs muscles strong before and after surgery was 5/5 upper motors sign improve immediately a day after surgery.

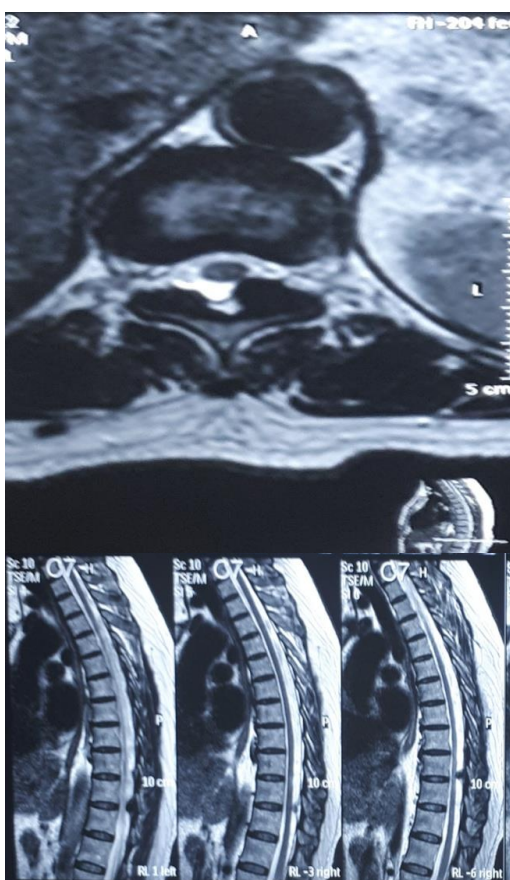


Figure 1: T 2 sequence of thoracic MRI sagittal and axial view, hypo signal extradural lesion which compress the thecal sac from posterior

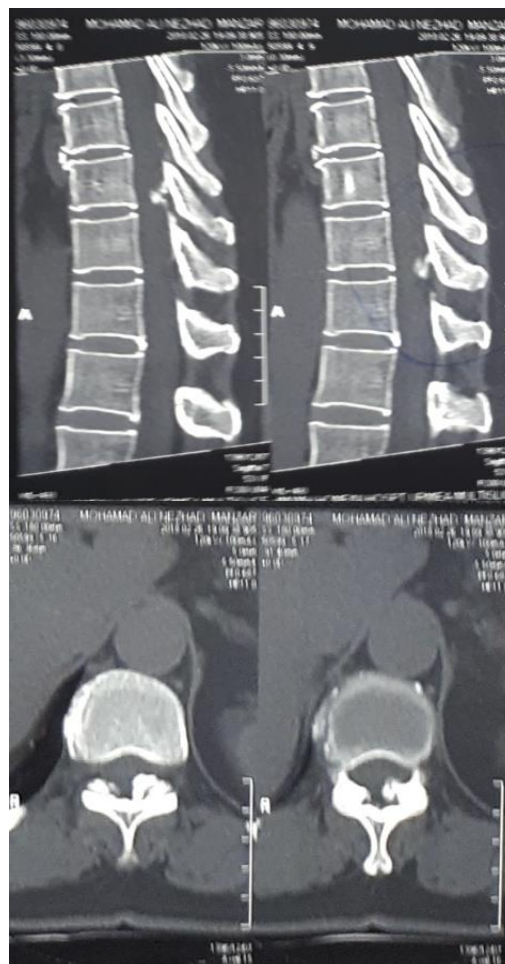


Figure 2: CT of vertebral column in sagittal and axial view: high density lesion from lamina projected to central canal

Discussion

Symptomatic OYL usually is located at the lower thoracic spine (38.5%) and the lumbar spine (26.5%) and is rare at the cervical spine (0.9%).(3) The detailed mechanism of OYL is unclear; There are several reports that support the relationship between the growing factors of these ossification diseases and static and dynamic factors. (4, 5)

The pathophysiology of OYL is similar to that of YL hypertrophy. Degeneration of the YL is due to hyper mobility of the posterior column, which results in collagen hyperplasia and hypertrophy of the YL. (5) Subsequent deposition of calcium pyrophosphate dehydrates and calcium hydroxyapatite occurs in the ligament, resulting in OYL (6). The pathology of YL hypertrophy includes fibro cartilaginous changes due to proliferation of type II collagen, ossification, and calcium crystal deposition, degeneration of collagen and elastic fibers, and chondroid metaplasia of ligament fibroblasts. (6,7) Ossification of the spinal ligament is characterized by heterotrophic bone formation in the spinal ligaments, which are normally composed of fibrous tissue Chondroid metaplasia in YL hypertrophy appears to play a pivotal role in ligament ossification, as cartilage differentiation, hypertrophy, and cell death are followed by bone formation in the bone morphogenetic pathway(7). CT and MRI are useful tools for diagnosis, surgical planning, and evaluation of surgical prognosis. Reconstructed 2- dimensional and 3- dimensional CT images visualize the ossified lesion in all directions, which clarifies the actual shape and extent of OYL and OPLL and contributes to surgical planning. Surgical treatment for symptomatic OYL and OPLL is recommended. Posterior decompression by partial laminectomy or laminoplasty with removal of OYL is effective for cases. (8,9). in this cases posterior decompression of spinal canal with standard laminectomy was done patient pain was improved immediately after the surgery and muscle force was improver

after 3 month and tendon reflex and upper motor singe disappeared after surgery, the location of the pathology in lower thoracic similar to usual site of this pathology.

Ethical Considerations

Compliance with ethical guidelines. All steps of this research were reviewed by Urmia University of Medical Sciences, ethical committee, with ethical code of 43256/43269.

Funding

This article was supported by Urmia University of Medical Sciences.

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