Acute Paraparesis Due to a Lumbar Spinal Chondroma – Case Report and Review of the Literature

*Sofia Esteves, 1Isabel Catarino, 2Miguel Quesado, 3Daniel Lopes, 5Carlos Sousa

1, 2, 3, 4, 5Centro Hospitalar do Tâmega e Sousa, Portugal

Abstract

Chondroma is a very uncommon benign cartilaginous neoplasm of the spine that can be associated with neurological symptoms. The authors present a case of a 52-year-old male patient with acute paraparesia 2 weeks after the onset of lower back pain and paresthesias in the lower limbs. Magnetic resonance imaging studies showed a right posterolateral oval mass, occupying the epidural space at L2-L3 level.

Surgical treatment was proposed, in order to avoid permanent neurological sequel and to establish the etiological diagnosis. Right partial laminectomy was done at L2 and L3 levels and a gross total resection was performed. The pathological examination confirmed that the lesion was a chondroma.

At 2 years of follow-up, the patient does not show signs of clinical or radiological recurrence. The complete surgical resection is curative in most of the cases but long-term follow-up is recommended because 10% of chondromas can have malignant differentiation.

Keywords

Chondroma; Lumbar Spine; Spine Tumor; Benign Tumor; Acute Paraparesis; Atypical Presentation

Introduction

Chondromas are benign rests of hyaline cartilage within cancellous bone that result from failed migration of chondrocytes [1, 2] and they are usually found in long bones. Rarely these tumors arise from an extradural location but when such tumors have been encountered they are frequently located within the cranium and only 3% comprises the spine, being more common in the thoracic spine [3, 4].

Clinically they grow slowly [3, 5] and may remain asymptomatic or may present as a paravertebral swelling or more rarely, with a slowly-developing neurologic syndrome, due to the mass effect of the lesion on the spinal cord or nerve roots. [1, 2] Until now, only 17 cases of chondromas located in the lumbar spine have been reported since 1928. [3].

The authors describe a rare presentation of lumbar chondroma, in a 52 years old male patient presenting with acute paraparesis.

Case Report

A 52-year-old male patient, construction worker, who presented on the emergency room lower back pain...
and decreased sensation and paresthesia in the lower extremities more exuberant on the right, with no motor deficits and no sphincter complaints with 1 week of evolution. He had no trauma or prior oncological history. The imagiological investigation with pain x-ray films and TC scan revealed no bone abnormalities or areas of compression of the neurological structures showing loss of lordotic curvature and degenerative alterations more exuberant at L4-L5 levels. The patient was discharged with analgesics and oriented to an orthopedics consultation.

2 weeks later the patient was observed presenting with paraparesis without gait capacity and urinary disability. Magnetic resonance imaging (MRI) scans showed a right posterolateral oval mass, occupying the epidural space at L2-L3 level, with mass effect over the dural sac. The lesion was slightly hypo-SI on T1-WI, hyper-SI on T2-WI, and peripheral rim enhancement on a gadolinium enhanced MRI was found (Figure 1A and 1B)

Figure 1A and 1B: Magnetic Resonance Imaging (MRI) Scans Showing A Right Posterolateral Oval Mass, Occupying the Epidural Space At L2-L3 Level, With Mass Effect Over The Dural Sac

Surgical treatment was performed in order to avoid permanent neurological sequelae and to establish the etiological diagnosis. Right partial laminectomy was done at L2 and L3 levels. A yellow reddish mass with a cartilaginous consistency was identified between the dura mater and the anterior wall of the L2 lamina. (Figure 2A and 2B)

The mass was hard consistency and did not present adherence to adjacent tissues and a gross total resection was performed. (Figure 3)

Histopathological examination revealed that the tumor was a Chondroma, which had mature hyaline cartilage with nests of benign-appearing cells. Findings suggestive of aggressive chondrosarcoma such as mitotic figures, double-nucleated chondrocytes were absent. (Figure 4A e 4B)

After surgery, the patient started a rehabilitation program. At 3 months after surgery, follow-up MRI, showed no signs of recurrence. Complete neurologic recovery was found after 6 months of treatment. A biannual follow-up evaluation is maintained.

Discussion

Benign cartilaginous tumors are classified into four histological types: Chondroma, osteochondroma, chondroblastoma, and chondromyxoid fibroma [1, 2, 6-7]. Chondroma is the most common cartilaginous tumor, and represent <5% of all bone tumors [7, 8]. The most
Figure 2A and 2B: A Yellow Reddish Mass Not Adherent to The Dura Mater and the Anterior Wall of the L2 Lamina was Identified After a Right Partial Laminectomy was Done at L2 and L3 Levels

Figure 3: Resected Mass with a Cartilaginous Consistency and Bone Fragments from Laminectomy
common originated sites are long bones of the hands and feet. However, chondromas were sometimes found in the ribs, pelvis, and rarely intracranial bones [3, 8].

Chondromas in the spine are very uncommon, accounting for approximately 3% of all chondromas [2, 3, 7].

Chondromas can be subdivided into 2 types according to their site of origin: the medullary cavity (enchondroma) and the surface of periosteum (periosteal chondroma) [3, 8]. The periosteal chondromas can increase in size with broad base, but usually does not infiltrate the adjacent soft tissue. Chondroma can occur at any part of the vertebra including body, pedicle, lamina and spinous process. According to literature, the neural arch was the most common affected location in the lumbar spine. In the case described, the type of the chondroma was periosteal chondroma of neural arch.

The soft tissue variant of chondroma is rare and is thought to arise from cartilaginous cell rests of mesenchymal origin that are thought to be displaced during development [8, 9]. The distinctions were based on the pathological findings. Yet sometimes pathologists cannot confirm the exact origin of a tumor because the given specimens are usually fragmented and so they do not show the complete features of dural tumoral interfaces. Moreover, the compression of the dura by the massive growth of the tumor may hinder the ability to pinpoint the origin of the tumor. [8, 9]

While most chondromas of the lumbar spine are likely to remain asymptomatic, it can present as a palpable paravertebral mass, back pain or neurological symptoms due to mass effect compression. Although tumors arising from the pedicle or posterior spinal canal could present acute nerve compression, in most of lumbar chondroma, the symptoms slowly develop over several months.

Our patient had symptomatology with 3 week of evolution with a fast-progressive neurological deterioration.

There are only 18 cases including this cases reported, the last one in 2014 (Table 1). [3]

This kind of tumors tends to mimic disc herniation, degenerative lumbar stenosis or nerve sheath tumors, [1, 7-9]. It should also be considered as differential diagnosis other malignant tumoral masses and infection lesions.

The differential diagnosis of chondromas is often difficult based only on the radiologic findings. Therefore, biopsy is needed for exact diagnosis [7].

Plain films of lumbar spine may show indirect signs of these lesions with smooth erosions of the bone structure, which are radiolucent area or calcification [3, 10], which didn’t happen in our case.

Computed tomography (CT) usually demonstrates a soft tissue mass with stippled calcifications and local bone destruction showing isodense or hyperdense [3, 10],

Figures 4A and 4B: Histopathological Examination: Hematoxylin and Eosin Stain At X10 Magnification (A) and X200 Magnification (B) Show Mature Hyaline Cartilage with Nests of Benign-Appearing Cells
but such findings were also not found in our case. MRI shows a sub periosteal lobulated mass at the bone surface with peripheral rim enhancement on T1WI. Also, MRI revealed hypo to iso-SI on T1-WI, low-SI on T2WI [2, 3, 10]. Furthermore, MRI is important for differential diagnosis because tumor size, pattern, location, and relation of surrounding structures, especially cord compression can be identified [1, 3, 10]. Histologically, gross findings of chondromas appear as well differentiated lobules of chondrocytes in hyaline cartilage. Cells may reside in small nests referred to as isogenous groups and occupy lucent spaces within their myxoid matrix called lacunae. Varying degrees of calcification are found in approximately one-third of cases [3, 8].

Surgically total removal is the treatment of choice for lumbar spine chondroma. Recurrence of chondroma is rare and usually related with incomplete removal [1, 3, 7, 11]. The important point is that approximately 10% of solitary chondromas undergo malignant progression requiring radiation therapy [1, 3]. Malignant progression associated with a component of syndrome as Ollier’s syndrome or Maffucci’s syndrome is over 50% [1, 2]

At this moment, with 2 years of follow-up, our patient does not show signs of clinical or radiological recurrence. Despite de fact that the majority of vertebral chondromas represent benign tumors, long-term follow-up is recommended for lesions of unusual pathology [2, 3, 8]

**Conclusion**

Lumbar chondroma is an unusual and slowly growing lesion but it should be considered in the differential diagnosis of Extrudal mass in patients with neurological deficits.

<table>
<thead>
<tr>
<th>Table 1: Chondromas of the Lumbar Spine Reported in Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age*(years)</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Pittoni et al., 1928</td>
</tr>
<tr>
<td>Peycelon et al., 1936</td>
</tr>
<tr>
<td>Godlewski et al., 1960</td>
</tr>
<tr>
<td>Paillas et al., 1963</td>
</tr>
<tr>
<td>Paillas et al., 1963</td>
</tr>
<tr>
<td>De Mourgues et al., 1964</td>
</tr>
<tr>
<td>Nag et al., 1966</td>
</tr>
<tr>
<td>Herndon et al., 1970</td>
</tr>
<tr>
<td>Bell MS [6]</td>
</tr>
<tr>
<td>Bland, LI, McDonald JV. [10]</td>
</tr>
<tr>
<td>Gaetani P, et al. [1]</td>
</tr>
<tr>
<td>Erten SF, et al. [7]</td>
</tr>
<tr>
<td>Motoooka et al., 2002</td>
</tr>
<tr>
<td>Cetinkal A, et al. [2]</td>
</tr>
<tr>
<td>Kim DH, et al. [3]</td>
</tr>
<tr>
<td>Pace J, et al. [8]</td>
</tr>
<tr>
<td>Present case</td>
</tr>
</tbody>
</table>
We report a case of a 52-year-old male patient with acute paraparesis due to a chondroma of the lumbar spine. In this kind of lesions, total surgical resection is the treatment of choice in order to avoid permanent neurological sequelae and to establish the etiological diagnosis.

The differential diagnosis of chondromas is often difficult based only on the radiologic findings. Therefore, biopsy is needed for exact diagnosis.

While most chondromas of the lumbar spine are likely to remain asymptomatic, it can present as a palpable paravertebral mass, back pain or neurological symptoms.

This procedure is curative in most the cases but long-term follow-up is recommended.

References


