Case Report
Endoscopy
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EXCISION OF INTRACANAL VERTEBRAL TUMOR CALCINOSIS BY INTERLAMINARY ACCESS OF ENDOSCOPIC SPINE SURGERY: CASE REPORT AND LITERATURE REVIEW

EXCISÃO DE CALCINOSE TUMORAL INTRACANAL VERTEBRAL PELO ACESSO INTERLAMINAR DA CIRURGIA ENDOSCÓPICA DE COLUNA: RELATO DE CASO E REVISÃO DA LITERATURA

ESCISIÓN DE CALCINOSIS TUMORAL VERTEBRAL INTRACANAL MEDIANTE ABORDAJE INTERLAMINAR DE CIRUGÍA ENDOSCÓPICA DE COLUMNA: REPORTE DE CASO Y REVISIÓN DE LA LITERATURA

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ABSTRACT

Tumorous calcinosis is a condition characterized by dystrophic calcification in periarticular soft tissues. Its main locations are the shoulder, hip, and metatarsophalangeal joints, but it is rarely found in the spine. Common symptoms include pain, limited range of motion, and extremity weakness. In the spine, surgical resection is indicated for lesions that cause acute, progressive symptoms, or refractory neurological dysfunction. There are few reports of these tumors in the spine, with the largest series comprising 32 cases. The objective of this report is to describe a rare case of tumorous calcinosis of the lumbar spine. A brief literature review is presented, covering the main characteristics of the tumor, differential diagnoses, histological study, and the surgical approach performed through spinal endoscopy. ***Level of Evidence IV; Case Report***.

Keywords: Spine; Tumors; Calcinosis; Endoscopy.

RESUMO

A calcinose tumoral é uma patologia caracterizada por calcificação distrófica em tecidos moles periarticulares. Suas principais localizações são no ombro, quadril e articulações metatarsofalângicas, sendo raramente encontradas na coluna. Os sintomas comuns são dor, amplitude de movimento articular limitada e fraqueza das extremidades. Na coluna, a ressecção cirúrgica é indicada para lesões que causam sintomas agudos, progressivos ou disfunção neurológica refratária. Existem poucos relatos desses tumores na coluna, sendo a maior série composta de 32 casos. O objetivo deste relato é descrever um raro caso de calcinose tumoral da coluna lombar. Apresenta-se breve revisão de literatura contendo as principais características do tumor, diagnósticos diferenciais, estudo histológico, bem como a abordagem cirúrgica realizada através da endoscopia de coluna. ***Nível de Evidência IV; Relato de Caso.***

Descritores: *Coluna vertebral; Tumores; Calcinose; Endoscopia.*

RESUMEN

La calcinosis tumoral es una afección caracterizada por la calcificación distrófica de los tejidos blandos periarticulares. Se localiza principalmente en el hombro, la cadera y las articulaciones metatarsofalángicas, pero rara vez se encuentra en la columna vertebral. Los síntomas comunes incluyen dolor, limitación del rango de movimiento y debilidad en las extremidades. En la columna vertebral, la resección quirúrgica está indicada para lesiones que causan síntomas agudos y progresivos o disfunción neurológica refractaria. Existen pocos reportes de estos tumores en la columna vertebral, y la serie más grande comprende 32 casos. El objetivo de este reporte es describir un caso raro de calcinosis tumoral de la columna lumbar. Se presenta una breve revisión bibliográfica que abarca las principales características del tumor, los diagnósticos diferenciales, el estudio histológico y el abordaje quirúrgico realizado mediante endoscopia espinal. ***Nivel de Evidencia IV; Relato de Caso.***

Descriptores: *Columna vertebral; Tumores; Calcinosis; Endoscopía.*

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INTRODUCTION

Endoscopic spine surgery has consolidated itself as the most frequently performed minimally invasive procedure, especially in the treatment of lumbar disc hernia. In addition, it can be used in other conditions, such as stenosis, infections and tumors.[1] The main objective of surgical intervention is to promote an effective decompression of the vertebral canal.[2] In the interlaminar approach, the procedures of laminectomy and disc resection should be conducted under direct visualization in order to ensure adequate decompression and minimize the risk of trauma or associated injuries.[3-5]

Among the main advantages of endoscopic spine surgery are: lower intensity of postoperative pain, reduced hospitalization time, less obvious surgical scarring, more early rehabilitation, lower incidence of peridural fibrosis and reduced rates of complications when compared to traditional methods.[1,3,5]

Tumoral calcinosis, first described in 1943, is a periarticular condition that affects predominantly the hips, elbows, shoulders and fingers, and is rare in the spine.[6] It is characterized by extracellular, lobular, focal or multifocal calcifications, located in the soft tissues of the periarticular regions. These formations may show progressive growth and tend to relapse even after surgical resection.[7,8]

This work presents a clinical case of tumor calcinosis located in the lumbar region treated by the interlaminar endoscopic technique of the spine.

CASE REPORT

This study was approved by the Research Ethics Committee of the Samaritan Hospital under protocol 3540420.5.0000.5487.

A female patient, 65 years old, with a history of hypothyroidism and dyslipidemia, had chronic low back pain associated with pain radiated to the right lower limb about three years ago. In the first year of symptoms, it was evaluated by several specialists, without reaching a conclusive diagnosis. In the second year, computed tomography of the abdomen was performed, showing calcificated nodular lesion in L5/S1 (Figure 1), which was not mentioned in the radiological report nor considered clinically. Magnetic resonance imaging of the lumbar spine showed "cystic image of lobulated contours, projecting in the right lateral recess of L5/S1, compressing the proximal segment of the root of S1" (Figure 2). At the time, the assistant doctor opted for conservative treatment, with the use of analgesic and physiotherapy.

In the third year of evolution of the painful picture, already in conservative treatment about a year ago, the patient called our team for re-evaluation. He referred to intensification of pain in orthostatic position, during the extension of the trunk and the deambulation. Progressive worsening of symptoms was observed, with reports of a sense of loss of strength in the right lower limb despite multiple physical therapy sessions and continued use of pregabalin, non-steroidal anti-inflammatory drugs and opioid analgesics. The patient was functionally limited, unable to perform activities of daily life or any kind of physical activity.

In the clinical examination, the patient referred pain to palpation in the topography of L5/S1. The Lasègue test was positive on the right lower limb, with pain radiated along the S1 dermatome on the right. Grade IV muscle strength was observed in right plantar flexion, associated with hypoesthesia and hyporeflexia in the corresponding nerve root distribution.

In the previous computed tomography review, bone density nodular lesion located in the foram of L5/S1 on the right was identified, not described in the initial reports and therefore not considered in previous evaluations. A new magnetic resonance of the lumbar spine was requested, whose images in the sagittal and axial cuts (Figure 3) revealed oval, voluminous and lobulate formation, located in the interapophyseal joint of L5/S1. The median lesion 21x13x14 mm in its larger axes, promoting significant compression of the dural bag and contact with the descending root of S1, suggesting synovial cyst.

The patient was submitted to endoscopic surgery of the lumbar spine for decompression of the vertebral canal and excision of the lesion, through an interlaminar approach under general anesthesia (Figure 4). Through a 7mm incision, an endoscope with a working channel of 4.3mm and 30 degrees of inclination was used. Cutting drill was used to enlarge the interlaminar window and bipolar was used for hemostasis and control of epidural bleeding. A continuous irrigation system of physiological serum was used in severity at 1.5m height relative to the patient. The calcified lesion was removed using forceps and a Kerrison rongeur. No drain was used postoperatively. In the immediate postoperative period, the patient presented significant improvement in lumbar and sciatic pain, evolving with discharge from the hospital the following day, already walking without help. The resected material was sent for anatomopathological analysis, and the diagnosis of tumor calcinosis was confirmed.

The patient was then referred to the endocrinologist for clinical follow-up. The lesion had been completely resected and the laboratory tests showed no changes or systemic repercussions.

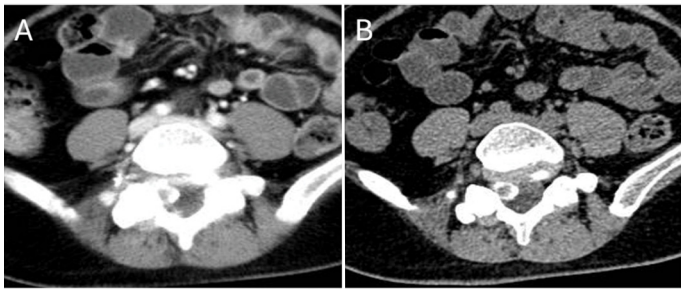

Figure 1. Computerized tomography images in axial cuts showing calcificated nodular lesion in the right lateral recess of L5/S1(A,B).

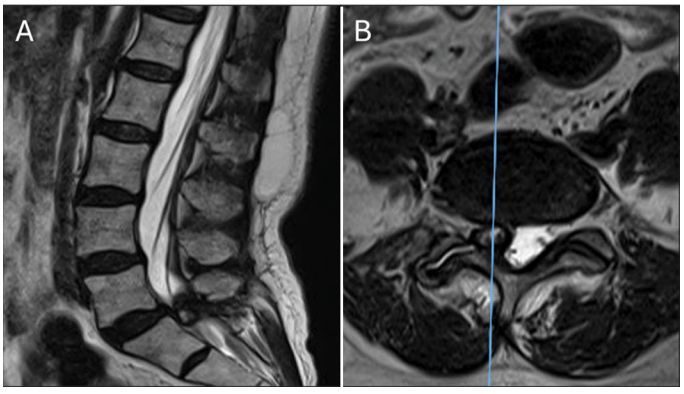

Figure 2. Magnetic resonance imaging in sagittal (A) and axial (B) cuts showed a lesion that projected in the right lateral recess of L5/S1, compressing the proximal segment of the root of S1.

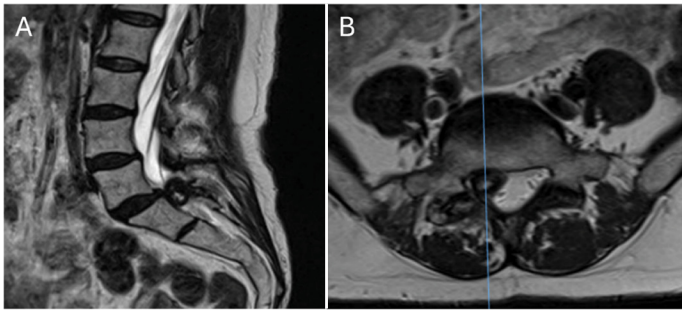

Figure 3. Magnetic resonance imaging in sagittal (A) and axial (B) cuts showed an increase in the lesion in the interapophyseal joint of L5/S1, which promoted significant compression of the dural bag and contact with the descending root of S1.

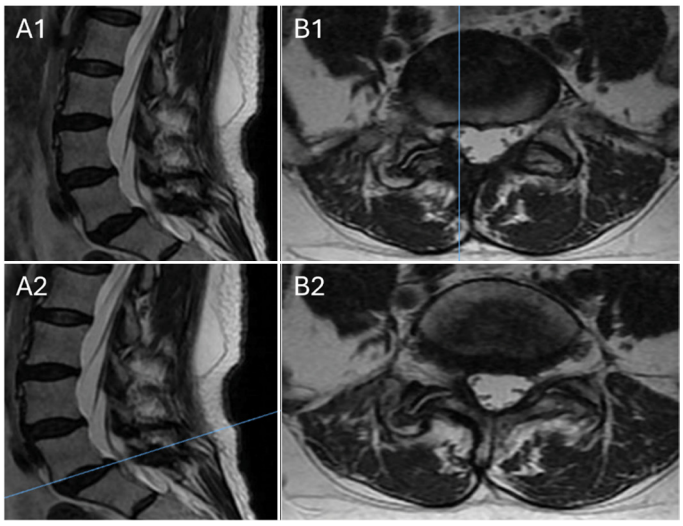

Figure 4. Postoperative magnetic resonance imaging, sagittal cuts (A) and axial cuts (B), showing decompression of nerve root.

DISCUSSION

The first description of tumor calcinosis dates back to the 1940s, and its manifestation in the spine was first recorded in 1952, by Reimenschneider and Ecker.[6,9] It is a pathology of obscure etiology, characterized by dystrophic calcification in periarticular soft tissues.[6] It affects most frequently individuals of African descent, has slow evolution and its main localizations are in the shoulder, hip, buttocks and smaller joints such as the metatarsophalangeal, and is rarely found in the spine.[8,10] The predominant symptoms include localized pain, restricted joint mobility and decreased muscle strength in the extremities.[11] Histologically, a densely localized mass is observed, consisting of calcified debris and fluid content, circumscribed by fibrous tissue.

Some authors classify tumor calcinosis according to its pathogenesis into: primary normophosphatemic, primary hyperphosphatemic and secondary.[7,12] One of the common causes of secondary tumor calcinosis is renal failure, although its etiology is poorly understood.[13] Another hypothesis would be periarticular trauma that could cause minor bleeding. The hematoma would be encapsulated by a fibrous tissue and the debris would be a favorable environment for depositing calcium phosphate crystals.[11]

Differential diagnosis can be performed with infectious processes and deposition arthropathies.[14] In clinical treatment, it should be considered to decrease hyperphosphatemia: renal transplant for renal insufficiency, parathyroidectomy, phosphate chelators, dialysis with calcium solution, increased duration and decreased frequency of dialysis.[7]

When in the spine, tumor calcinosis affects the vertebral bodies, facet joints, dura-mater and *filum terminale*. Underlying conditions such as scleroderma, systemic sclerosis and CREST syndrome (characterized by calcinoses, Raynaud's phenomenon, esophageal dysmotility, sclerodactyly and telangiectasias) may be associated with the picture. The degeneration of the intervertebral discs and facet joints may also be an etiological factor.[10] There is also a record of concomitant occurrence of tumor calcinosis with spinal epidural lipomatosis in patients with negative serology for spondyloartropathy.[10] Spinal epidural lipomatosis is characterized by pathological growth of adipose tissue in the spinal canal, being a rare complication associated with prolonged use of corticosteroids.[10]

Surgical resection is the most important part of the treatment of epidural calcinosis and is usually performed for lesions that cause acute, progressive symptoms or refractory neurological dysfunction.[7] Incomplete resection is associated with recurrence of the lesion.[10]

Most reported cases of tumoral calcinosis of the spine in the literature have been treated with conventional open surgery.[10,15] Although the endoscopic approach is widely used in the treatment of various spinal conditions, such as calcificated disc hernias, yellow ligament calcification, drainage of peridural abscesses, infectious spondylodiscitis thoracic and lumbar, no specific reports of its application in the treatment of spinal tumor calcinosis have been found.[5,16-18]

Endoscopic surgery has demonstrated superiority over conventional techniques in various clinical situations, providing less postoperative pain, reduced hospitalization time and comparable rates of complications.[2,4,5] In view of these benefits, this approach should be considered as a preferential option whenever possible, including in the treatment of tumor calcinosis of the spine.

CONCLUSION

The accurate diagnosis of spinal tumor calcinosis is essential for the definition of the most appropriate therapeutic conduct, contributing to the prevention of neurological complications. Endoscopic surgery, in turn, has consolidated itself as a minimally invasive surgical approach that offers benefits such as lower complications rate, reduced postoperative pain and faster recovery. Although its application in the resection of vertebral tumors is still limited in the literature, the observed results in the treatment of other calcificated lesions indicate its relevant potential, which justifies further scientific research.

CONFLICT OF INTEREST

All authors declare no potential conflict of interest related to this article.

CONTRIBUTIONS OF THE AUTHORS

Each author contributed individually and significantly to the development of this article. TCF, TSS and LSS: conceptualization, writing – original draft; TSS, LSS, DFG, LRN, SEL and JPMB: data curation and formal analysis; NCS, SEL and JPMB: writing – review and editing.

DATA AVAILABILITY DECLARATION

The contents underlying the research are available in the manuscript.

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