International Journal of Medical and Pharmaceutical Case Reports

Volume 16, Issue 1, Page 25-31, 2023; Article no.IJMPCR.97170
ISSN: 2394-109X, NLM ID: 101648033

Chondroma of the Thoracic Vertebrae Base with Abdominothoracic Aorta Involvement, a Case Report and Review of the Literature

Joseph Fondop [a], Sangou [b], F. A. Atemkeng [a], Atyam Banga [c], Dogmo Amougou [a], Djam C. Alain [a*], V. D. P. Djientcheu [d] and S. Fuentes [e]

[a] FMSP UDS, Cameroon.
[b] Hopital General de Douala, Cameroon.
[c] HR Annexe de Dschang, Cameroon.
[d] Hopital General de Yaounde, Universite de Yaoundé, Cameroon.
[e] CHU Timone adulte Marseille, France.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IJMPCR/2023/v16i1326

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/97170

Case Report

Received: 04/01/2023
Accepted: 08/03/2023
Published: 13/03/2023

ABSTRACT

Spinal chondroma is a rare benign tumor it accounts for 2.8% of benign bone tumours and 12% of all bone tumours. 3.6% to 4% of chondroma are located in the spine representing 10% of all chondromas. It can originate from the vertebral bodies or the posterior arch and is described in patients between 5 and 78 years of age [1]. We present the clinical case of a 60 year old woman,

**Corresponding author: E-mail: djamalain@gmail.com;*

who consulted for dorso-thoracic pain around the belt line and who was treated as a gastroduodenal ulcer, after a Pott's disease on the basis of an imaging diagnosis showing spondylodiscitis lesions with a paravertebral spindle D11-D12. Firstly, it was operated by a posterior approach by laminectomy spondylodesis of D10 D11- L1 L2 and biopsy of the tumor whose anatomopathological examination diagnosed a vertebral chondroma directing towards a total corporectomy by anterior or antero-lateral way. After the refusal of the second operation by the patient, she came back in consultation 3 months later with Frankel B paraplegia, anemia and cachexia. The MRI and CT show the evolution of the spondylolytic tumor D10 D11 with debricolage of the osteosynthetic material and invasion of the thoracic aorta with its collaterals; the very high risk of damaging the Adam kiewizc artery and of postoperative paraplegia during the anterior management without endovascular material by the thoracic team compromised this second operative step. The low sensitivity of chemotherapy and the risk of aggravation of the lesion by the therapeutic doses of radiotherapy for this tumour was directed in palliative care.
Dorsal vertebral chondroma is a rare benign tumour that requires early complete resection to avoid the risk of thoracic aortic inversion that can increase complications and compromise the definitive treatment of this benign tumour.

Keywords: Chondroma; dorsal vertebrae; thoracic aorta; surgery.

1. INTRODUCTION

"Chondroma is a slowly growing benign cartilaginous tumor, and rarely affects the spine" [2,3,4]. "According to its site of origin, chondroma can be subdivided into 2 groups: periosteal chondroma and enchondroma. Periosteal chondroma arises from the surface of periosteum and grows in an exophytic fashion" [3]; "whereas, enchondroma originates from the medullary cavity and produces an expansile growth pattern" [4,5,6]. "Histologically, they consist of benign nests of hyaline cartilage within the cancellous bone which resulted from failed migration of chondrocytes. Usually, the chondrocytes are arranged in a pseudolobular fashion and may be associated with ossified foci" [7,8].

2. CLINICAL CASE PRESENTATION

MN a 60 year old housewife, domiciled in Douala Makepe, received on the 12/06/2017 for back pain and paraparesis with spinal cord compression known and managed as Pott's disease based on imaging.

Years, September 2015 prior to the presentation was marked by back pain, radiating into the right abdominal hemibelt, which led to a consultation in a health facility where the clinical diagnosis of peptic ulcer disease was made.

She was commenced on a proton pump inhibitor. When the pain persisted for 3 weeks, she changed doctors and consulted a gastroenterologist who performed a normal ultrasound and did a fibroscopy which revealed a gastric ulcer with positive helicobacter pyloric tests for which the treatment was prescribed.

In November 2016, a paraparesis with gait disorder and constipation was added, motivating the rheumatological consultation which realizes an MRI showing an image very suggestive of Pott's disease of D10 D11 and she is put on anti-tuberculosis treatment. After 3 months of treatment with no response, the patient came to neurosurgery.

On 17/06/2017 she was seen in a neurosurgery consultation for complete functional impotence of the lower limbs on coming in the morning without any particular effort.

On examination, she was a cachectic, thin, very algic patient with a bladder globe, a Fränkel C paraplegia of clinical level D10 D11 with a weight of 68 kg

At RT there was a relaxation of the anal sphincters and fecal impaction, the images request a CT scan (Fig. 1) and show vertebral lysis with spinal cord compression at level D10 D11 confirming the diagnosis of slow spinal cord compression.

A compressive laminectomy with spondylodesis (Fig. 2) and biopsy.

The postoperative period was marked by the recovery of neurological deficits, sphynterial functions and pain. She was discharged without a urinary catheter, continuing the anti-tuberculosis drugs started before the operation.

The analysis of the bacteriological samples shows the presence of staphylococcus aureus sensitive to ofloxacin and amoxicillin clavulanic, and the anatomopathology shows a chondroma.

She came back in consultation on 13/09/18, for lumbodosalgia, invalidating since 1 month of progressive installation, irradiating to the lower limbs in the type of cramp with parepaesthesia of FM: 4/5, in a cachectic state, with a weight of 40 kg, normal heart, clear lung, flexible abdomen without organomegaly. The examination of the lymph nodes is free.

The CBC showed an anaemia of 6g /dl requiring a transfusion of 2ui of packed red blood cells.

The radiopulmonary shows free parenchyma, the abdominal echo was normall.

Vertebromedullary CT (Fig. 1) and dorsolumbar MRI (Fig. 2) show spinal cord compression by a voluminous T2 hypersignal mass with thoracic abdominal periaortic extension on the right and left, level T8-L1 with spinal instability due to tinkering with the screws of the osteosynthesis material following lysis of the D10-D11 pedicles.

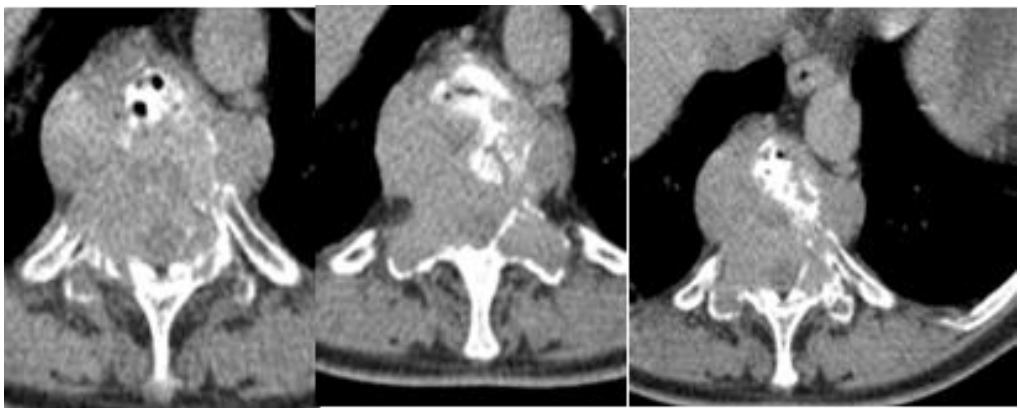

Fig. 1. CT scan of 17/06/2017 D12 vertebral lysis with compression of the vertebral canal

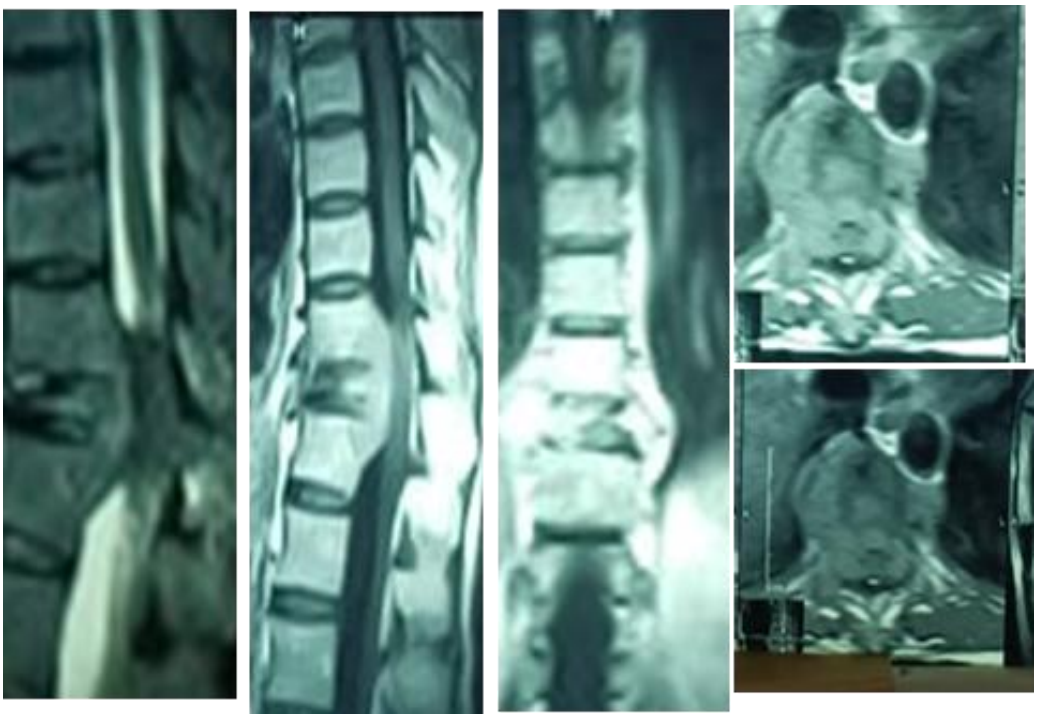

Fig. 2. MRI (14/03/2017): T12 compression and spinal cord compression, with paraspinal spindle

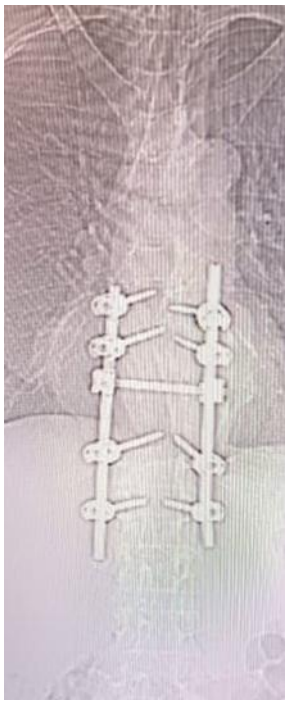

Fig. 3. X-ray spondylodesis D9D10 -L1L2 D10

A discussion with the vascular surgeon concluded that in view of the invasion of the thoraco-abdominal aorta with probably the ADAM KEWIZT artery and the size of the lesion, an almost complete tumour resection surgery becomes impossible without locating and placing an endovascular stent of Adam Kewitz with the risk of paraplegia completed by the lesion of the thoraco-abdominal artery.

After discussion at the multidisciplinary staff, the patient is put in palliative care and in DCD by October 2020

3. DISCUSSION

Benign cartilaginous tumors are classified into four histological types: chondroma, osteochondroma, chondroblastoma, and chondromyxoid fibroma [9-12].

Chondromas are benign tumor of cartilaginous tissue that is found frequently in the tubular bone of hands [13], that is most common cartilaginous tumor and is equivalent to 5% of all bone tumors(14) . It is reported that men are twice more likely to have a chondroma than women, and lesions typically present between the third and fifth decades of life.1 Although chondromas occur predominantly in the small bones of the hands and feet, they can develop in any bone. They rarely occur in the spine, accounting for only 2% to 4% of all spinal tumors. they account for 2% of all spinal tumors and 2.6% of all benign bone tumors [12,14].

It is postulated that spinal chondroma is derived from hyperplasia of immature spinal cartilage with migration outside the vertebral axis or from metaplasia of the connective tissue in contact with the spine or the anulus fibrosus [9,15].

This tumor is described at all vertebral levels. the symptomatology is earlier in the cervico-dorsal regions than at the lumbar and sacral level [4,9,11,14].

Chondroma is a benign tumor characterized by the formation of mature cartilage. Chondromas usually occur in a solitary fashion; however, they may affect many bones synchronously or sequentially in the setting of chondromatosis such as Ollier disease and Maffucci syndrome [16]. According to their site of origin, chondromas can be subdivided as enchondromas, periosteal chondroma, or soft tissue chondromas. Enchondromas have an intraosseous location and may grow compressing the dura mater; periosteal chondroma arise from cortical bone surface, and when they are located at a site distant from the bone they are referred to as soft tissue chondroma. Therefore, when a chondroma is located extradurally in the spinal canal, it may be difficult to differentiate between periosteal and soft tissue chondroma [10,14].

Histologically, chondromas are composed of neoplastic chondrocytes dispersed within an abundant hyaline or myxoid background.1 Cells may reside in small nests referred to as isogenous groups and occupy lucent spaces within their myxoid matrix called lacunae. Macroscopically, the aspect of the tumor is usually yellowish, soft, and easily separated from the dura mater. The extradural location of the tumor may be observed in any position, either lateral, dorsal, or ventral to the dural sac [14].

he clinical installation in our patient is progressive; it started with unilateral and then bilateral radiculalgia. The coincidence of epigastralgia, the discovery of peptic ulcer with positive helicobacter test at the fibroscopy and the aspect of the lesions in paravertebral spindle making evoked a pain of pott made delay the diagnosis chew this patient the installation and papareparesis and paraplegia are late signs of the medullar compression by the chondroma.

This slow evolution is described by other authors, Neurological symptoms may develop gradually as the tumor grows and compresses the neural elements [4,7,12].

The CT and MRI assessment makes several stages of clinical evolution of the affliction is correlated with the evolution of the tumor, the degree of spinal compression and expansion of anatomical structures around the vertebral body In the case of our patient, the growth of the tumor has led to invasion and compression of all the surrounding structures: backward, medullary compression, forward invasion of the abdominal and thoracic aorta, and most likely the lumbar bulge, ADAMKIEWICZ artery, upward and downward by an invasion of the vertebral bodies above and below the lesion causing the tinkering of the material of osteosyntheses.

The artery of Adamkiewicz is the primary supply to the lower two-thirds of the spinal cord and enters the spinal canal via an intervertebral foramen. Although it typically enters on the left from T9-L1, the artery can enter on either side from T5-L4. The T1 [11]; Occlusion or trauma of the artery of Adamkiewicz usually presents with signs of thoracic watershed ischemia-paraplegia with relative sparing of the sacral roots. Infarction in the anterior spinal artery distribution results in dysfunction of the anterior two thirds of the cord, including the anterior horns, the spinothalamic tracts, and the corticospinal tracts; patients usually present with acute paraparesis and impaired bowel and bladder function. Sharp and sometimes circumferential pain at the level of the infarct is often described. Below the level of the lesion, temperature and pain sensation are lost, but vibration and position sense (posterior columns) are preserved [15].

The tumor of our patient had envied the abdomino thoracic aorta and let perceive the emergence of Aortic collaterals to D12 very evocative of this artery of the lumbar bulge; without endovacular stents, to operate this patient would expose it to irreversible sequels lesions more than the disease; the angiography being unavailable in our country.

Surgical excision of tumor is the recommended treatment for spinal chondroma although a case of spontaneous remission has been reported [17]. The approach depends on the location of the tumor and the surgeon's experience, the posterior approach is the most used but remains very limited to have a complete resection of the tumor, it can be completed by the posterolateral or anterior approach [9].

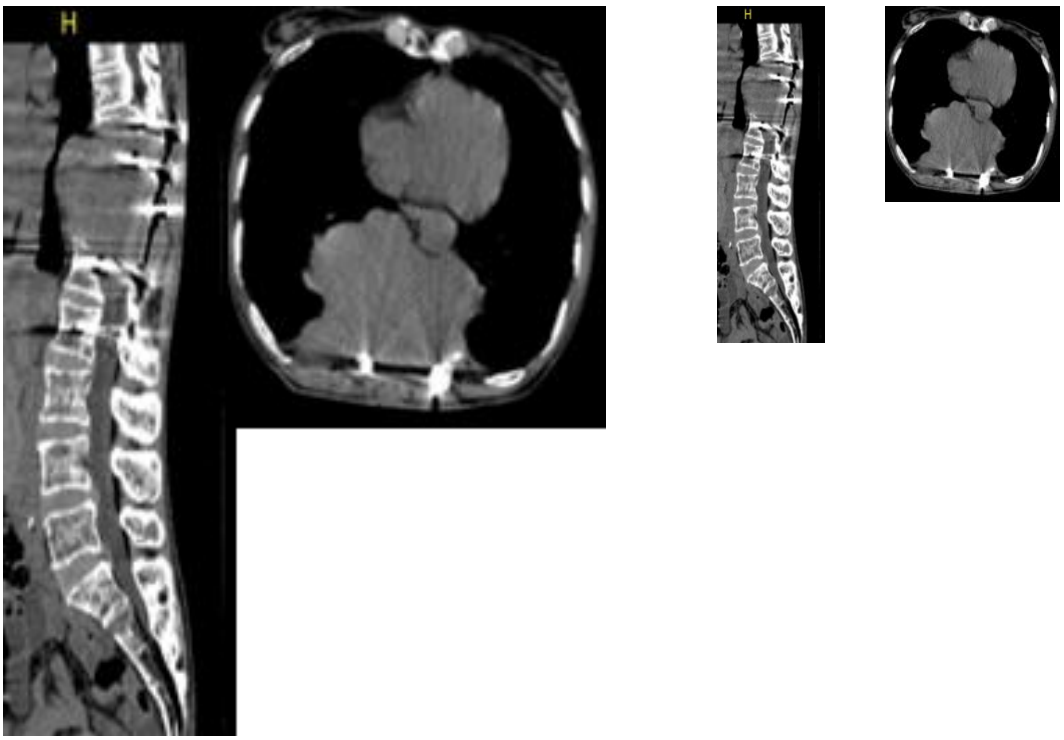

Fig. 4. MRI image showing lesion of the thoraco-abdominal artery

Complete en bloc surgical excision is generally recommended as the treatment of choice for cases with local and/or neurological symptoms [18]. The goal of surgery is to establish a histological diagnosis, prevent sarcomatous degeneration, and preserve neurological function, In cases in which excision results in spinal instability, the spine must be instrumented or reconstructed [4]. Chondromas, being benign pathology, seldom recur; and recurrence is usually associated with incomplete resection [17,18,19]. Following complete resection, the recurrence rate of chondromas is less than 10% [20]. According to Nora et al. [21], recurrence of a chondroma always results in cases of incomplete removal. Regarding other modalities of treatment strategy, chemotherapy is ineffective; and the lesions are not responsive to radiotherapy [22]. Radiotherapy is only considered for patients with unresectable tumors [23]. Malignant transformation, occurs in about 10% of solitary lesions and usually associated with syndromes such as Ollier's or Maffucci's [4,7,14,24].

Our patient presented with spinal instability justifying spondylodesis, the total resection of the tumor in our patient required the posterior approach combined with the posterolateral or anterior approach, and a second biopsy to evaluate if there was malignant degeneration of the tumor. This evaluation could not be reviewed.

4. CONCLUSION

The chondroma is a benign tumor of slow evolution, spinal involvement is rare; at the dorsolumbar level, its evolution leads to a spinal cord compression of progressive installation. The injected dorsolumbar CT scan, the vertebral MRI scan and the angiography will allow to appreciate the lesions and the invasion of the neighboring organs, and more precisely the ADAMKEWICZ artery, prior to the operation.

The treatment of choice is a complete surgical resection of the tumor, the unstable tumors of the spine requires the material of osteosynthesis. The chondroma is not chemo or radio sensitive. It may recur and may transforms into a chondrosarcoma.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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