

Aneurysmal Bone Cyst of the Cervical Spine: Clinical Case Report

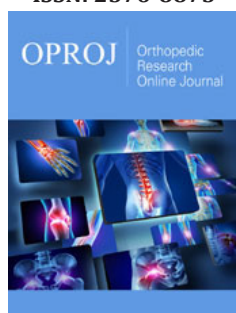
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Abstract

Aneurysmal bone cyst has a benign, hypervascularized, aggressive behavior due to the progressive, destructive and compressive growth of adjacent structures. Its symptomatology is variable, being able to cause from pain to the patient to neurological complaints, preferentially affecting long bones and vertebrae [1-5].

We report a case of aneurysmal bone cyst of the cervical spine affecting an adult man, presenting limitations of cervical movements and neurological alterations during the clinical follow-up. The diagnosis was established through radiography and computed tomography; puncture biopsy was performed to rule out differential diagnoses. The patient was submitted to surgical procedure for resecting the tumor and the affected vertebrae, in addition to stabilizing the cervical spine. In this case, infusion of local intra operative corticoid was performed as a method of association to reduce the risk of relapse. The patient progressed satisfactorily, showing a significant improvement in the movement of the cervical spine and in the neurological picture, demonstrating efficacy in the Magerl surgical technique for stabilizing the cervical spine, and in the transoral approach for resecting the tumor of cervical involvement. We discuss the treatment of choice in relation to all the currently existing ones, and the evolution of this patient.

Keywords: Benign tumor; Bone cyst; Cervical spine; Surgical technique; Orthopedic care

List of Abbreviations: SAE: Selective Arterial Embolization; Et. al.: And others; CT: Computed Tomography

Introduction

Aneurysmal bone cysts represent 1% of all the benign bone tumors affecting children, adolescents and young adults, and may affect any bone of the body, predominantly long bones and vertebral bodies [6-10]. They are formed by blood spaces and trabecular bone tissue, presenting varied and discusses able behaviors towards treatments [11-14]. The causes are still unknown, and may be traumatic, vascular or even genetic [15-18].

Those are generally destructive and expansive tumors, causing sensitive neurological and motor alterations when they compress nerve roots, besides weakening the bone tissue and favoring fractures in low-energy events [19-23]. The diagnosis is made through image exams, such as X-ray photographs and magnetic resonance, and biopsies are performed with needles for differential diagnoses [24-28]. The treatments are still varied, the selective arterial embolization (SAE) being currently the first-line option. They also present good response to immune modulators and, in some cases, radiotherapy is necessary [24]. When located in the spine, for there being structural destructions, open surgery must be performed by resection and/or curettage, with posterior grafting and instrumentation when necessary [29-33]. Surgical removal keeps being the most successful treatment, preventing spinal deformities, besides controlling the area to prevent possible relapses.

Case Report

Patient ECS, male, aged 36, Caucasian, single, worksite painter, born in Bahia, living in São Paulo, checked in the outpatient clinic of the health service of Hospital Santa Marcelina in Itaquera-SP, with a 4-month complaint of mechanical neck pain, with progressive worsening, with no history of trauma.

At the physical examination, the patient presented absence of lesions and phlogistic signs of the underlying skin, painful palpation of the cervical region, besides a moderate reduction in its extension of movement, deriving from intense pain in movements of flexion, extension and lateral bending to the left and to the right, besides rotation to both sides of the cervical spine. He also globally kept level 5 strength scales, besides a satisfactory neurological test as regards nerve roots C5, C6, C7, C8, and T1.

According to the patient's symptoms and physical examination, X-ray photographs of the cervical and thoracic spine were requested, providing altered findings. Multilocular, radiolucent, cystic mass level CII/CIII was visualized, surrounded by septation of bone tissue with diverticular-shaped internal projection on the cyst wall, besides the cortical discontinuity of the CII vertebral body.

The treatment proposal was divided into three stages. In the first, the patient under-went biopsy by cervical spine puncture at the CII vertebra level by transpolar percutaneous incision aided by fluoroscopy, which confirmed the diagnosis. A month after the material collection, the patient was submitted to arthrodesis of the cervical spine, when the occipital region at CIV level was exposed to perform the stabilization of the CI-CII segment, following the Magerl technique described in the literature. Atricortical bone graft from the iliac crest was placed in the posterior portion of

the cervical spine, followed by needle pass via transoral anterior for collecting material for the biopsy, associated to the infusion of corticoid in the CII body.

Five months after the second intervention, the patient presented global neurological deficit with signs of myelopathy (loss of balance and fine movements). A mandibular osteo to my by the transoral approach was performed, when the cervical vertebra lesion was resected, besides making an incision in the chin region, with para cervical extension for Odontoid body resection and of CII/CIII vertebral discs. Still at this stage, there was the very patient's fibula grafting, and cervical plate with screws in the CIII body, with posterior mandibular repositioning and rigid fixation of symphysis.

Computer Tomography was performed eight months after the last surgical intervention, evidencing the correct positioning of stabilization for both systems, besides the absence of radiological signs of relapse.

Five years after the surgical interventions, the patient keeps the same job with cross bite complaint and periodontal pain. Panoramic X-ray photographs were taken, the image suggesting generalized horizontal bone loss, yet without alterations in the plate and screws positioning in CII/CIII. Therefore, the patient has under gone dental follow-up (Figure 1-6).

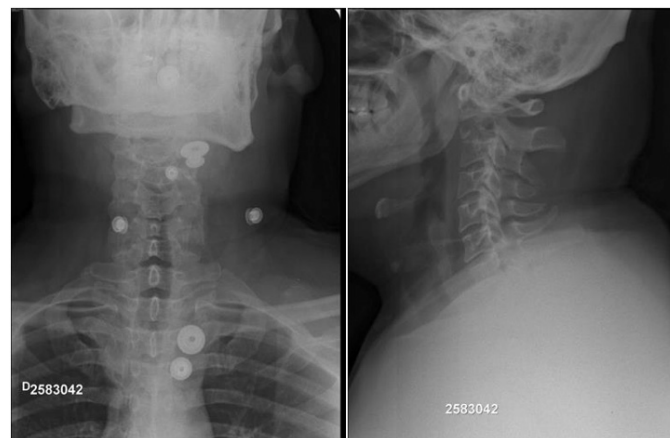


Figure 1: Bone cystin RX.

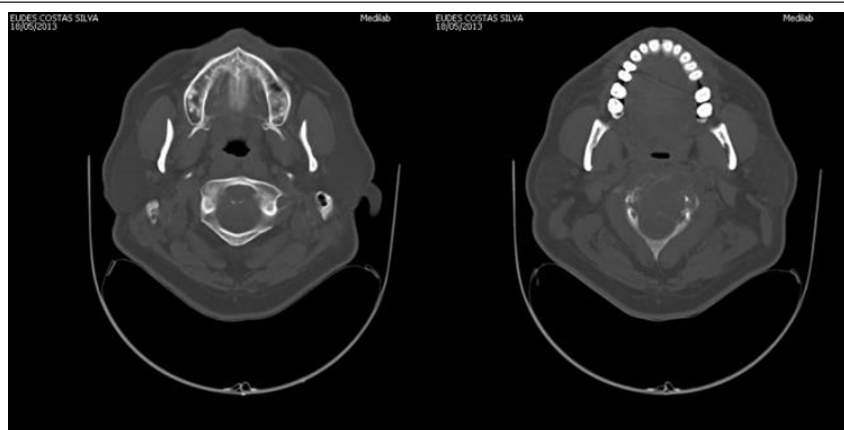


Figure 2: Bone cyst in CT.

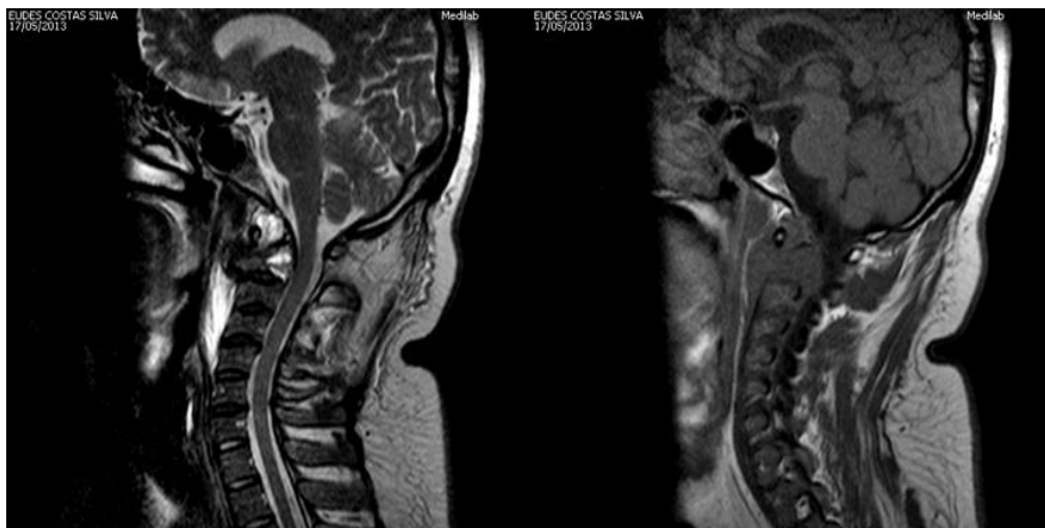


Figure 3: Bone cyst in IRM.



Figure 4: Biopsy.

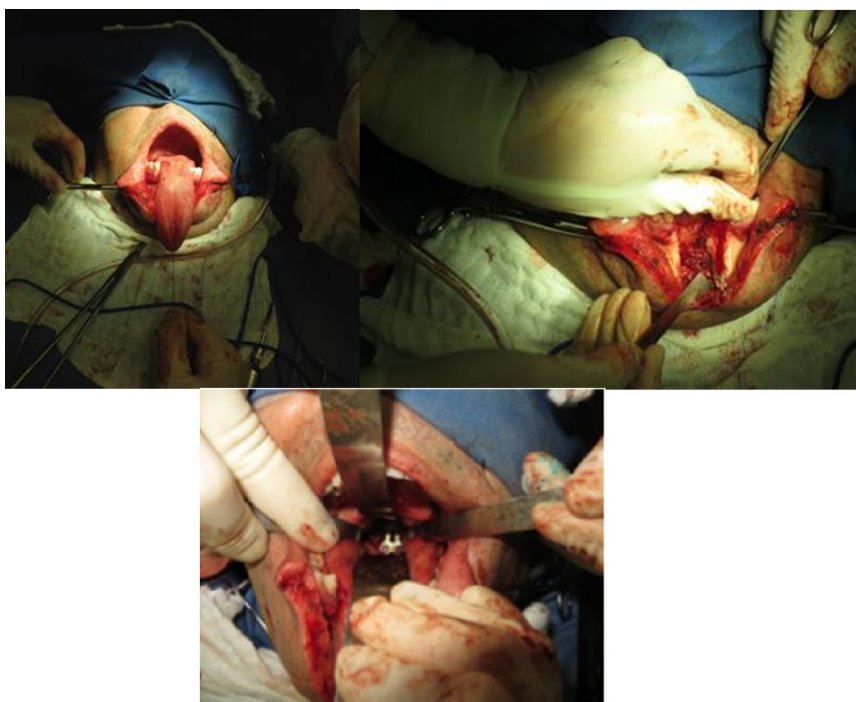


Figure 5: Intra operative pictures.

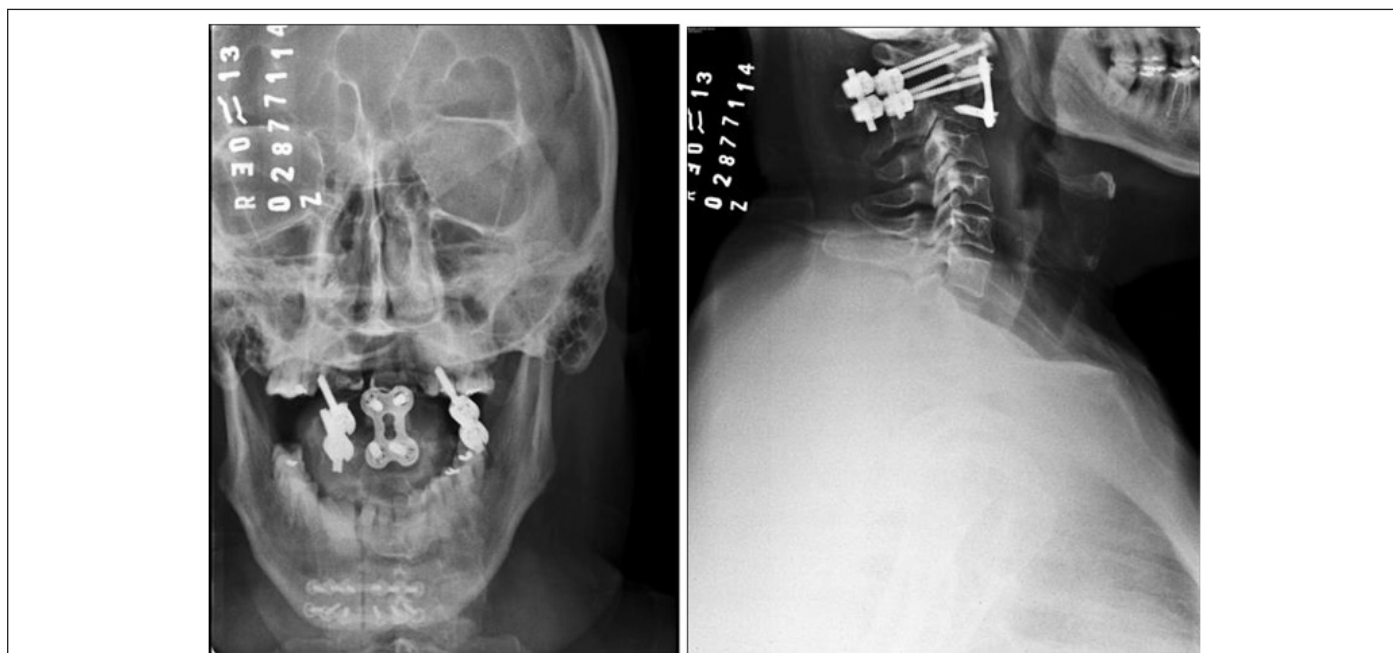


Figure 6: Final RX.

Revision and Discussion

Aneurysmal bone cysts of the spine are rare, presenting predilection for the lumbar spine [34-38] and raising great consideration regarding differential diagnoses. They are: osteoblastomas, osteosarcomas, osteoid osteomas, giant cell tumors, aneurysmal bone cyst, osteochondromas, chondrosarcomas, chondromas and Ewing sarcoma [24].

Gidding et al. point out the history of sub periosteal trauma with an incorrect and exaggerated repair, with the presence of hemorrhage [34,39]. In the case described herein, the patient did not report any remote traumas in his vertebral spine. We thus resorted to the hypotheses of primary tumor of genetic or even vascular etiology.

We here present the case of an adult male with CII aneurysmal bone cyst, who checked in our service with a complaint of mechanical neck pain, hypersensitivity, besides limited cervical motion. X-ray photograph, despite being an inconclusive imaging exam for aneurysmal bone cysts [40], was requested, with typical findings, such as rarefaction areas, well circumscribed lytic lesion, and the presence of thin trabeculae.

Some authors consider pre-surgery puncture biopsy dispensable, having image tests as the only basis. In this case, pre-surgery puncture biopsy in CII was performed, which allowed discarding other pathologies, making the diagnosis of aneurysmal bone cyst conclusive.

Treating aneurysmal bone cyst is challenging, and in the literature researched, although selective arterial embolization (SAE) is described as a first-choice treatment, there was a great trend for surgical treatment with complete resection of the lesion due to the success verified in multiple cases described. A number

of authors consider curettage alone a high risk for relapses, considering the adjuvancy with Phenol or Ethanol [40-42].

In this case report, due to the locally aggressive behavior of the tumor, cervical spine instability, expansibility and neurological complications, we opted for surgical resection, grafting, stabilization and local infusion of corticoid. Similar cases are described in the literature journals, also at three surgical times, yet we identified changes in the order of the approaches. Other authors considered performing the biopsy followed by resection and cervical spine stabilization, whereas in our case, stabilization was performed at the second time with cervical arthrodesis of CII/CIII and grafting. The resection of vertebral discs CII/CIII and of the Odontoid body was performed at a third time, with the association of plates and screws, after the patient's signs of myelopathy.

The control of the patient through CT was performed eight months after the last surgical intervention, with successful system stabilization. The objective was thus met, with the complete excision of the tumor, reduced risk of relapse and minimum morbidity.

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