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Case Study

Difficulties in the Diagnosis and Treatment of some Bone Tumors. Case Report

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Abstract

Bone tumors are a diagnostic challenge for orthopedists, radiologists, oncologists and pathologists dedicated to the study of these lesions, it is necessary to consider multiple factors (epidemiological, clinical, imaging and pathology) for an effective diagnosis and treatment. Three cases of patients are presented: the first 43-year-old female, the second 15-year-old male and the third 8-year-old male with symptoms of pain in the lower limbs associated with bone lesions, which were diagnosed as tumoral lesions, tumor of giant cells, metaphyseal fibrous defect and aneurysmal bone cyst, respectively, which did not receive the best treatment option, so it was necessary to carry out new procedures. Due to the complexity of managing these patients, we carry out this work and with it we expose the need for the existence of a multidisciplinary team prepared to take on the challenge of diagnosis and treatment of bone tumors.

Keywords: Tumor; Bone Neoplasms; Diagnosis; Treatment

Introduction

Bone tumors are frequent lesions nowadays, they can be of primary or secondary origin. The first group is most often seen in young patients in the first two decades of life. On the other hand, secondary ones are more frequent in patients over 40 years of age and respond to metastatic disease with various sites of origin [1].

Bone tumors are a major diagnostic challenge for the radiologist since multiple factors (epidemiological, clinical, as well as imaging studies) need to be considered for an effective diagnostic approach. Radiography is the first step in the diagnosis, and perhaps the most important, for the following decisions that will be made about the patient. It is important to know if the bone lesion is aggressive or not, since this radically changes our performance [2].

To make a definitive diagnosis of a tumor requires a correct interrogation of the patient, adequate physical examination, accompanied by complementary laboratory studies and imaging (simple X-rays, computed axial tomography, magnetic resonance, bone scintigraphy, ultrasound),supported by the anatomopathological study that confirm the clinical thinking [1].

Once the tumor diagnosis is confirmed,it is necessary to establish the treatment in each case to meet the needs of patients and families.

Our goal is to call on doctors who in one way or another provide care to patients affected by tumors or pseudotumor lesions of

SOMA to reach anaccurate diagnosis in time in each case and as well as apply the correct treatment according to the established protocols.

Presentation of cases

Case 1

A 43-year-old female patient who goes to the doctor for presenting pain in the inner face of the left knee, analgesics and anti-inflammatories are indicated for 15 days despite which she continues with pain and difficulty in performing the gait. On physical examination, an increase in volume could be felt on the inner side of the left knee, intense pain and inability to perform the flexor extension of said joint.

Radiological study

Simple X-rays of the left knee AP and lateral where it is observed: osteolytic lesion of 4 cm of the internal femoral condyle with rupture of the cortical, associated with oblique fracture that interests both femoral condyleswith the diagnosis of giant cell tumor (GCT) associated with pathological fracture.

It is decided to perform osteosynthesis with two Ender wires, which were placed through the external femoral condyle, osteosynthesis is not satisfactory, since one of Ender's wires lost fixation.

After four months of evolution, the patient is received in the Peripheral Tumors Service of the CCOI FrankPaís.

Physical examination

- Absolute functional impotence
- Surgical scar of plus minus 2 cm on the outer face of the left knee.
- Increased volume of the left knee (Figure1).
- Pain on palpation of the left knee.
- Inability to perform flexion of the left knee.

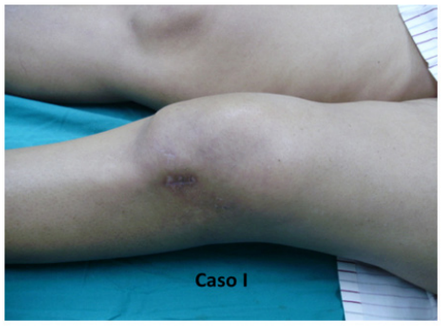

Figure 1: Visible volume increase left knee.

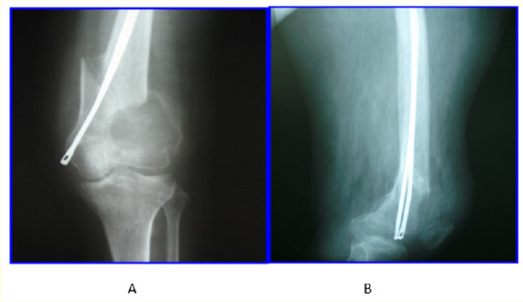

Figure 2 A and B: Hematological studies, chest x-rays, scintigraphic bone survey in normal parameters.

Simple X-rays of left knee Ap. and side. (Figure 2A and 2B) Extensive destructive epiphyseal osteolytic lesion with cortical rupture, supraintercondylea pathological fracture and extension to soft parts, with osteosynthesis material that has lost fixati biopsy was performed and the diagnosis of Giant Cell Tumor (GCT) malignant grade was confirmed, with invasion of soft parts. The osteosynthesis performed was not satisfactory, Ender wires do not offer the necessary bone stability in the presence of a tumor at the level of the femoral condyles and the malignant cells can be dragged into the healthy tissue.

Final conduct taken

Prior informed consent the presence of a malignant GCT accompanied by a pathological fracture with 4 months of evolution, with normal complementary studies, without the presence of metastases, left supracondylar amputation was proposed (Figure 3) as a definitive treatment method, associated with rehabilitation of the residual limb with the aim of a prompt incorporation into the usual activities of life.

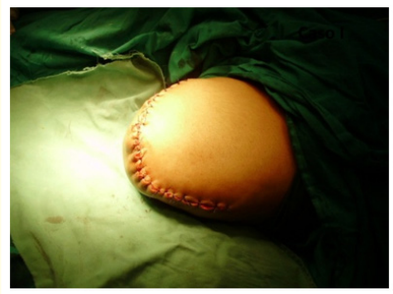

Figure 3: Supracondylar amputation.

Case 2

A 15-year-old patient who attends the doctor's office in his health area for presenting pain in the external face of the right leg above the peroneal malleolus, initially he was treated with analgesics, after a month of treatment the pain increased.

X-rays of the right ankle were indicated where a lytic image was observed in the distal third of the right fibula, which was interpreted as a benign T.C.G, is taken to the room for curettage and graft taken from the patient's own internal femoral condyle.

The bone graft was insufficient and was not incorporated into the entire tumor, so they decided to perform block resection of the distal third of the right fibula. He was referred to the CCOI Frank País Tumor Service seeking a second opinion and the retrospective study of the biopsy confirmed the diagnosis of fibrous metaphyseal defect.

Physical examination

- Surgical scar on the outer face of the right thigh distal third and outer face of the right leg, distal third.
- Normal flexoextension tibiotalar joint movements.

Discussion of the case

This is a young patient to which only a simple radiographicstudy was performedin ap. view (Figure 4A) and lateral (Figure 4B) that allows us a limited image in the study of anosseous tumor, CT, MRI, Bone Scintigraphy was not performed to define the limits and extent of the tumor.

The bone graft taken from the external femoral condyle was notenough to fill the entire tumor so the patient continued with the painful symptomatology so it was decided to resection of the distal third of the fibula (Figure 5A and 5B) extremely radical behavior where other treatment alternatives were possible.

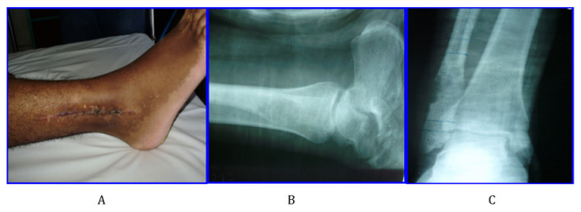

Figure 4A-C

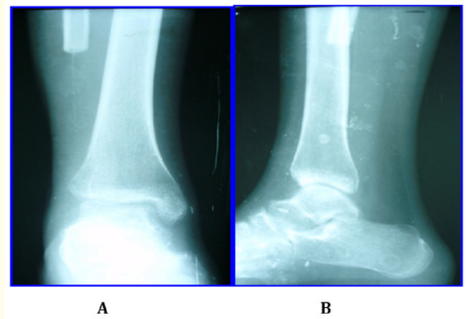

Figure 5A and B: AP X-ray post-surgical.

Final Behavior Taken: Before the exaggerated eversion movement, beyond the normal limits which causes a deformity in valgus of the right ankle in a sustained way causing instability of the same of ligamentous cause (tibioperoneal ligaments) and bone due to lack of the distal third ofthe right fibula. Prior informed consent it was decided to apply conservative treatment with short caliper orthopedic orthoseswith t-device onthe outer side of the ankle to avoid the valgus deformity that would cause the gait as well as associated rehabilitative treatment and in the future perform ankle arthrodesis.

Case 3

An 8-year-old patient, who goes to the guard corps in his health area for presenting pain in the left forefoot, is indicated analgesics and restfor 15 dayswithout achieving improvement. On physical examination, an increase in volume was observed in the left forefoot and claudication to the gait.

X-rays are indicated in anteroposterior and lateral views in which lytic lesion was observed that took the third metatarsal of the left foot of 3 cm in diameter, with marked thinning of the corticals and areas of ruptureof the same.

With the diagnosis of possible bone tumor they decide to perform biopsy under general anesthesia.

The pathological diagnosis reports that it is an aneurysmal bone cyst.

The patient was immobilized for 8 weeks and is proposed as a second surgery, placement of autologous bone graft taken from the iliac crests or the placement of bench bone graft. Parents go to the tumor service of CCOI FrankPaís.

Physical examination

- Volume increase in the dorsum of the left foot.
- Surgical scarring approximately 3 cm above the third left metatarsal.
- Claudication to the gait due to pain in the left forefoot.

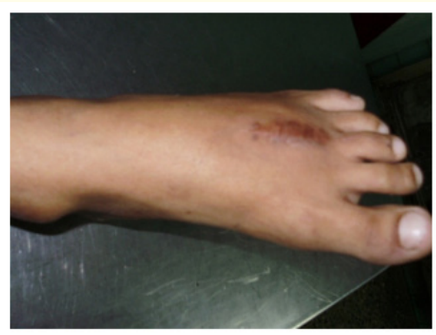

Figure 6

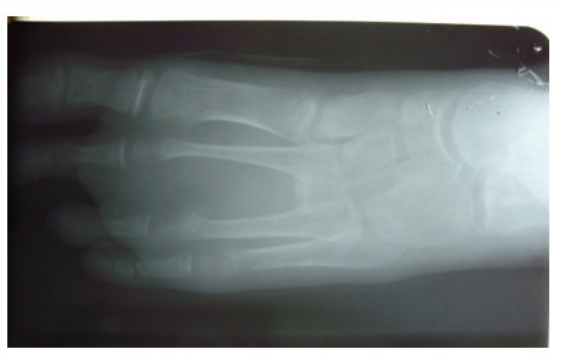

Figure 7: Posterior antero x-ray.

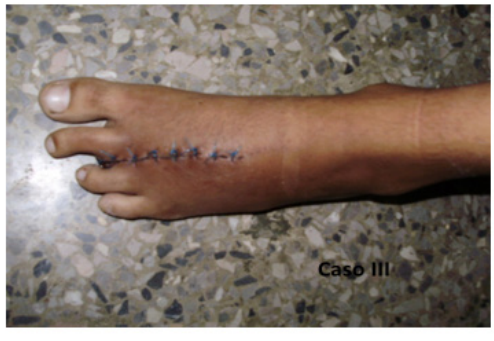

Figure 8: Vista dorsal.

Discussion of the case

This is an 8-year-old patient, with the pathological diagnosis of Aneurysmal Bone Cyst, with inability to perform the gait and two months of evolution after having undergone the first surgery.

In the radiographs in the anteroposterior and lateral view of the left foot, osteolytic lesion was observed with great thinning of the corticals in the distal third of the third metatarsal with cortical rupture by several areas near the growth epiphysis which caused a shortening of the metatarsal.

Final conduct taken

- Prior informed consent it was decided to amputate the third metatarsal of the left foot for the following reasons
    - The destruction of the cortical by several areas does not allow the placement of bone graft.
    - Amputation of the third metatarsal does not incapacitate the patient during his or her gait.
    - Why the aneurysmal bone cyst can mask a malignant lesion especially in a previously manipulated lesion.
- The basis of the third metatarsal was respected for not being taken and to maintain the stability of the rest of the metatarsals.
- The final evolution was satisfactory because the pain disappeared and the patient achieved an adequate functional and aesthetic gait.

Discussion

In the study of tumor and pseudotumoral conditions of the skeleton, it is necessary and essential to know and interpret the clinic and radiology in each case due to the variety of the radiological picture as well as the dissimilar forms of presentation of these lesions. It is necessary the competition of orthopedics, clinicians, pediatricians, oncologists, radiologists and specialists in Pathological Anatomy to settle the difficulties that may appear and offer the best guarantees of treatment to the affected patients in each case.

Among the most frequent injuries of difficulties and errors of interpretation is the Metaphyseal Fibrous Defect that not because it is the most frequent injury in our service is exempt from these.

Non-ossifying fibroid (FNO), also known as metaphyseal fibrous defect, is considered a lesion with spontaneous regression in skeletal maturation. The presentation of this disease can vary from the asymptomatic form to the presence of pathological fracture. Due to its location adjacent or close to the insertion of muscles, tendons and ligaments, symptoms such as pain are sometimes not interpreted clearly and are confused with other diseases, hence the importance of maintaining a high index of suspicion of this injury [1,3,4].-FNO predominates in males in 60% of cases and ranges in age from seven to 69 years. The highest incidence occurs in the first two decades of life, especially the second [5-7].

The most commonly used diagnostic means are plain radiography, computed tomography (CT) and magnetic resonance imaging (MRI). The bone scan shows an isocaptant image and in the healing phase there is anincrease in the uptake in a homogeneous way [8,9].

The most commonly used surgical treatment is bone resection and curettage with filling or not of the medullary cavity, sometimes associated with the use of osteosynthesis [10,11].

It is significant in the presence of such an injury and given the characteristics of it that it can be asymptomatic and evolve to spontaneous healing, properly evaluate to avoid extreme behaviors and complex surgical techniques that may cause instabilities that require limiting surgeries that can leave important sequelae.

The term Aneurysmal Bone Cyst (QOA) was first used in 1942 by Jaffe and Liechtenstein to describe two samples of blood-filled cysts in which the tissue of its wall contained wide spaces, areas of hemosiderin deposits, giant cells, and some bone trabeculae [12].

As a concept it is an osteolytic lesion of an expansive nature consisting of spaces of variable size filled with blood and separated from each other by connective tissue septums, in which trabeculae of bone or osteoid tissue can be seen, as well as osteoclastic giant cells.

They usually appear in patients under 30 years of age with predominance in childhood, 76% before 20 years of age, with greater representativeness in the female sex, are metaphyseal and eccentric, although it can also appear in the diaphysis, flat bones, short tubular bones and even the spine [12-19].

Clinically it is characterized by pain, increased volume and limitation of joint mobility [20-22].

Tests such as Axial Tomography or Magnetic Resonance Imaging, are necessary studies and better show the anatomy of the lesion, its extension within the bone and the involvement of soft parts [12,16].

Corticosteroid injection may be used in treatment. In large lesions and vertebral locations, a single or repeated selective arterial embolization is advised.

It is necessary to always remember the benign character of the injury and to practice a conservative surgery accordingly. When the size and/or location of the cyst permits, curettage of the cystic bed should be resorted to, followed by grafting. Block resection is indicated in bones such as the fibula. At the vertebral level, surgery should be performed whenever possible with the aim of emptying the lesion and stably arthrodesar the affected segment. Only in surgically inaccessible lesions is radiotherapy used, always aware of the risk of the appearance of an osteogenic sarcoma after radiation [13,20-22].

Giant cell tumor is a neoplastic lesion that almost always develops in the epiphyseal region of a long bone (femur, tibia, and radius). In the review conducted by Schajowicz it was found that this tumor lesion comprised 19% (420 of 2,421 cases) of the malignant bone lesions, of which 75% (345 of 460 cases) were between 20 and 50 years old; most giant cell tumors appear after the closure of the epiphyseal plaque, being more frequent in women between 30 and 50 years men. The predominant symptoms are usually pain, functional limitation, joint effusion or present as a pathological fracture. From the radiological point of view, studies reveal an eccentric, destructive (osteolytic) epiphysometaphyseal lesion of medullary and cortical bone that thins it, infuses it and breaks it, all this at the end of a long bone in an adult [23].

The treatment of GCT is controversial and controversial and includes various options such as: curettage and grafting ofautologous or homologous bone, curettage and insertion of polymethylmethacrylate (PMMA), cryoterapia after curettage, curettage and washing of the cavity with phenol, alcohol, zinc chloride and hydrogen peroxide, milling of the cavity and insertionof PMMA or bone grafting, block resection and bone transportation with external fixator or tumor prosthesis, radiotherapy and embolization of the vessels that feed it [24].

We have used amputation in those cases of malignant GCT with infiltration of soft parts or those located in short bones that has not been feasible from another surgery and due to the high risk of metastasis.

Conclusion

Bone tumors constitute a difficult challenge for their diagnosis and adequate treatment, which is why they require the participation of a multidisciplinary team capable of developing an effective epidemiological, clinical, psychological, imaging and pathological approach in the management of these patients.

Conflict of Interest

The authors declare that there is no conflict of interest in the preparation of this work.

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