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Hand Chondrosarcoma, Atypical Presentation: Case Report

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ABSTRACT

Chondrosarcoma is the third most common primary bone tumor of the hand, after myeloma and osteosarcoma, affecting mainly the proximal phalanx of the fifth finger, with a long-term clinical presentation, manifested mainly by local pain and enlargement, affecting mostly people in the fifth and sixth decades of life, with no reports of which hand is most affected. It is diagnosed by combining imaging studies in combination with the histopathological study, with magnetic resonance being the preferred paraclinical study due to its multiple benefits. The main proposed management is amputation, however lately a primarily conservative management has been advocated, with the aim of preserving the function of the affected hand, justified by the low metastatic rate of chondrosarcomas in the hand. We present the clinical case of a 76-year-old female patient who presented after a fall from her own height with a pathological fracture of the proximal phalanx of the fourth finger of the left hand. Upon questioning, the patient denied having presented clinical symptoms prior to her incident; her surgical management was decided by means of wide resection and placement of a bone graft, since the patient did not accept general anesthesia, the placement of a cadaveric cortical graft was chosen.

KEYWORDS: chondrosarcoma, hand tumor, amputation, wide resection, preservation of function.

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INTRODUCTION

Chondrosarcomas are the third most common primary bone tumor in the hand, representing 0.5% in this location, the majority arise de novo, mainly affecting the metacarpals and proximal phalanges, with an even greater predominance of the latter, with reports that the most affected phalanx is the

fifth and less frequently the fourth; still without a report on which hand is most affected, characteristically also presenting a low metastatic potential when they occur in the hand compared to other locations. Histologically, it is of mesenchymal origin characterized by the formation of cartilaginous matrix, 90% correspond to low or intermediate-grade tumors, that is, WHO grade 1 or 2 (Table 1). It is more common in people in the fifth and sixth decade of life, with the most common clinical presentation being the presence of a mass that increases in size with or without association with pain, over several years before visiting the doctor, with an average time from symptom onset to the first surgery ranging between 2 months and 30 years.[1,2,3,4,5,6] They are notoriously resistant to chemotherapy and radiotherapy; their management is necessarily surgical, with an extensive debate recently between wide surgical resection and surgical resection with reduced margins. The justification for the latter is associated with function preservation, as well as its low potential for local recurrence and metastatic potential; however, there are reports of recurrence in up to 92%, compared to a common 16% with wide resections, even with reports of no recurrence with amputation, as in the series reported by Bovée et al. Its resistance to chemotherapy or radiotherapy is believed to be associated with increased expression of p-glycoprotein and telomerases, as well as low division rates.[1,2,5,6,9] Magnetic resonance imaging is the preferred diagnostic study as it allows us to detect the limits between pathological and normal bone, intramedullary extension, extraosseous extension. The extension into soft tissue and irregular cortical thickening are indications of malignancy. In the histopathological study, this type of tumor has 5 distinctive characteristics: 1) Production of malignant cartilage, 2) Infiltration of the medullary cavity, 3) Entrapment of bone trabeculae, 4) Infiltration of Haversian systems, 5) Destruction of normal bone. To establish the diagnosis of chondrosarcoma in this region, a combination of histological and radiological findings is needed.[1,2,5]

Table 1. Based on the work of Evans et al.7

OMS Classification System	
Grade	**Characteristics**
0.5 (Borderline)	Cannot be histologically distinguished from an enchondroma but presents a more acute onset and an aggressive radiological appearance.
1 (Low)	Compared to an enchondroma, it shows slightly increased cellularity, nuclear hyperchromasia, and enlarged nuclei. No polymorphisms, no myxoid matrix, and rare mitoses.
2 (Intermediate)	Increased cellularity, nuclear size, hyperchromasia, polymorphisms, binucleation, and numerous mitoses; focally present myxoid matrix.
3 (High)	Similar to Grade 2, with a diffuse myxoid matrix and a higher number of mitoses.

CLINICAL CASE

We present the clinical case of a 76-year-old female patient with a history of systemic arterial hypertension of 13 years of evolution, homemaker, right-handed, who denies drug addiction and alcoholism, without surgical history. She presented to our service 9 days after suffering a fall from her own height, with a contusion on her left hand, presenting local pain and edema. She initially visited a bone setter without improvement; therefore, she was referred to our unit. X-rays of the hand were taken in two positions, finding a transverse bicortical diaphyseal fracture in the proximal phalanx of the fourth finger of the left hand, non-displaced; similarly, a tumor lesion adjacent to the fracture dependent on the affected phalanx was observed. Surgical management was planned with the patient through wide resection and placement of an autologous graft fixed with an osteosynthesis system; however, the patient did not accept general anesthesia, so the placement of a cadaveric allograft was decided.

Figure 1. AP X-ray of pathological fracture of the proximal phalanx of the 4th finger.

Figure 2. Oblique X-ray of pathological fracture of the proximal phalanx of the 4th finger.

SURGICAL TECHNIQUE

On a hand table, after asepsis and antisepsis, with placement of sterile fields conventionally, marking was performed on the dorsum of the hand and proximal phalanx of the fourth finger for a zigzag incision. Esmarch bandage was placed; the procedure began with incisions through the markings, dissecting by planes until locating the extensor system; it was incised longitudinally, osteotomies were performed with an oscillating saw over the metacarpal neck, followed by disarticulation at the proximal interphalangeal level; the bone piece was removed en bloc, leaving a 4cm bone defect. Subsequently, two bone plates of 4x1.5cm were made with cadaveric cortical bone; they were approximated and fixed with a 2.0 system proximally and distally, previously bending the plate to 30° at the metacarpal level and 45° at the proximal interphalangeal level. The Esmarch bandage was removed, hemostasis was performed, tissues were approximated, and the procedure was completed. An intrinsic plus position splint was placed. The histopathological report confirmed the presence of a well-differentiated low-grade chondrosarcoma (Grade 1), with negative surgical margins for neoplasia, with the lesion 0.6cm from the surgical margin, with adequate margins; therefore, only follow-up continued. At the third month, the patient was evaluated with new hand X-rays, without data of local recurrence.

Figure 3. Surgical dissection of the proximal phalanx of the 4th finger.

Figure 4. Resection of the proximal phalanx of the 4th finger.

Figure 5. Marking of cadaveric bone graft.

Figure 6. Placement and fixation of cadaveric graft with pre-bent linear plate.

Figure 7. Immediate postoperative photograph.

DISCUSSION

Despite the 0.5% incidence of chondrosarcomas located in the hand, being the third most common primary bone tumors in the hand, behind myeloma and osteosarcoma, the importance of these tumors lies in their destructive capacity of adjacent local tissues. We consider that much of this situation is due to the long clinical evolution, as most patients present in advanced stages, ranging from 2 months from the onset of symptoms to 30 years later, allowing local involvement. In our patient, classic symptoms (pain and size increase) of the tumor were not present, being a finding derived from a pathological fracture due to her fall. [1,3,5] Although the proximal phalanx of the fourth finger is the least common location in the hand, in our patient, this phalanx was affected, with a low-grade tumor found in the histopathological report, consistent with 90% of hand chondrosarcomas.[6]

Figure 8. Postoperative AP X-ray.

Figure 9. Postoperative oblique X-ray.

CONCLUSION

We consider that conservative management in these patients may be a viable option in early stages; however, we find that most patients present in locally advanced stages, which does not allow this type of management. We believe that the evaluation of these patients should be focused on the needs of

each individual and primarily on the stage at which they present, not neglecting that both radical and conservative management are adequate options according to the patient's characteristics and needs.

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