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Enchondroma of the Hand revealed by Trauma, case presentation

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Abstract **Case Report**

Enchondromas or chondromas are benign bone tumors of a cartilaginous nature, most frequently found in the hand. Most often asymptomatic or clinically awakened by painless swelling, an enchondroma can be diagnosed during a routine physical examination, as an incidental finding on plain X-rays or in the case of a pathological fracture usually caused by minor trauma. The imaging work-up initially includes standard X-rays, and may be supplemented by CT and MRI scans. Chondromas are often single, but can also take multiple forms. Diagnosis is radio-clinical, but must be confirmed by histology. The risk of malignant degeneration calls for surgical treatment, involving complete curettage of the chondroma and its filling with an iliac cancellous graft.

Keywords: Enchondroma, Chondroma, Hand, Hand Tumor.

I. INTRODUCTION

Enchondromas, also known as chondromas, are benign cartilaginous lesions seen mainly in the skeleton of the hand (around 35% of all enchondromas develop in the hand) and are the most common (up to 90%) bone tumors of the hand [1-9].

Chondroma affects subjects of any age but is much more observed in children and young adults between 10 and 40 years of age [15].

It originates primarily in the small bones of the hand and foot (mainly in the metacarpals and first phalanges [10], but may be present in other bones [8].

The chondroma of the hand is a benign cartilage tumor, resulting from a lack of normal enchondral ossification below the growth plate [4].

Chondromas are usually asymptomatic and rarely painful. It can sometimes cause a pathological fracture. Very large chondromas may also produce a curvature.

Imaging is highly characteristic, and in many cases may be sufficient to make a diagnosis.

No treatment is necessary if the chondroma is asymptomatic. Simple radiological monitoring may be proposed. If the chondroma is troublesome, surgical treatment by simple curettage may be proposed, or grafting will only be necessary if there is a significant risk of fracture after curettage [11].

We are reporting the case of an enchondroma of the left hand in a 12-year-old boy, discovered incidentally following trauma.

II. OBSERVATION

We are presenting the case of a young boy with a left 5th finger enchondroma, examined, diagnosed and treated.

This is a 12-year-old boy with a history of closed trauma to the 5th finger of the left hand 2 years ago, For which no investigation was undertaken and from which he kept a painless swelling of this finger, which had been progressively enlarging in size for 1 year. He arrived to the emergency department of the traumato orthopedics with a painless swelling of the left hand following a recent closed trauma to the hand 2 days prior to admission.

On physical examination, a painless swelling of the metacarpal and 1st phalanx of the left finger was noted, with no other associated signs. The rest of the clinical examination was unremarkable. A standard external X-ray of the left hand revealed osteolytic lesions of the left 5th metacarpal and the 1st phalanx of the homolateral 5th finger, with no periosteal reaction or apparent involvement of the surrounding soft tissues.

A CT scan of the left hand was requested prior to biopsy, revealing two osteolytic lesions on the 5th finger of the left hand, probably related to enchondromas.

These lesions had the same characteristic, osteolytic meaphyso-diaphyseal centromedullary, dense, well-defined contours, seats of endolesional calcified partitions realizing an endosteal scalloping with doubt of a cortical rupture for the lesion of the 5th metacarpal (Figs. 1,3, 4) and without cortical rupture for the 1st phalanx (Figs. 2, 3)

He was treated surgically, with curettage of the lesions, enabling a biopsy to be taken for histopathological analysis, showing a benign chondroid tumor proliferation bounded by a fibrous capsule. The chondrocytic cells were regular with no architectural atypia, confirming the diagnosis of enchondroma.

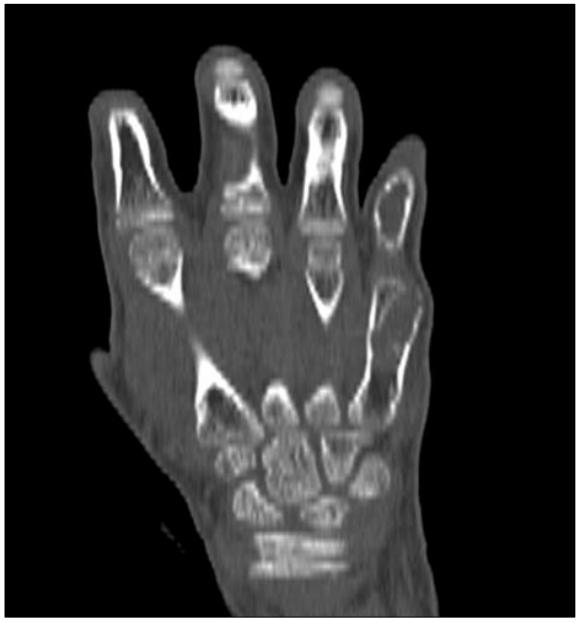

Figure 1: CT scan of the left hand, coronal section in bone window: osteolytic lesion of the 5th metacarpal blowing the cortical

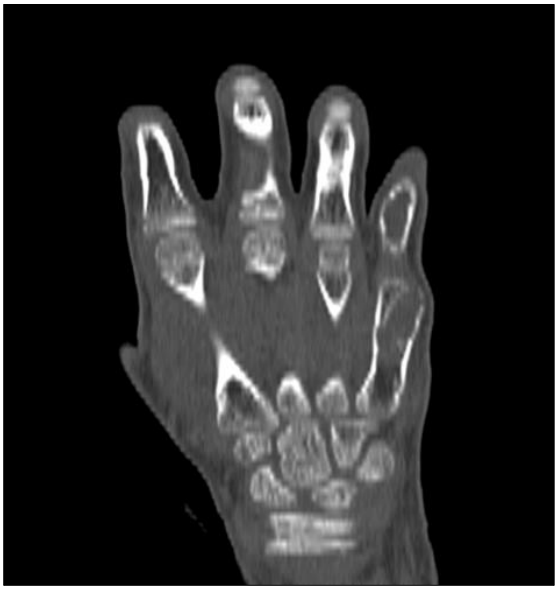

Figure 2: CT scan of the left hand, coronal section in bone window: centromedullary osteolytic lesion of the 1st phalanx of the 5th finger

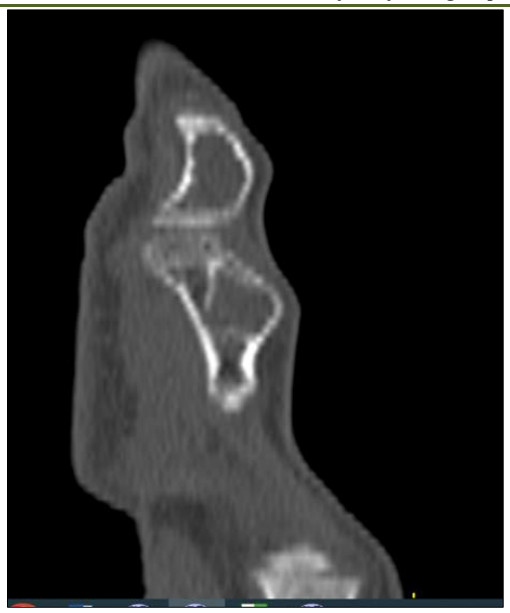

Figure 3: CT scan of left hand sagittal section in bone window: Two osteolytic lesions of left 5th metacarpal and 1st phalanx.

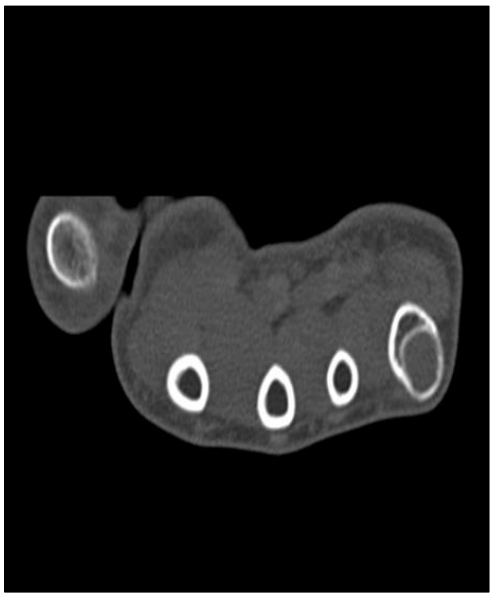

Figure 4: CT scan of the left hand, axial section in bone window: osteolytic lesion of the 5th metacarpal.

III. DISCUSSION

Chondromas are the second most common benign bone tumors [5, 6], and the most common in the hand [19]. Chondromas account for 11.2% according to Dahlin [6], and 27% according to Schajowicz [15].

Paradoxically enough, publications on chondromas of the hand are rare: Narakas in 1969 [10], in 1971 Jewusiak [8], and above all Takigawa [14], in 1974 Noble and Lamb [11].

The chondroma may be solitary or multiple, forming part of an enchondromatosis; its unilateral form is Ollier's disease, and its association with cutaneous angiomas gives rise to Maffuci-Cast syndrome. The tumor is referred to as an enchondroma or central chondroma when its development is intraosseous, and as a juxta-cortical chondroma or ecchondroma when its development is peripheral to a piece of bone [5]. Central chondroma occurs in 35% to 40% of cases in the hand [5].

It can be observed at any age, but is much more common in children and young adults between the ages of 10 and 40 [5]. It is a tumor that affects predominantly Males and is located on the left rather than the right, and is found on the metacarpals and first phalanges [4-6].

Enchondromas are frequently asymptomatic, discovered incidentally on radiological examination, or manifest as more or less painful swelling, pathological fracture or trauma [2-4], as in the case of our patient

where the diagnosis was revelated following closed hand trauma.

The cause of isolated enchondromas is unknown. For multiple enchondromas, the current hypothesis is the presence of a genetic error leading to abnormal bone formation [7].

Enchondroma is an expansive tumor, meaning it grows over time. As a result, the cortex of the bone may be thinned. Punctiform (dot-shaped) or annular (ring-shaped) calcifications are found in over 50% of cases [7].

Radiology can make the diagnosis by demonstrating a geographic, centro osseous, diaphyseal lacuna pushing back the cortex without destroying it, without periosteal reaction or peri lesional sclerosis [1-15].

Histological diagnosis of chondromas is straightforward. The macroscopic appearance of the central chondroma is suggestive: diaphyseal or metaphyseal thinned cortices limit the whitish or slightly bluish tumor, which is friable and poorly vascularized. The lobulated architecture remains the same, but the chondrocytic population changes its appearance: the cells are more numerous, sometimes two cells are in the same logette, but they remain highly differentiated. There are no cytonuclear atypia or mitoses, but the nuclei are more distinct rich in chromatin [16].

The histological borderline with chondrosarcoma is not always obvious. This notion is classic for all cartilaginous tumors and more specifically for chondromas. It requires careful reading of all intratumoral tissue by an experienced histopathologist [16].

Treatment consists of curing the tumor and filling the cavity with an iliac cancellous bone graft [4]. Noble and Lamb [11], affirm that simple tumor curettage gives as good a result as curettage with graft; Jewusiak [8], recommends homograft. Takigawa [13, 14], Narakas and Verdan [9], favor curettage and iliac cancellous filling.

IV. CONCLUSION

Enchondroma is a benign cartilage tumor that often affects the hand, and is very common in people under 40. Most often asymptomatic, it is usually discovered by chance.

Diagnosis is radio-clinical, but must be confirmed by histology. The risk of malignant degeneration requires surgical treatment.

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