Case Resolution

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Case presentation on page 267.

DIAGNOSIS: Giant cell tumor.

DISCUSSION

Magnetic resonance imaging with contrast media was used to examine the lesion and the inflammatory process in the soft tissues (Figure 3).

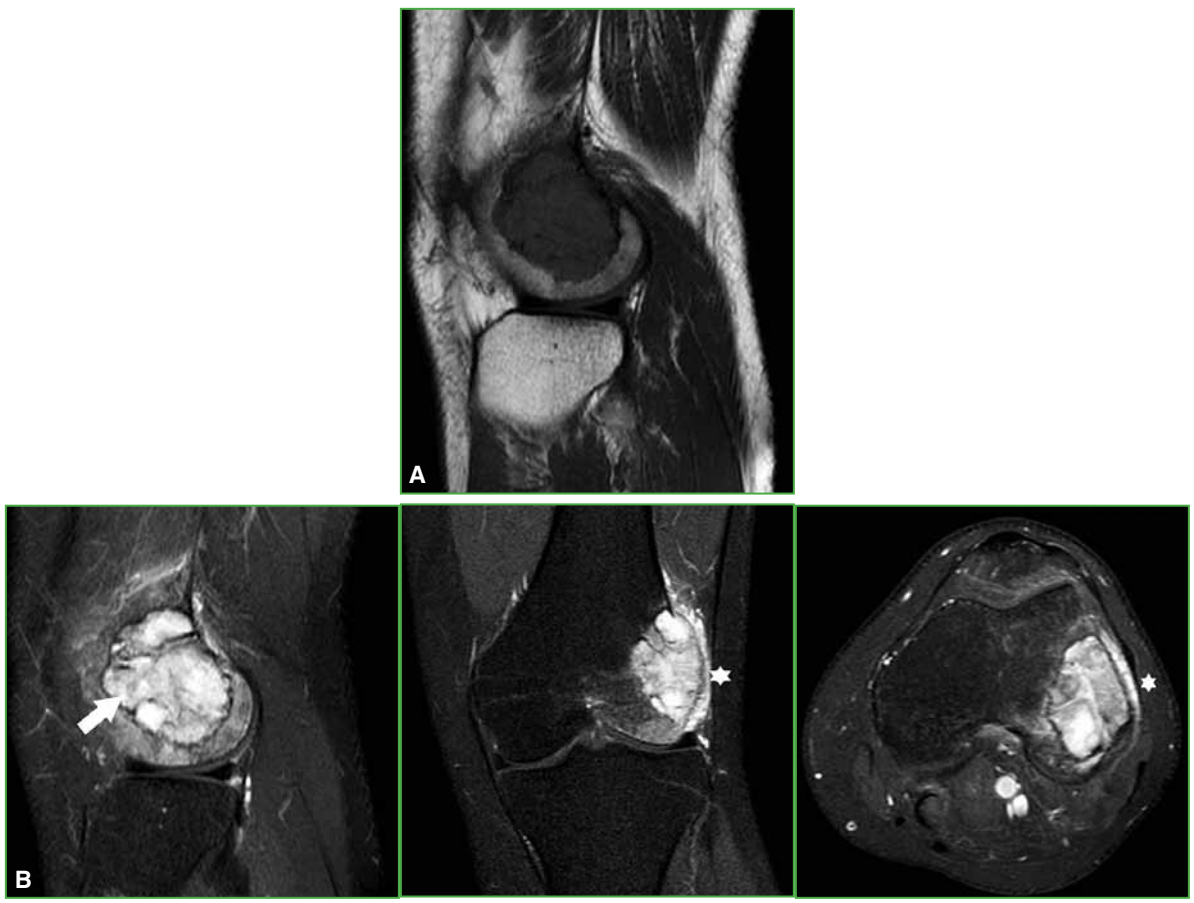

Figure 3. Magnetic resonance imaging of the left knee with contrast medium. **A.** Sagittal section in T1-weighted sequence. The lesion persists with characteristics similar to those of the previous study. **B.** Sagittal, coronal and axial sections in T1-weighted sequences with injection of contrast medium and fat suppression. Contrast uptake in the lesion (arrow) and minimal soft tissue edema adjacent to the lateral retinaculum (asterisk) are visualized.

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The computed tomography (Figure 4) revealed a lesion with cortical thinning and, in some sectors, cortical destruction.

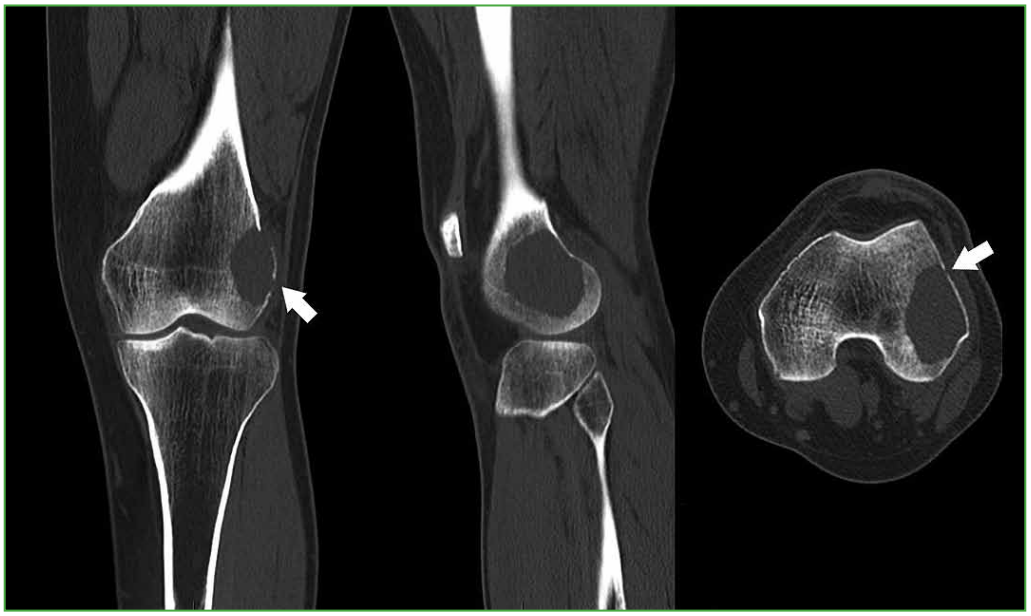

Figure 4. Computed tomography of the left knee, coronal, sagittal, and axial sections. A hypodense lesion with fine septa inside that thins the cortex and produces endosteal erosion (arrow).

With the information from the studies, the head traumatologist and the doctors from the Musculoskeletal Tumors Committee decided to perform a CT-guided biopsy (Figure 5) and stage the lesion with a chest tomography. The patient never experienced weight loss or changes in muscle mass.

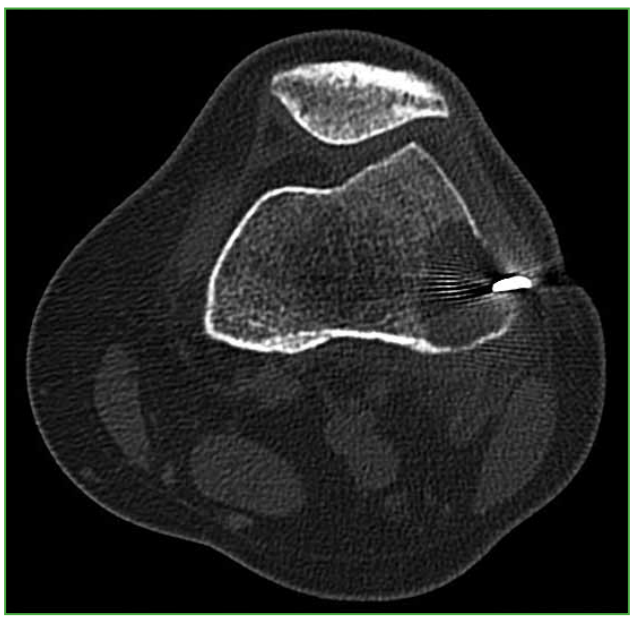

Figure 5. CT-guided bone biopsy of the external condyle with an 11G-4 core needle. A geographic pattern is identified.

The anatomical pathology study reported that the sections showed a tumor consisting predominantly of numerous multinucleated giant cells of the osteoclastic type interspersed in sectors with mononuclear fused cells. A focus of spindle cell proliferation with a whorled arrangement was recognized, in which foam cells were distinguished (Figure 6).

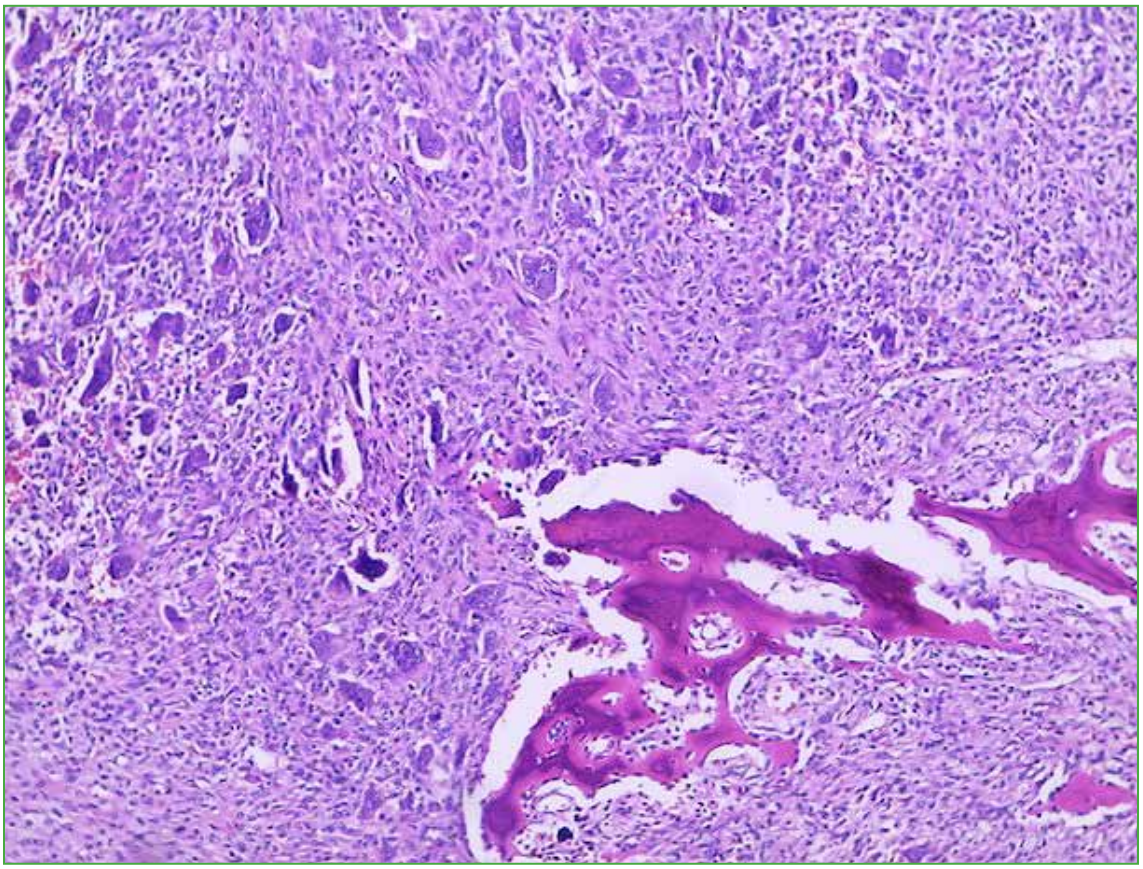

Figure 6. Histological preparation of a distal femoral tumor, whose current histomorphological characteristics (predominantly giant cells), in conjunction with radiological findings and clinical evolution, led to its classification as a giant cell tumor.

The possibility of neoadjuvant treatment with subsequent surgery or extensive surgery with placement of bank bone filler and autologous iliac crest graft emerged with the diagnosis of giant cell tumor without a distant lesion.

Curettage surgery with bank bone filling and autologous iliac crest graft was performed, with which good outcomes were obtained (Figure 7).

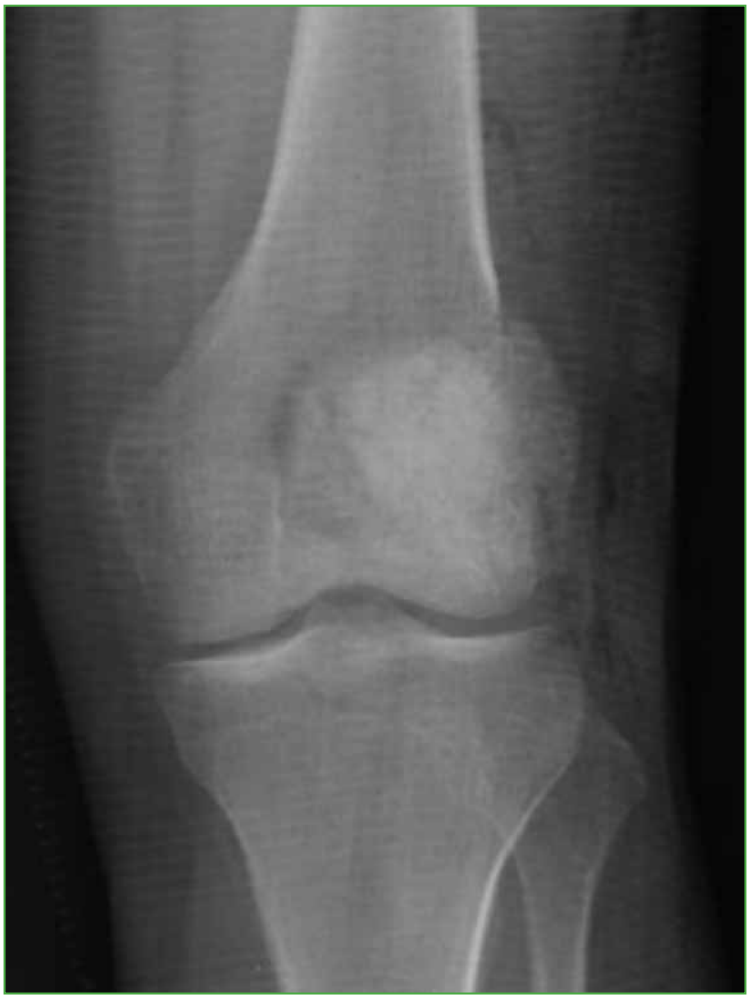

Figure 7. Anteroposterior radiograph of the left knee for immediate post-surgical control.

DIAGNOSIS

With all these findings, the diagnosis of giant cell tumor was reached. It is a generally benign bone tumor, formed by two sheets of oval mononuclear cells interspersed with giant cells. This tumor is rarely malignant (5% of all giant cell tumors). It originates in the metaphysis, with possible extension towards the epiphysis. Involves, in order of frequency, the distal femur, proximal tibia, and distal radius.

It is characterized by signs and symptoms such as pain, inflammation, limitation of movement, and pathological fracture (5-10%). The maximum incidence is at 20-50 years (80%). There is a slight predominance in the female sex (1.5:1) and the recurrence rate is high after marginal resection (25%). Wide resection is preferred.

On radiographs, it appears as an eccentric, lytic lesion originating from the metaphysis. The geographic borders have a narrow transition zone, no sclerotic margin, and cortical thinning. On computed tomography, cortical thinning with penetration is confirmed.

On MRI, T1-weighted sequence images show low to intermediate, heterogeneous signal intensity. In fluid-sensitive sequences, the signal intensity is high, not homogeneous. After injection of contrast medium, heterogeneous enhancement can be seen.

In histological preparations, the Campanacci grading system should be taken into account:
I: Radiology and histology studies show low aggressiveness.
II: Radiology studies show aggressiveness and intact periosteum. Benign histology.
III: Aggressive growth and soft tissue mass in both radiology and histology studies.

The most frequent differential diagnoses are: chondroblastoma (Figure 8), aneurysmal bone cyst (Figure 9) and telangiectatic osteosarcoma.

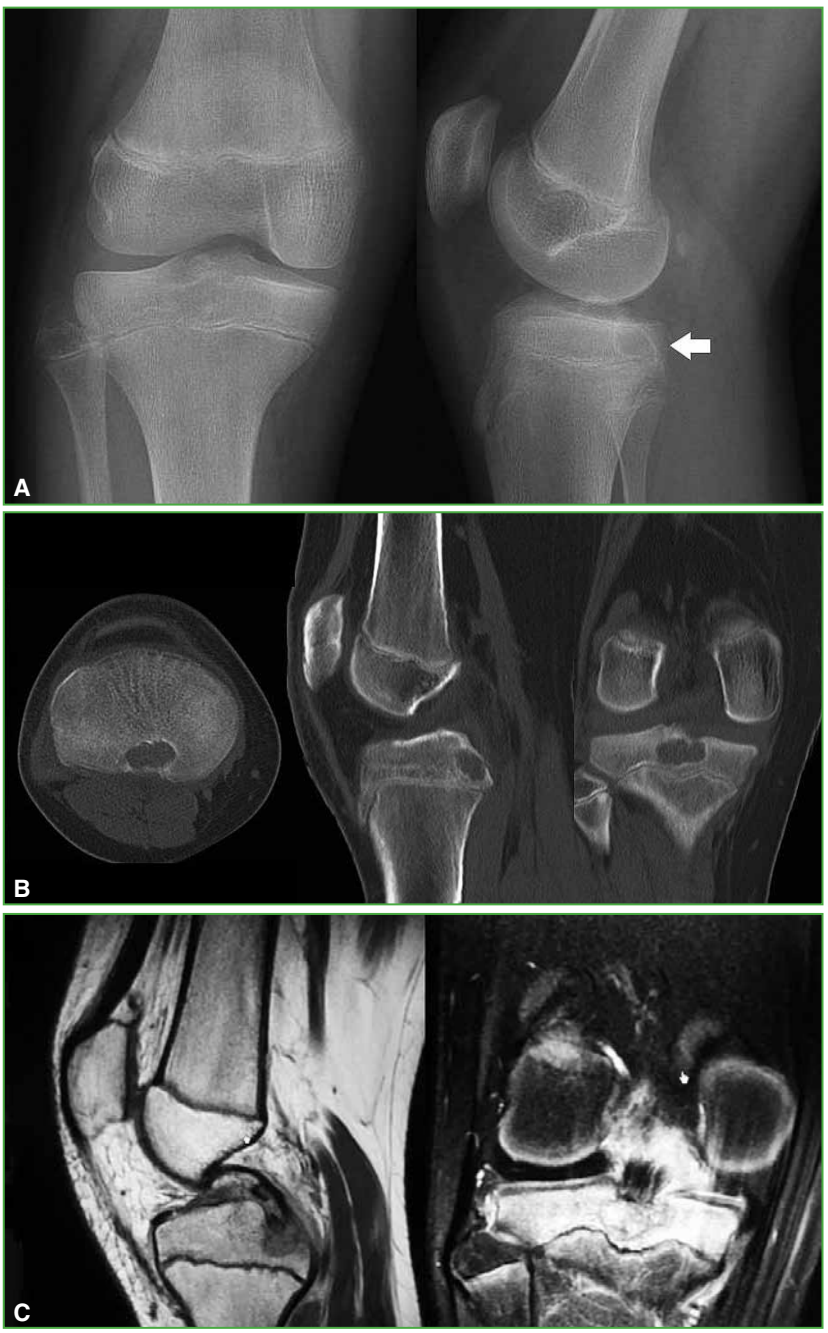

Figure 8. Chondroblastoma. 11-year-old patient with pain located in the popliteal fossa of the right knee, of six months of evolution. **A.** Radiograph of the right knee with a geographic Ia lesion, with a sclerotic border at the level of the epiphyseal sector of the tibia (arrow). **B.** Computed tomography showing a hypodense lesion with sclerotic borders. **C.** Magnetic resonance imaging of the knee, sagittal section on T1-weighted sequences and coronal section on STIR sequence. The lesion is visualized with significant bone edema.

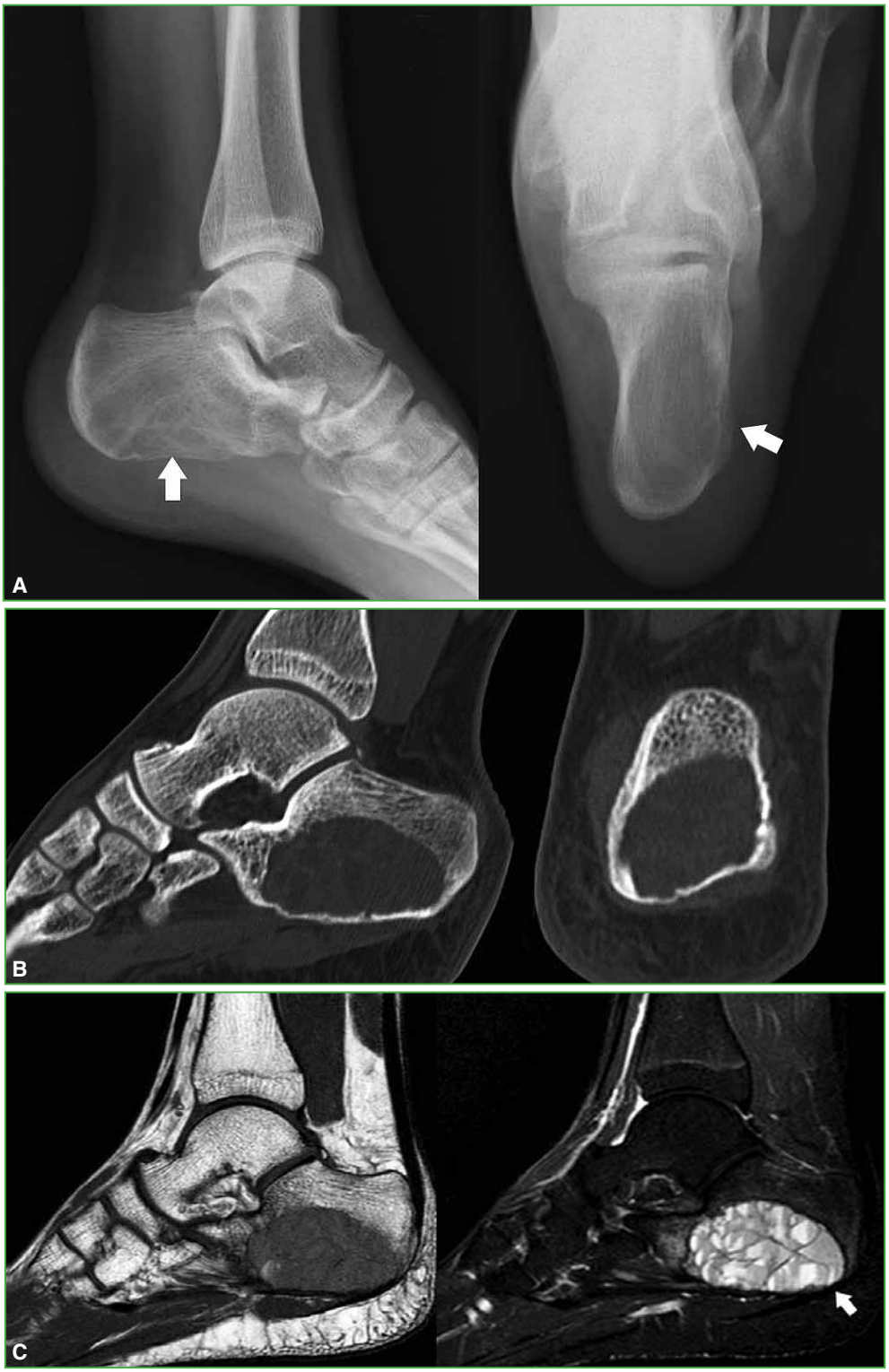

Figure 9. Aneurysmal bone cyst. A 20-year-old patient with pain in the hindfoot of several months' evolution. **A.** Lateral and axial radiographs of the calcaneus. A radiolucent lesion with poorly defined borders can be seen, with septa inside it and without cortical rupture (arrow). **B.** Computed tomography, sagittal and coronal sections. Endosteal involvement. **C.** Ankle MRI, sagittal sections in T1-weighted and STIR sequences. A hypointense and hyperintense lesion are visualized, respectively, with fluid-fluid levels (arrow).