Two cases of periosteal chondroma

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One of our 2 cases of periosteal chondroma of the tibia recurred three times before definitive cure, and required extensive radiographic and histologic evaluation to avoid overinterpreting the malignancy. Our experience confirms that marginal excision should be employed.

Periosteal chondroma is a benign cartilaginous tumor of bone, which was first described by Lichtenstein and Hall (1952) and by Jaffe (1956), who coined the term *juxtacortical chondroma*. It arises on the surface of cortical bone, under or in the periosteum; it can erode the underlying cortex, without, however, penetrating into the bone marrow cavity.

There are about 150 cases of periosteal chondroma described in the literature; the lesions are predominantly observed in the young adult, usually in the metaphysis or diaphysis of long bones. Marginal excision (Boriani et al. 1983) usually leads to healing. Only occasional cases of recurrence have been reported (Scaglietti and Stringa 1956, Cooper 1965, Nosanchuk and Kaufer 1969, Nojima et al. 1985).

We describe 2 cases of periosteal chondroma with a rare location, i.e., the proximal tibia. To date, only 18 cases with this location have been reported (de Santos and Spjut 1981, Bauer et al. 1982, Boriani et al. 1983, Nojima et al. 1985).

Case reports

Case 1

In an 11-year-old boy, a hard, painless swelling arose on the anterior aspect of the right proximal tibia. Radiographs showed a small, somewhat radiopaque mass adjacent to the cortical bone, which was slightly eroded (Figure 1). After intralesional excision, the tumor recurred a few months later. Radiography showed a soft-tissue mass with cortical sclerotic reaction (Figure 1). The patient was again treated by intralesional excision 2 years after the first operation. After both operations, the histologic sections were interpreted as showing periosteal chondroma. A short time later, after a new recurrence, the patient was admitted to our hospital at aged 14 years.

Radiography and tomography showed a juxtacortical mass with extensive calcifications and numerous bony spiculae perpendicular to the cortex (Figure 1). Marginal excision and autologous bone grafting were performed, but the tumor recurred after 4 months. The patient underwent a fourth marginal excision, and autologous bone grafting was performed.

The mass removed at the first operation in our hospital (third local occurrence) was a grayish-white, lobulated mass measuring 4 x 2 cm. Microscopic examination showed highly cellular cartilaginous tissue. The cells varied in size; many of them were hyperchromatic or plump, sometimes binucleated; and they exhibited nuclear polymorphism (Figure 2). A similar histologic picture was observed in the samples from the second operation in our hospital; it confirmed the diagnosis of periosteal chondroma.

At present, 6 years after operation, the patient remains free of disease.

Case 2

A 14-year-old boy complained of swelling of the left tibia; a tumor was found just distal to the anterior tibial tubercle and appeared to be fused to the bone. The mass was hard and slightly painful. Radiography and xeroroentgenography showed a weakly radiopaque mass, without calcifications, adjacent to the cortical bone, which was eroded (Figure 3). The patient underwent marginal excision. The surgical specimen consisted of a whitish, lobulated mass measuring 3 x 2 cm. Microscopic examination showed hyaline cartilage, arranged in lobules, with enlarged cells. The cartilaginous cells showed nuclear polymorphism and hyper-

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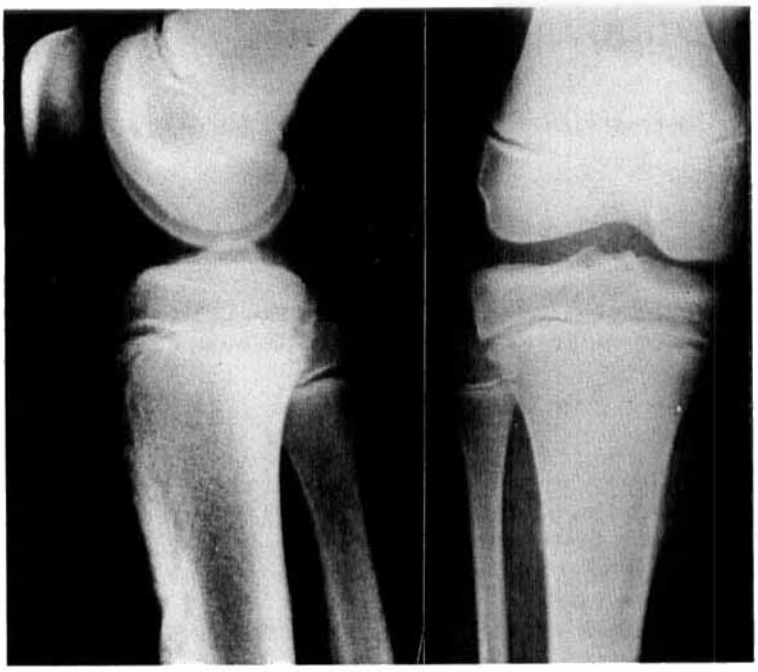
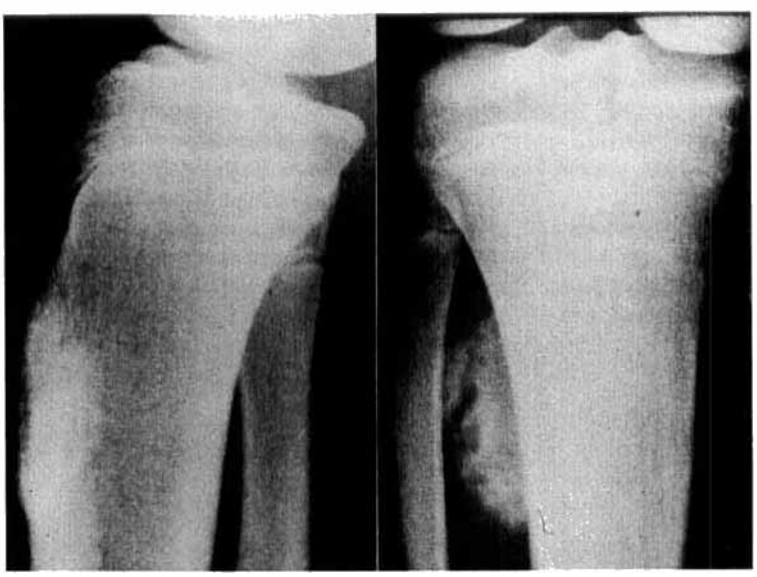


Figure 1. Case 1. An 11-year-old boy with a hard, painless swelling in the upper right leg, noticed for 6 months.

A. First examination shows a moderate scalloping of the cortex, with a sclerotic rim of reactive bone.



B. Two years later. Recurrence after an intralesional excision. Soft-tissue mass with evident sclerotic reaction.

chromatism. The histopathologic diagnosis was periosteal chondroma.

At present, 4 years after operation, the patient remains free of disease.

Discussion

There are three important radiographic features in the majority of cases with periosteal chondroma: scalloping of cortex, calcifications, and a soft-tissue mass (de Santos and Spjut 1981). An atypical form can be present, with abundant bony spiculae perpendicular to cortical bone (Willner 1982).

Certain microscopic features of cellular atypia — such as polynuclearity, hyperchromatism, polymorphism — in periosteal chondroma can erroneously be interpreted as signs of malignancy. In light of these considerations, it becomes clearly important to base

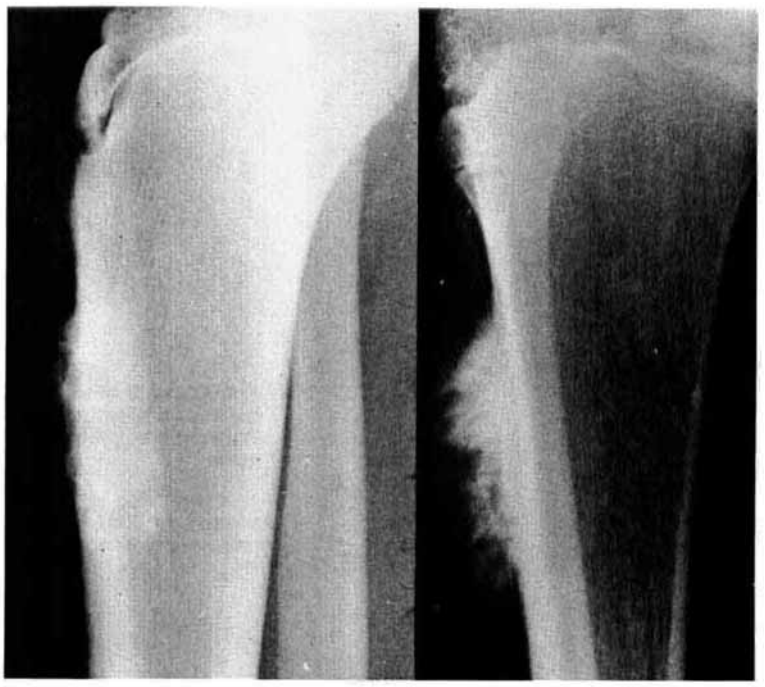
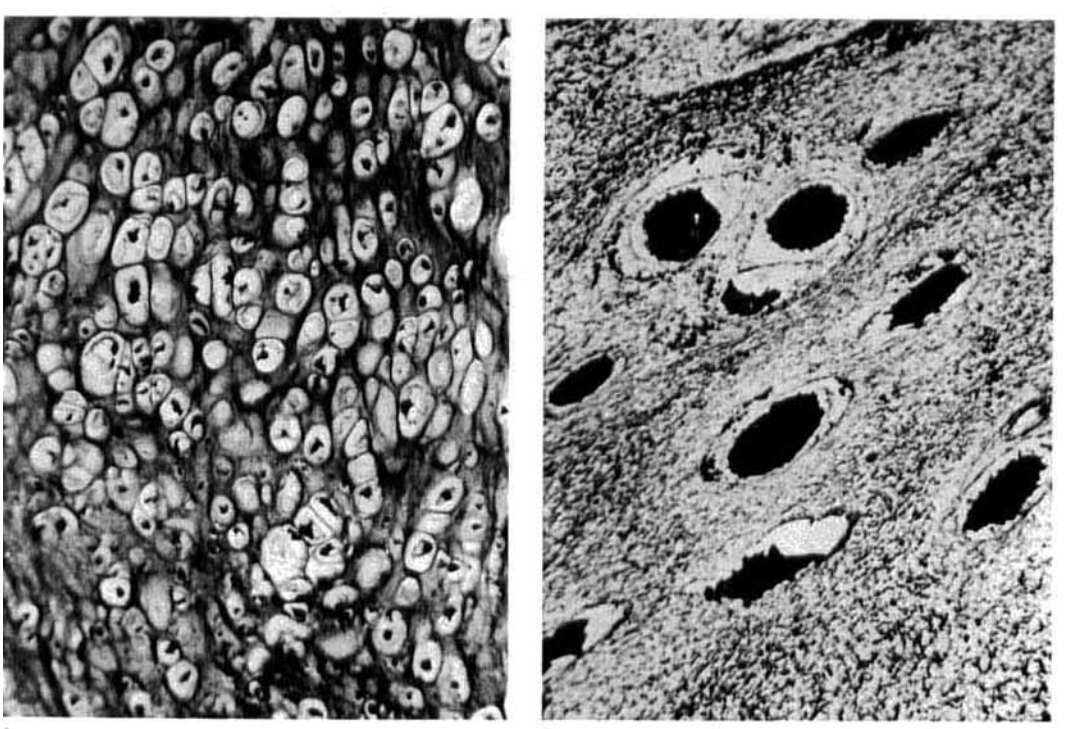


Figure 1C. Three years after the first examination. Third local occurrence after two intralesional excisions. Thick spiculae perpendicular to the cortical bone.



A B

Figure 2. Photomicrographs of a specimen from Case 1 at the third occurrence.
A. Well-differentiated hyaline cartilage, with hypercellularity and polymorphism, is seen (HE, original magnification x 125).
B. Silver nitrate staining of a 1-μ thin section illustrates the nuclear polymorphism of the cartilaginous cells (original magnification x 1250).

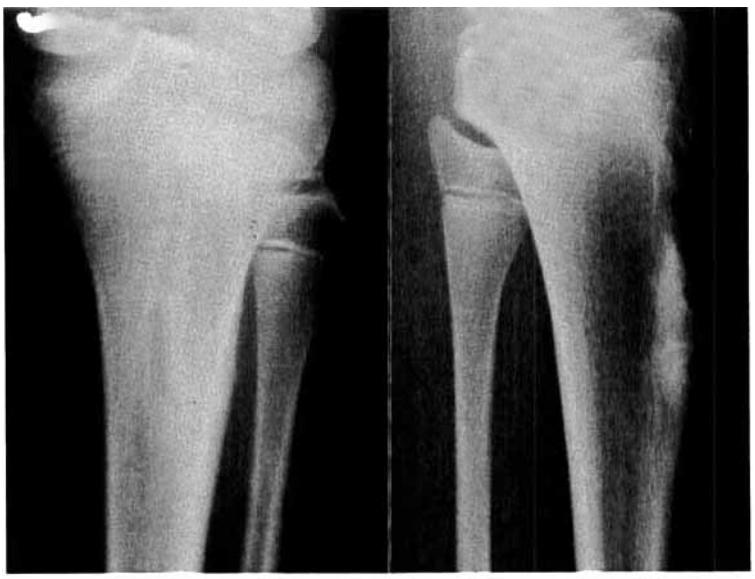
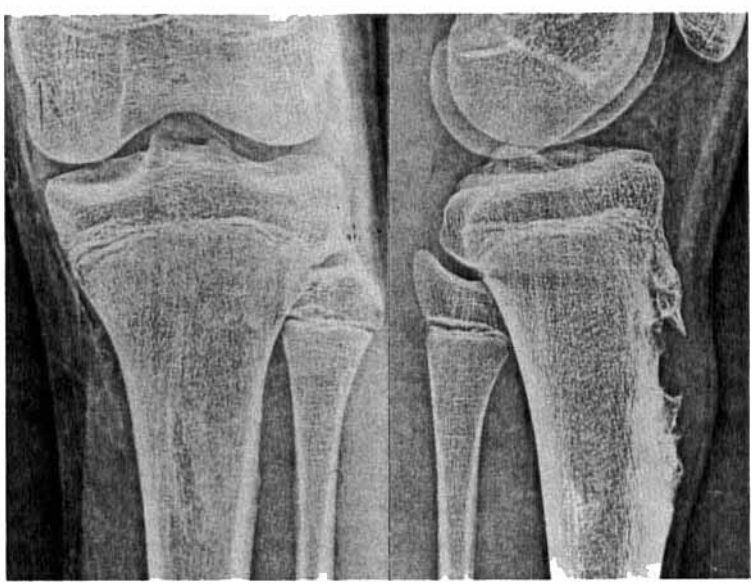


Figure 3. Case 2. A 14–year–old boy with a hard swelling of the left proximal tibia, noticed for 2 months.

A. Conventional radiographs demonstrate scalloping of the cortex with adjacent sclerotic rim.



B. Xeroroentgenography shows a soft tissue tumor with scalloping and remodeling of the adjacent cortex.

the final diagnosis on a combination of histologic and radiographic features.

Our first case would seem to reflect the importance of a combined diagnostic approach. The radiographic pattern of the tumor in the course of time showed the ominous feature of bone spiculae, probably arising in this case as a result of repeated surgery. However, the review of the histologic material from the four operations showed that the specimens essentially exhibited the same microscopic pattern. Although there was hyperchromatism and nuclear polymorphism, there was no progression of these features over time.

Finally, it should be emphasized that the best treatment is marginal excision. We feel that in the first of our two cases, as in the few cases of recurring periosteal chondroma reported in the literature, the recurrence can be attributed to inadequate, intralesional excision.

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