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PERIOSTEAL CHONDROMYXOID FIBROMA OF THE TIBIA

A Case Report

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A case of periosteal chondromyxoid fibroma of the tibia is presented. A search of the literature revealed only two other possible similar cases, and these are discussed.

Key words: bone neoplasms; fibroma

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Chondromyxoid fibroma is an uncommon benign tumour characterized by chondroid and myxoid differentiation of matrix (Jaffe & Lichtenstein 1948), and almost all reported cases describe lesions which are intraosseous. Lesions with the histological features of chondromyxoid fibroma and arising in the periosteum appear to be extremely rare, and it is the purpose of this report to record an example of a periosteal chondromyxoid fibroma.

CASE REPORT

A 33-year-old man was first seen in January, 1980, complaining of a lump below the right knee. He had noticed this 3 months previously whilst bathing and it had been slowly increasing in size. He had experienced no pain or discomfort and there was no difficulty in walking. There was no history of any trauma to the limb.

On examination there was a firm swelling measuring 12 centimetres by 6 centimetres in the upper anterior medial compartment of the tibia. The upper limit of the swelling was 1 centimetre below the tibial tuberosity. The swelling appeared to be fixed to the underlying tibia, but the skin was fully mobile over the lump. The regional lymph nodes were not enlarged. Knee movement was normal.

Roentgenograms of the right tibia (Figure 1) showed a soft tissue swelling over the anteromedial aspect of the tibia. There was an area of new bone formation 4

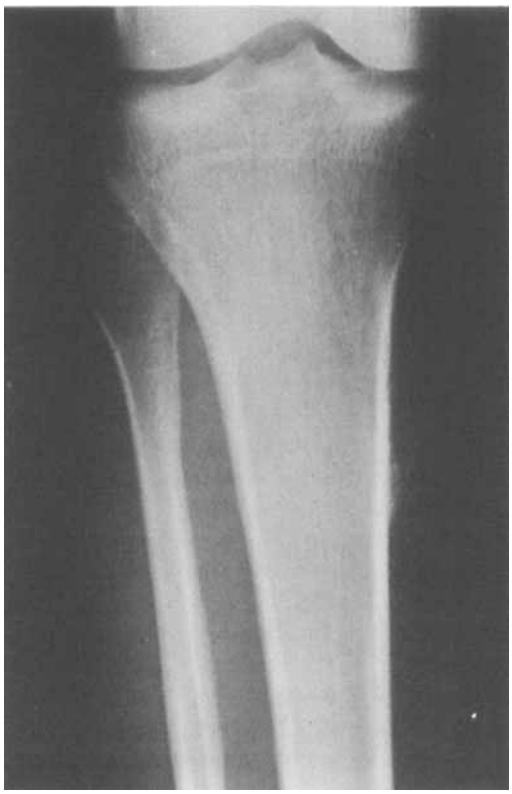

Figure 1. Radiograph of the right tibia showing the soft tissue swelling and a small area of new bone formation.

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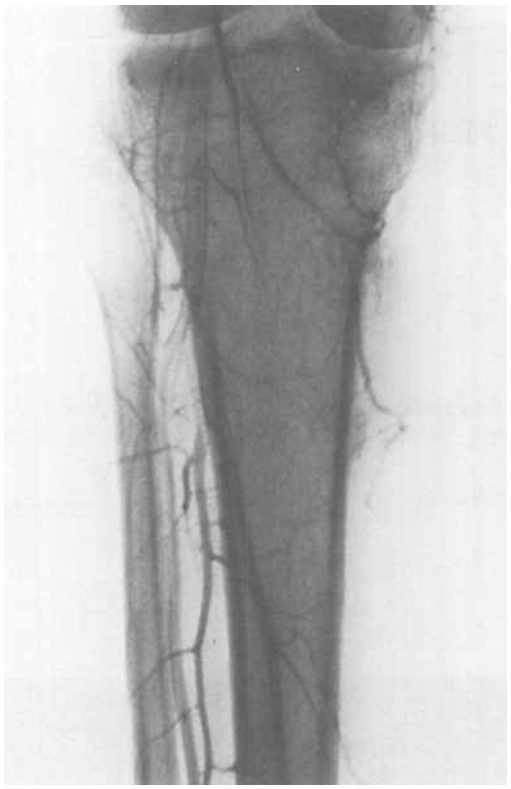

Figure 2. An arteriogram demarcating the tumour circulation.

centimetres long adjacent to the medial upper tibial cortex, with slight periosteal reaction. Tomograms showed no spread of the lesion into the medulla. Chest X-ray and routine haematological investigations were normal.

An open biopsy was performed. Deep to the subcutaneous layer there was a firm, lobulated, yellow-white coloured tumour attached to the underlying periosteum. Histology revealed this to be a locally invasive tumour, and to demarcate its extent further arteriography (Figure 2) and CAT scan (Figure 3) were performed. CAT scanning demonstrated the soft tissue swelling superficial to the periosteal bone, its density being similar to that of muscle. No abnormality of the endosteum or medullary cavity was noted.

Two weeks following open biopsy, the tumour was widely excised. The tumour extended proximally to the level of the tibial tuberosity involving the distal fibres of the medial ligament and pes anserinus and these were excised. The tumour was attached to the underlying periosteum and a block of tibial bone 10 centimetres in length, 4 centimetres in width and 3 centimetres in depth was excised with the surrounding soft tissue. An AO buttress plate was placed *in situ* with cancellous screws proximally, and the tibial defect bone grafted.

The recovery following the operation was uneventful and the wound healed by primary intention. Twenty months following surgery the patient was fully weight-bearing and had a full range of knee movement. The reattached knee ligaments were stable. There was no clinical or radiological evidence of recurrence.

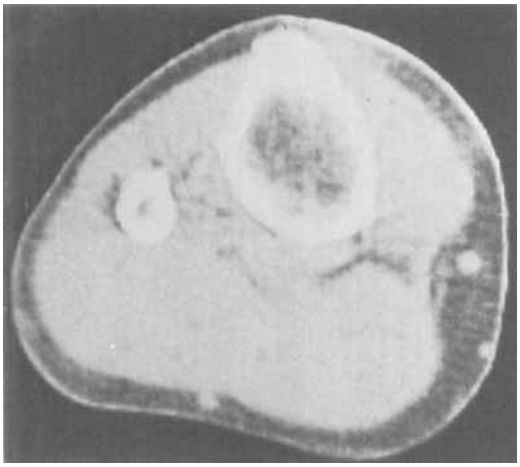

Figure 3. CAT scan demonstrating the tumour superficial to the bone, its density being similar to that of muscle.

HISTOLOGY

Histological examination showed the abnormal tissue to be mainly myxoid in type with irregular strands of collagenous fibrous tissue separating the myxoid material into nodules (Figure 4). In the fibrous tissue and particularly where septae met, there were small foci of chondroid tissue (Figure 5). Abnormal tissue was sharply demarcated from normal fibro-fatty tissue but was not encapsulated. Tumour was present in a few of the immediately subperiosteal Haversian canals (Figure 6), but at no point could extension through the cortex be demonstrated and the cancellous bone and medullary marrow appeared entirely normal. The new bone seen on the radiograph on the periosteal surface of the bone was revealed as well differentiated trabecular structures with fatty intertrabecular tissue, with tumour or fibrous tissue on the external surface (Figure 7).

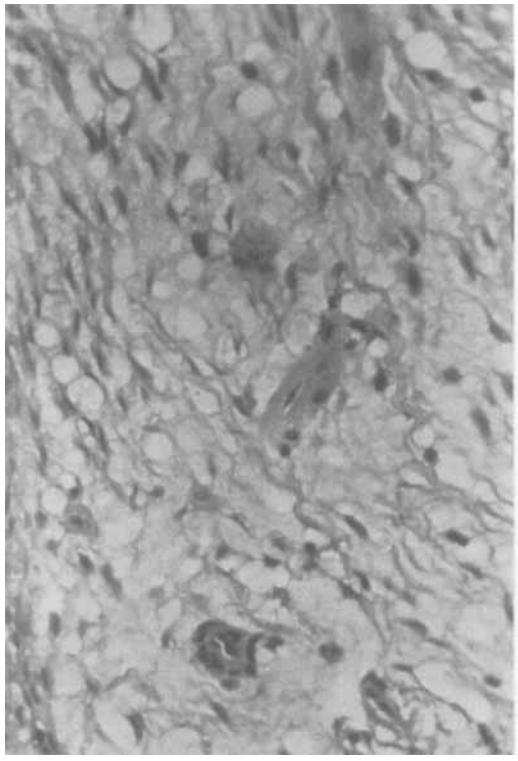

Figure 4. Myxoid component of the lesion. H & E, × 450.

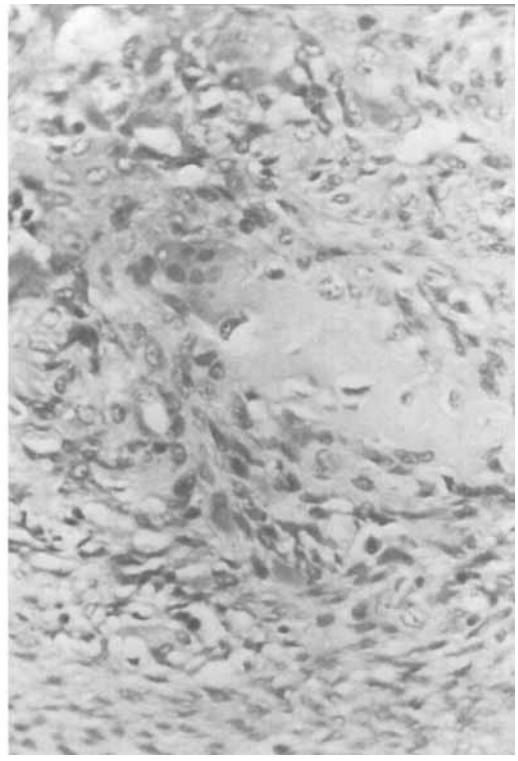

Figure 5. Focus of chondroid matrix in the fibrous area of the lesion. Multinucleate cells of osteoclast type are present, one in contact with the chondroid material. H & E, × 450.

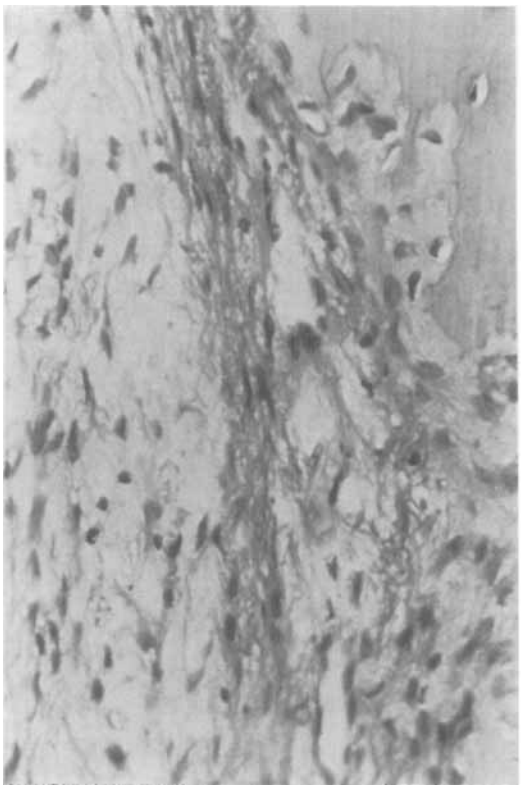

Figure 6. A lesion in contact with the periosteal surface of the tibial cortex. The bone surface is irregular but there is no evidence of multinucleate osteoclasts. Decalcified. H & E, × 450.

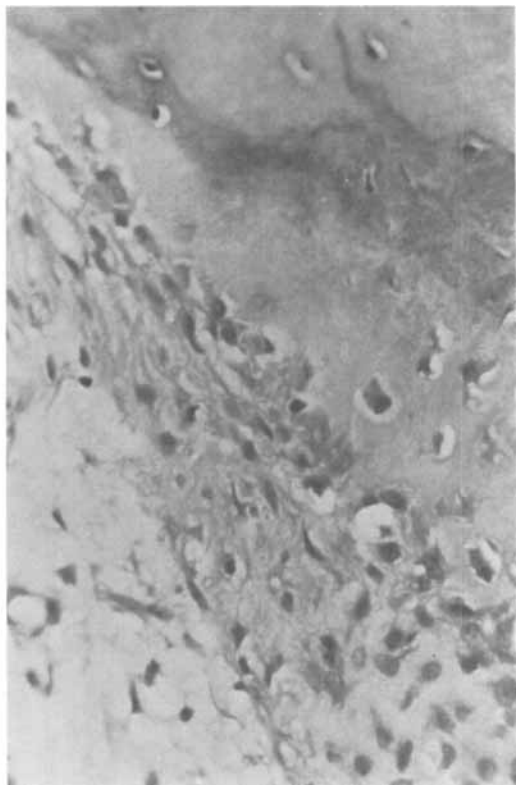

Figure 7. Part of a piece of bone included in the lesion. The bone matrix is of immature type. On the external surface there is fibrous tissue which merges into the lesion. Decalcified. H & E, × 450.

Histological interpretation of the lesion was that it was a benign expansile neoplastic mass and that the descriptive term 'periosteal chondro-myxoid fibroma' best described the appearance.

DISCUSSION

The descriptions of chondromyoxid fibroma as it occurs in bone leave the impression that there is a wide variation in the arrangement of the fibrous, chondroid and myxoid components. One of the described variants is of the myxoid tissue being in lobules with fibrous septae between and foci of chondroid differentiation in the fibrous tissue (Dahlin 1967), which correponds closely with the appearances seen in the present lesion. The lesion described and illustrated by Chacha & Tan (1972), designated by them as a periosteal myxoma, but thought by Huvos (1979) to be more properly called a chondromyxoid fibroma, also appears to be very similar to the present lesion. Spjut et al. (1970) describe an atypical chondromyxoid fibroma with a large extraosseous component which may also be similar to the present case, but only the gross appearance is illustrated, no details being given of the histology. These three cases all occurred in young adults, similar in ages to the patients with intraosseous chondromyxoid fibroma. This is not the situation for the five patients with periosteal myxoma reported by Scaglietti & Stringa (1961), all of whom were children, and whose lesions were thought, again by Huvos (1979), to be more properly called chondromyxoid fibroma. On reviewing the case reports their origin in periosteum is speculative, there was extensive bone invasion and destruction and those lesions which were curetted recurred within a few months. This is more like the behaviour of myxoma of the jaw and soft tissue and these lesions are not thought to be similar to the present case.

Views on the histogenesis of chondromyxoid fibroma must be speculative. One reasonable hypothesis is that the lesion is primarily fibroblastic and that degenerative changes and metaplasia account for the myxoid and chrondroid appearances. Accepting that the cause of the initial fibroblastic proliferation is not known for either the intraosseous or extraosseous lesions, only a descriptive name can be applied to the tumour. On that basis the term periosteal chondromyxoid fibroma describes the lesion reported here perfectly. The natural history of intraosseous chondromyxoid fibroma is that of a locally aggressive, non-metastasising tumour. Follow-up information on the periosteal lesions does not yet permit statements to be made about their behaviour.

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