X-ray DIAGNOSIS OF EXTRASKELETAL (SOFT TISSUE) CHONDROSARCOMA

(A REPORT OF 8 CASES)

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Eight cases of surgically and pathologically verified extraskeletal (soft tissue) chondrosarcoma were analyzed with regard to clinical and X-ray features. The cardinal clinical aspects of this series are: presence of a local soft tissue mass; gradual enlargement of the mass accompanied by increasing pain. The X-ray signs were summarized as follows: formation of a soft tissue mass; various forms of calcifications concentrated in the central area of the tumor; in some instances, presence of a saucer-like defect on the cortical surface of neighbouring bone and periosteal proliferation with mound-like new bone on both sides as well as bending deformity of the affected bone. The incidence and sites of predilection, the main X-ray findings, radiological diagnosis and differential diagnosis of the tumor were discussed. The Roentgen features of synovial chondrosarcoma of the knee joint were especially analyzed.

Extraskeletal (soft tissue) chondrosarcoma is a very rare malignant tumor. Up to now, there had been only several articles about it. Eight cases verified surgically and pathologically were reported in this paper.

CLINICAL DATA

There were 5 male and 3 female with mean age of 44.8 years (16—78 years). A hard mass in the soft tissue of the extremity was the main clinical manifestation. In early stage, the mass was mobile and painless, it increased in size gradually and became fixed and painful. Three cases in which the tumor was juxta-articular had restricted motion. In one case the tumor was located intra-articularly in the knee joint and manifested swelling, varicosity and dysfunction of the joint. Two cases had a history of prior trauma. The course, from the appearance of a mass to established diagnosis, is of 14 months to 8 years with an average of 3.9 years, while the interval between rapid enlargement of the mass and intensification of pain ranged from 3 to 12 months (average 5 months).

Location of tumor: Two were proximal thighs; two in buttocks and two in legs; extra-articular of elbow and intra-articular of knee was one case respectively. Three of the eight cases were pathologically proved to be mesenchymal chondrosarcoma.

X-ray MANIFESTATIONS

Formation of a Soft Tissue Mass

All of the 8 cases showed a soft tissue mass. The masses were oval in shape without lobulation, their sizes ranged from $6 \times 4 \text{ cm}$ to $22 \times 18 \text{ cm}$. The longer axis of the masses was parallel to the diaphyses (Figure 1). The dividing lines between the masses and surrounding normal soft tissue were obscure and the lipid lines between muscles disappeared.

Calcification

Calcification was seen obviously in 7 cases.
Fig. 1. In the external of fibula, there is a immense soft tissue mass, the longer axis paralleling neighbour bone. Spotted and ring-like calcification appears in the central part of the mass. Fibula bends like bow, accompanied by a saucer-like defect of cortex and mound-like periosteal proliferation on both sides of the defect.

In one of them the tumor showed nearly complete calcification, either lobulated or fused (Figure 2). Another case in which the tumor was adjacent to the greater tuberosity of femur showed diffuse and diverse calcifications, with compact, spotted or ring-like calcification in the central area of tumor and thin patchy or villous calcification in the peripheral part (Figure 1). In the other five cases the calcification concentrated on the central area of tumor and presented as spotted or ring-like calcification surrounded by a thin calcified area (Figure 4). One of these cases in which the tumor was located in the but- tock had a history of trauma and demonstrated intense calcifications inclined to one side of the tumor (Figure 5).

Fig. 2. A nodular and lobular soft tissue mass is located in the external part of periosteal and showed nearly complete calcification.

Changes of Adjacent Bone
In two cases the cortex contacted with tumor was pressed, absorbed and became thinning, forming a saucer-like defect on its surface without sclerosis. The periosteal new bone forming on both sides of the defect showed a mound-like appearance. Arched deformity of the affect ed diaphyses due to pushing of tumors was also noted (Figure 1).

Changes of Intra-articular Chondrosarcoma of the Knee Joint (One Cases)
A huge soft tissue mass filled the joint space entirely, so that the knee joint enlarged globally and its density increased evenly. The mass projected to the anteriority of femur about 12 cm and pushed the patella anteriorly, the axis of the displaced patella was perpendicular to that of femur's, but the femur-tibia joint space had not widened. There was no calcification in the tumor and the adjacent bones were normal. No periosteal reaction could be seen (Figure 6).