Late pulmonary metastases from chondroblastoma of the distal femur

A case report

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A patient treated with curettage and bone grafting for a chondroblastoma of the distal femur sustained a pathologic fracture after a local recurrence. He then underwent a local, radical resection and an arthrodesis of the knee. Ten years after the first operation, pulmonary metastases were found, for which he underwent a metastasectomy (thoracotomy). At the latest follow-up, 1 year later there were no signs of tumor.

Chondroblastoma is a benign, mostly osteolytic lesion in the epiphysis of long bones. It progresses slowly and often causes symptoms from the neighboring joint. The tumor may grow to considerable size (9) and occasionally metastasizes; we found only 7 case reports in the literature, but no mention of metastases in larger series of chondroblastoma (1, 2, 11).

We report a case of late pulmonary metastatic spread of a chondroblastoma.

Case

A 38-year-old male had a chondroblastoma of the left distal femur. It was curetted and filled with bone chips in 1977 (Figure 1). In 1979, while at work, he stumbled and sustained a fracture through a local recurrence. A radiograph of the chest was normal. Because the fracture failed to unite, the patient was referred to our clinic. A wide local resection and arthrodesis with a custom-made AO intramedullary rod was performed in 1980. The analyzed specimen exhibited the same type of tumor tissue as in 1977 without signs of malignancy. The tumor was composed of round or polygonal primitive chondroblasts with large nuclei and occasional mitoses, multinucleated giant cells, and patches of chondroid matrix with occasional calcification (Figure 1). The patient was kept in a plaster of Paris cast for 6 months, after which full consolidation was attained. At follow-up, he had no complaints and had resumed working.

In May 1988, the patient requested a radiograph of the lungs, which until then had not been made. A round density was seen in the lower lobe of the right lung, which was suspected of a primary pulmonary tumor or a metastasis (Figure 1). The CT-scan showed a 2-cm lesion at the right hilum with a possible second shadow in the same part of the interlobal space. There were small suspect densities in both lower lobes. Blood tests, bronchial lavage, and bronchoscopy were normal. Five metastases were removed via a median sternotomy. All of them showed the same histologic characteristics as the tumor removed in 1977 and 1980. The patient recovered and resumed his work as a clerk. Follow-up did not show new lung metastases up till December 1989.

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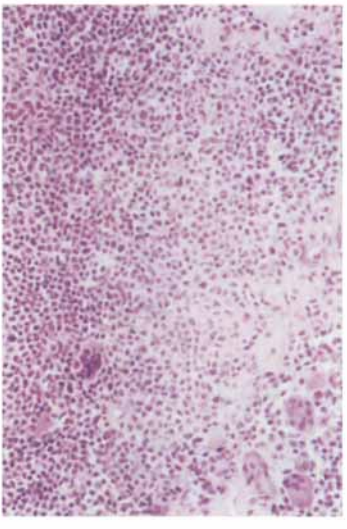

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Figure 1A. Tomogram of the left distal femur of a 38-year-old man showing an osteolytic lesion with a sclerotic rim and slight ballooning.

B. Recurrence with a pathologic fracture 3 years later.

C. Pulmonary metastasis 10 years later. The right lower lobe shows a dense shadow (arrows).

D. Histopathologic section of the primary tumor showing primitive chondroblasts with patches of chondroid matrix and multinucleated giant cells characteristic of chondroblastoma. HE, ×150.

Discussion

Chondroblastoma is a benign, uncommon tumor, representing approximately 1 percent of all bone tumors (5, 11). Preferential sites are the proximal humerus, proximal tibia, distal and proximal femur, although localization in flat bones have been described (1).

Sometimes the tumor may recur after seemingly curative surgery (8). In one study, three fatal pelvic tumors and one fatal tumor of the femoral head were reported.

Pulmonary metastases have been reported in 7 cases (Table 1). In the seventh patient, widespread visceral metastases were found causing his death. In the latter the duration from biopsy to death was 15 years, whereas in the former cases the longest interval between the biopsy and the occurrence of the metastases was 2 years. In our patient, pulmonary metastases were discovered only by chance at a routine checkup 10 years after the diagnosis of the primary tumor. In view of our patient, we concur with Kyriakos (1985), who states that there are two types

Table 1. List of all 8 patients with histologically proven metastases of chondroblastoma

Reference	Sex	Age	Site	Side	Treatment	Metastases		Follow-up
						site	time (yr)	
6	M	13	pelvis	r	curettage-resection	lung-intestines	9	dead after 15 yrs
10	F	14	prox tibia	r	curettage-amputation	lung	2	alive
3	F	13	prox femur	l	curettage	lung	0.5	alive
4	M	16	dist femur	r	curettage	lung	6	alive
12	M	38	scapula	r	resection-radiotherapy	lung	13	dead after 34 yrs
8	M	9	prox tibia	l	curettage-chemotherapy	lung	0	dead after 4 yrs
7	M	33	pelvis	r	hemipelvectomy	lung	12	alive
This study	M	38	dist femur	l	curettage-resection	lung	10	alive

of chondroblastoma. One type only occasionally recurs after curettage and bone graft. Another, and rare type, has identical histologic features, but behaves as a malignant tumor with rapid destructive growth and a tendency to recur and to metastasize. There seems to be no way of distinguishing the two types histologically.

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