Skeletal metastases of intermediate grade chondrosarcoma without pulmonary involvement

A case report

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Summary. *Although pulmonary metastases are typical of chondrosarcoma, only 2 patients with intermediate grade tumours have been reported with bone metastases and without pulmonary involvement. We report one patient with an intermediate grade chondrosarcoma which metastasised to the lumbar spine following surgical resection of a locally recurrent tumour. The local recurrence and the metastases were resected and she is alive and well after 20 months.*

Résumé. *Quoique la métastase pulmonaire soit typique du chondrosarcome, seulement 2 patients avec des tumeurs de degré intermédiaire ont été rapportés avec métastase osseuse sans complication pulmonaire. Nous présentons le cas d'une patiente avec chondrosarcome de degré intermédiaire de l'humérus avec métastase à la colonne lombaire suite à la résection chirurgicale de la tumeur récurrente locale. La récurrence locale et la métastase ont été résectées et la patiente est vivante et bien après 20 mois.*

Introduction

Chondrosarcoma is the second most common bone sarcoma after osteosarcoma [6] and occasionally metastasises to distant sites, most often to the lung and regional lymph nodes [7].

We describe a patient with an intermediate grade chondrosarcoma which recurred and metastasised to the lumbar spine without pulmonary involvement.

Case report

A woman, 58 years of age, was admitted with pain in the shoulder for 30 months which had increased during the previous 3 months. Her physician had treated her for a frozen shoulder. A swelling appeared one month before she attended.

Shoulder movement was slightly restricted. Plain radiographs showed a destructive lesion in the proximal humerus (Fig. 1). A whole body bone scan showed destruction with an abnormally high uptake in the proximal humerus. Magnetic resonance imaging (MRI) showed a low signal intensity area on T1-weighted images and high signal intensity on T2-weighted images. Laboratory investigations were normal.

Open biopsy showed an intermediate grade chondrosarcoma with a myxoid component (Fig. 2). The tumour, including the joint capsule, was resected with the contaminated margin. Reconstruction was done with a proximal humeral prosthesis (Fig. 3).

Ten months later she complained of swelling of the left shoulder region and biopsy showed the same histology as the primary lesion. A wide resection was carried out, including the lateral half of the scapula and clavicle, and an adequate surgical margin obtained. A humeral prosthesis was again inserted.

One month after this operation, she had low back pain. T1-weighted MRI showed a low signal intensity area in the body of the L5 vertebra (Fig. 4). The metastatic lesion was exposed by hemilaminectomy and removed by hemicorporectomy with posterior instrumentation (Fig. 5). Histology showed the same grade and type of chondrosarcoma as the primary lesion (Fig. 6).

The patient is alive 20 months after the initial operation for the primary lesion with no clinical or radiographic evidence of recurrence.

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Fig. 1. Radiograph showing the primary chondrosarcoma

Fig. 2. Histology of the primary lesion ($\times 200$)

Fig. 3. Radiograph after resection and reconstruction with proximal humeral prosthesis

Fig. 4. MRI of L5 vertebra

Fig. 5. Radiograph after hemicorporectomy and posterior instrumentation

Fig. 6. Histology of the metastatic lesion

Discussion

The lumbar metastasis was identified almost at the same time as the local recurrence in this patient suggesting that resection was associated with mechanical seeding of tumour cells leading to me-

tastasis and local recurrence. We have only found 5 cases of chondrosarcoma with bony metastases with documentation of the tumour grade and the metastatic site [1, 2, 5] (Table 1). Of the 6 cases, including our own, all had metastases to the vertebral column.

In our patient, the metastasis was in the lumbar spine and may not have been associated with pulmonary metastases because of the venous connections between the vertebral and other veins [3, 4], and the absence of a basement membrane in the capillaries of bone marrow [5].

The incidence of metastasis in chondrosarcoma is low which explains the rarity of bone involvement. Four of the 6 patients had tumours containing a myxoid element (Table 1) and this type of tumour may have a higher incidence of metastases [9]. The use of MRI enables metastatic lesions to be easily identified in patients with back pain. In patients with osteosarcoma, the incidence of bony metastases was higher when chemotherapy was used than in cases treated previously without

Table 1. Bone metastasis of chondrosarcoma

Authors	Sex/Age (years)	Primary chondrosarcoma						Relapse		
		Location	Grade	Substance	Surgery	Chemo-therapy	Radiation	Local recurrence (mos.)	Metastasis (mos.)	Outcome (mos.)
Aprin et al. (1982)	M/13	Ilium	3	Not known	Hemipel.	Yes (ACT-D)	Yes	No	Spine (unknown)	DOD (13)
Aprin et al. (1982)	M/16	Ilium	3	Not known	Hemipel.	Yes (HD-MTX, ADR)	No	No	Ilium, spine (unknown)	DOD (41)
Abello et al. (1986)	F/75	Scapula	3	Hyaline Myxoid	Not known	Not known	Not known		Lung, pleura, Spine	?
Disler et al. (1993)	M/65	4th Rib	1–2	Hyaline Myxoid	Resection	Yes (ADR, CDDP)	Yes	Yes (42)	Clavicle, ribs, spine, etc. (36)	AWD (46)
Disler et al. (1993)	F/35	Prox. Femur	2	Myxoid	Resection	No	Yes	No	Skull, spine, ribs, etc. (0)	AWD (20)
Ozaki et al. (1995)	F/58	Prox. humerus	2	Myxoid	Resection	No	No	Yes (12)	Spine (13)	NED (20)

ACT-D: actinomycin-D, HD-MTX: high-dose methotrexate, ADR: adriamycin, CDDP: cisplatinum, DOD: died of disease, AWD: alive with disease, NED: no evidence of disease

chemotherapy [8]. Such a situation has not arisen with chondrosarcoma, although it may be that metastases have been present in the past without being diagnosed. Improvement in imaging may lead to bony metastases being diagnosed more often.

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