POSTIRRADIATION CHONDROBLASTIC OSTEOGENIC SARCOMA

A CASE REPORT

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A case of chondroblastic osteogenic sarcoma is reported in a patient with a history of three separate malignancies treated by postoperative irradiation. Fifteen months after a forequarter amputation she remains well and free of recurrence and metastases.

Surgical procedures in the treatment of cancer have to be considered in the context of life expectancy and the quality of life. We present a patient who had a remarkable history of three different malignant tumours.

CASE REPORT

A 59-year-old woman was admitted to the orthopaedic department in September 1980 with a rapidly growing tumour in the left supraclavicular region. She had a history of three episodes of carcinoma. In 1952 she had had carcinoma of the cervix, treated by total hysterectomy and postoperative irradiation. In 1965 she had suffered an adenocarcinoma of the left breast, treated by mastectomy and local irradiation. In 1966 she had undergone resection of an adenocarcinoma in the left axilla and had then had a course of irradiation to the upper left thorax. Severe skin changes had developed in the supraclavicular region and in the trapezial area, together with oedema of the entire arm and paraesthesia in the hand and arm, which she was unable to use and kept in a sling. Retrospective examination of the radiographs from the 1952–66 period revealed no abnormal bone structures at the shoulder girdle. During the spring of 1980 she had discovered a small lump in the left supraclavicular region which had rapidly increased in size. When she was admitted in September 1980 the tumour measured five centimetres by six and was tethered to the deeper structures (Fig. 1).

Radiography revealed normal lungs, but tumour involvement of the lateral part of the clavicle. Computerised tomography of the chest and left shoulder demonstrated a tumour measuring four by seven centimetres, involving the clavicle and scapula and reaching the pleura. Metastasis to the lungs could not be demonstrated. Arteriography of the subclavian and axillary artery showed a few tumour vessels (Fig. 2) and a distally displaced subclavian artery. The deltoid, acromial and the suprascapular arteries could not be demonstrated which indicated obstruction by the tumour. Scintigraphy using technetium-99m pyrophosphate revealed pathological activity in the clavicle and the spine of the scapula, and possible involvement of the first and second ribs.

At operation tumour masses were found which involved the clavicle, the lateral part of the brachial plexus, the subclavian artery and vein, as well as the major part of the scapula. The clavicle was resected leaving the medial 2.5 centimetres for attachment of the sternocleidomastoid muscle. The first rib and the pleura appeared normal. The brachial plexus and subclavian vessels were freed leaving their sheaths attached to the tumour. Finally, the scapula was freed enabling the tumour to be removed en bloc without ever being touched. The arm was amputated 15 centimetres above the elbow and the humerus was extracted through a double incision on the lateral aspect of the upper arm, leaving a normally innervated and vascularised musculocutaneous flap, which could be sutured to the margin of the original incision (Fig. 3).

Uneventful healing took place. The sutures were removed on the twelfth day and the patient was discharged. After four weeks a prosthesis was fitted for the left shoulder and arm. Histological examination of the tumour showed a chondroblastic osteogenic sarcoma. All borders of the resected specimen were free of tumour involvement. No supplementary treatment has been given.

Clinical and radiological examination of the chest 15 months after operation revealed no signs of recurrence nor of metastasis. The patient was physically well and well-adjusted to her disability.
DISCUSSION

It is extremely rare that three different malignant tumours develop in the same patient (Prior and Waterhouse 1981), even if the third tumour was probably the result of former irradiation. Such a tumour in itself is very rare, but is occasionally seen in connection with former cancers of the breast or of the cervix several years after irradiation therapy (Weatherby, Dahlin and Ivins 1981). This case even fulfilled the criterion of Parker (1972), who claimed that radiation-induced tumours only occurred in bone that was normal before treatment. So far only 22 cases of such postirradiative chondrosarcoma have been published (Weatherby et al. 1981). Considering that it was the shoulder girdle that was affected the prognosis is poor.

The problem with this patient was how to cover the large defect which would result if a radical operative procedure was tried. The only skin area totally unaffected by irradiation was the axillary region and the inside of the upper arm. As the arm was painful and useless, the decision was made to perform this operation, knowing well there was only a small chance of doing a total resection. However, had the tumour fungated through the skin, the quality of life for the patient would have deteriorated greatly. So far the result has justified this rather unusual surgical solution.

REFERENCES