MALIGNANT SOFT-TISSUE TUMOUR AT THE SITE OF A TOTAL HIP REPLACEMENT

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A case is reported of a patient who presented with a soft-tissue tumour at the site of a total hip replacement. This tumour proved to be a malignant fibrous histiocytoma.

The events described took place more than 10 years ago and the author has had no similar cases since then. However, the recent appearance in this journal of an article on malignant fibrous histiocytoma of bone at the site of a total hip replacement (Bagó-Granell et al. 1984) and the knowledge of Penman and Ring's case (reported in this present issue, page 632) suggested that this earlier case should now be reported.

CASE REPORT

The patient was a 63-year-old man with osteoarthritis of the left hip which had caused symptoms for two years prior to operation. In December 1969 he had a left total hip replacement through an anterolateral approach, using a vitallium all-metal McKee-Farrar prosthesis. He made an uneventful recovery and was seen as an outpatient in March 1970 when some evidence of periarticular ossification was noted. Radiographs. In December 1970 he was discharged having regained good function and a painless joint.

April 1973 saw his reappearance in a more dramatic fashion when he attended the accident and emergency department complaining of severe pain and swelling. He looked pale and ill and was febrile. There was a diffuse, firm, hot, tender, extensive swelling surrounding his left hip; dilated veins were clearly visible overlying the swelling (Fig. 1). Blood tests revealed a haemoglobin level of 10 g/dl, a leucocyte count of 28 000/µl (with 91% polymorphs) and an ESR of 48 mm in the first hour. Radiographs showed the prosthesis to be satisfactorily placed, but with a great deal of lateral periarticular ossification. There was no evidence of infection in the bone nor of any other abnormality that could be related to the soft-tissue swelling (Fig. 2).

It was thought that he was suffering from an acute infection of insufficient duration to produce radiological evidence. On this assumption aspiration was attempted, but without success. An open drainage incision was then made, but in the event this became the access for biopsy rather than for the drainage of pus. Pale necrotic material was removed for histological examination and the incision was closed. The material was sectioned and studied by a number of pathologists; the overall opinion at that time was that it was a malignant spindle-celled sarcoma without any particular pattern.

The patient had no evidence of metastases but the tumour was considered to be inoperable and a course of radiotherapy was planned. However, before this could be started his general condition deteriorated and he died a few weeks later.

Postmortem dissection of the tissue surrounding the left hip revealed a large oval tumour extending almost
from the iliac crest to about the level of the upper third of the femur. It thus enveloped the whole hip region as far as the false capsule, but was not arising from the bone. It was white, with a soft consistency and had extensive areas of necrosis. The postmortem examination confirmed that there was no evidence of metastases and showed that death was due to bronchopneumonia secondary to a sarcoma of the soft tissues of the hip.

The upper part of the femur together with the prosthetic components were excised from the body. After removing the prosthesis, examination of the tumour by radioactive techniques failed to demonstrate the presence of any particles of metal.

Fortunately, the histological sections had been saved and were available for re-examination. Now, 10 years later, it is possible to classify this tumour as a malignant fibrous histiocytoma. It had a variable morphological pattern and showed frequent transition from spindle cell to pleomorphic areas (Figs 3 and 4). There were plump spindle cells arranged in short fascicles in a storiform pattern. The spindle cells were well differentiated and resembled fibroblasts. There were also occasional plump histiocytic cells (Fig. 5), and areas in which the cytology was pleomorphic, consisting of large numbers of giant cells with multiple hyperchromatic irregular nuclei (Fig. 6). Pleomorphism and mitoses were present (Fig. 7).
Focal myxoid degeneration, inflammatory cell infiltration and areas of necrosis also were noted.

DISCUSSION

It is estimated that about 35 000 hip replacements are performed in Britain annually and the quoted world figure is 350 000. In our practice, no other cases of malignancy similar to this one have been seen. Other isolated reports have, however, come to light (Bagó-Granell et al. 1984; Penman and Ring 1984).

In our patient the tumour was large and necrotic and enveloped the hip region right down to its false capsule. There was, however, no direct contact between metal and tumour nor between cement and tumour. Radioactive tests failed to demonstrate particles of metal in the tissues.

It is quite possible that the development of a sarcoma adjacent to a hip replacement in this patient is quite coincidental. If it is not, we have no clear evidence whether it was the alloy or one of its individual components, or the cement or some other cause that provoked the change. This case must rest as a single report. It is submitted for publication as the implications are clearly of importance. It is hoped that it will alert other orthopaedic surgeons and encourage them to report any similar cases.

I wish to thank Dr Mufeed H. Ali for his review of the histology of this case.

REFERENCES
