OPEN TRANSPEDICULAR BIOPSY OF THE VERTEBRAL BODY

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We describe a method of obtaining a biopsy from the body of a vertebra by an open transpediclar route. This minimises the danger of contamination of tissue planes and spaces.

The radical resection of a primary malignant or locally aggressive spinal tumour requires an en bloc removal of the lesion and of any biopsy track and haematoma caused by the biopsy. This is almost impossible after a standard posterolateral needle biopsy: this contaminates every compartment along the track and may produce a contaminated paravertebral haematoma. We describe an alternative technique of biopsy.

CASE REPORT

A 21-year-old man presented with a three-month history of thoracolumbar pain which was worse at night. There had been no trauma or infection and he had no neurological symptoms. Clinical examination revealed slight restriction of thoracolumbar spinal movements and some local tenderness. Blood tests were normal.

Radiographs showed a fairly well defined expanding osteolytic lesion in the right side of the body of T11, and this was confirmed by CT examination (Fig. 1). A bone scan showed a local increase in activity. The most probable diagnoses were considered to be giant cell tumour or aneurysmal bone cyst.

Because the pathology of the lesion was in doubt, biopsy was indicated. To avoid the possibility of producing a contaminated posterolateral biopsy track, we decided to carry out an open transpediclar biopsy. If the diagnosis of a giant cell tumour was then unequivocally confirmed by frozen section, immediate hemivertebrectomy could be performed. If there was any doubt, we intended to plug the hole in the pedicle with bone cement, close the wound and await the definitive histological diagnosis.

Pre-operative digital subtraction angiography revealed only moderate hypervascularity of the lesion; the pictures were more suggestive of a giant cell tumour than an aneurysmal bone cyst. To minimise bleeding at operation, especially if hemivertebrectomy was needed, the tumour vessels were embolised with Ivalon after checking that no major medullary feeder artery, such as that of Adamkiewic, arose near the tumour vessels.

Fig. 1

CT scan showing the lesion in the right side of T11. The cortex is deficient just anterior to the head of the rib.

Operation. With the patient prone, the spinal level was confirmed by image intensifier and a longitudinal incision made just to the right of the midline. To minimise the chance of making a false passage, the entry site into the pedicle was checked with biplanar image intensification and the pedicle broached as for the insertion of a pedicle screw. The diameter and direction of the pedicle were
ascertained from the pre-operative CT scan and an appropriately sized biopsy cannula was passed through the pedicle. There was no resistance within the body of the vertebra until the anterior cortex was felt, and bleeding was slight. Only a minimal amount of tissue and blood clot was obtained, so a little more tissue was curetted with a small, sharp spoon passed through the pedicle. The operation site was kept dry with a sucker. The entrance to the biopsy canal was plugged with bone wax whilst the frozen section was examined and the wound was washed out with Dakin’s solution.

Fig. 2

CT one year following open transpedicular biopsy. The biopsy track is still visible and the aneurysmal bone cyst is healing.

The frozen-section diagnosis was aneurysmal bone cyst, so the bone wax was removed and a curved spoon was passed through the pedicle, to curette as much as possible of the interior of the cyst. The pedicle entry site was again plugged with bone wax and the wound washed out and closed.

Postoperatively, pain was gradually relieved, while CT scans at five months and one year showed both the biopsy track and progressive healing of the aneurysmal bone cyst (Fig. 2).

DISCUSSION

The track used to biopsy a limb tumour can usually be placed so that it can be completely excised in continuity at any subsequent radical resection of the tumour. Such a block excision of a vertebral body tumour is virtually impossible following a standard posterolateral percutaneous spinal biopsy. But biopsy is essential before planning the treatment of a primary malignant or locally aggressive tumour of a vertebral body for which radical resection may be the treatment of choice.

Percutaneous transpedicular biopsy is possible by a technique similar to that described by Magerl (1984) for inserting Schanz pedicle screws, but this carries the risk of producing a large contaminated haematoma in the erector spinae. Furthermore, a slight directional error could damage the pedicle and lead to paravertebral or epidural contamination with tumour. Open transpedicular biopsy avoids these possible complications.

In the patient we describe, the incomplete curettage may have contributed to the healing of the aneurysmal bone cyst, but we adopted an expectant attitude primarily because such lesions can heal following biopsy and embolisation (Murphy, Strecker and Schoenecker 1982) or even biopsy alone (McQueen, Chalmers and Smith 1985).

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REFERENCES

