Chondrosarcoma of Cervical Spine Causing Compression of the Cord

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Neoplasms of cartilaginous origin make up about 33 per cent of primary tumors of bone. Their location in the vertebral columns is not frequent, and signs of compression of the spinal cord rarely are observed. In this connection the following case is presented.

Case Report

J.U., a male aged 22, was referred on Oct. 20, 1962 to the Neurosurgical Department from the Neurological Clinic in Białystok, where he had been admitted 6 weeks earlier. At this time he complained of paresis and numbness of the left side which had been increasing for the last 3 months. Lumbar puncture done there revealed a manometric block and the spinal fluid contained 160 mg. per cent protein without pleocytosis. Suboccipital myelography demonstrated arrest of the contrast medium above the level of C5 (Fig. 1).

Examination. On admission spastic quadriaparesis, more pronounced on the left, with preserved function of sphincters was found. The patient could walk only with help. The position of his head was restricted and movements were limited. There was referred pain in the lower part of the neck, but soft tissues in this region were normal on palpation.

Laboratory findings and roentgenograms of the chest were normal. Spotty calcification superimposed on the bodies and transverse processes of C5-C6 on the left side were found in roentgenograms of the cervical spine. On the oblique views it also was shown that this pathological shadow was bulging into the intervertebral foramen and canal. The lesion was visualized better on laminograms. The area of calcification was surrounded by a margin of destroyed bone. The edges of destruction were polycyclic and either sharp or confused. The relation between tumor and vertebral artery was shown by means of arteriography performed by femoral catheterization. An irregular narrowing of the vertebral artery at the level of the tumor was found.

Course. During the 3 weeks' stay in our department the condition of the patient quickly deteriorated so that he could not walk and insufficiency of the respiratory muscles occurred. The diagnosis of a neoplasm, probably a chondrosarcoma, arising from the vertebral column and invading the vertebral canal from the left side with compression of the cord was established.

Operation. Nov. 18, 1962. A tumor of cartilaginous consistency, partially well encapsulated, arising from the transverse processes of C5-C6 was found beneath the muscles. Displacement and compression of the dural sac could be seen after laminectomy of C4-C5. The external part of the tumor was removed in pieces and then the dural sac returned to its normal position. The deep part of the tumor was left in place. The osseous processes and arches C3-C7 were connected, for better stabilization and prevention of pathological fracture, by bone grafts from the iliac crest. The wound was drained for 48 hours. Immobilization of the neck and trunk was obtained by means of a posterior cast.

Course. The wound healed perfectly and the postoperative course was uneventful except for a febrile state in the first few days. The patient's condition began to improve during the day after operation and in 4 weeks' time symptoms disappeared. Postoperative irradiation was done and a dose of 3900 r was given on one field by a window in the plaster of Paris. After 40 days the patient was discharged.

A month later he was admitted again because of a postradiation reaction of the skin with superficial pyodermitis which soon improved after removal of the plaster of Paris and local treatment. Roentgenograms showed that the bone grafts were well healed.

Pathological sections of the operative specimen revealed suspicion of a well-differentiated chondrosarcoma (Fig. 2).

Received for publication August 19, 1963.

Fig. 1. Suboccipital myelogram, showing arrest of contrast medium above the level of C5. A calcified irregular shadow on the left side of the vertebral column is visible.

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Discussion

The differential pathological diagnosis was difficult in our case because the specimen was obtained in small pieces. It was said by Dahlin\(^3\) that diagnosis of well-differentiated chondrosarcoma is the most difficult of all malignant tumors of bone. Despite the benign microscopical appearance the clinical course may be unsatisfactory and an early recurrence or pulmonary metastases may be observed.\(^1,2,6,9\) Differential criteria are based on subtle changes in cellular nuclei of chondrocytes. If many plump nuclei and double cells are present the neoplasm may be classified (according to Jaffe and Lichtenstein\(^7\)) as a chondrosarcoma of the first grade of malignancy. The clinical and radiological findings are important in the establishment of proper diagnosis. Fast growth, big size of tumors and the possibility of metastasizing to the lungs, or early local recurrence are clinical signs of malignancy. An irregular border between tumor and bone, predominance of osteolysis over osteosclerosis, scanty calcifications, 1–5 mm. in size, within a tumor are radiological features of malignancy.\(^3,7\)

Such features as irregular osteolysis on the border between tumor and normal bone tissue are also suggestive of malignancy. Microscopical examination was not made from the entire tumor and for this reason its diagnosis may be uncertain. The neoplasm can not be homogeneous in microscopical structure and because of this a malignant focus might be in the part left in situ. Although the microscopical appearance was typical for chondroma, the diagnosis of chondrosarcoma was established in our case because of the rather rapid development of the illness.

The localization of primary chondrosarcomas in the vertebral column is rare. Geschickter and Copeland\(^4\) described in their monograph 8 cases with such localization, in only 3 of which were there symptoms of compression of the spinal cord. According to Dahlin, of 199 cases of chondrosarcomas only 4 were localized in the region of the spinal column. Lindblom et al.\(^6\) presented 39 of their own chondrosarcomas, of which only 1 was localized in the spinal column. Strang et al.\(^9\) described a case of chondrosarcoma in the upper part of the cervical spine compressing the cord, causing a Jacksonian syndrome. Complete surgical removal of the tumor and subsequent radiotherapy are the most efficient methods of treatment. This type of treatment, according to Lindblom et al.\(^6\) gives a prognosis of 5 years of survival in 60.9 per cent of the cases and a prognosis of 10 years in 34.4 per cent of such cases.

These conditions were not met with in our case and as such the prognosis is poorer in spite of a