UPPER LUMBAR CHORDOMA

Report of a Case

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A woman aged fifty-eight was seen in September 1958 with a history of nine weeks' pain in her back passing down to both legs, present both when lying and standing. The pain was obviously severe, and it came from the upper lumbar region. She was very fat, weighing some fifteen to sixteen stone (210-224 lb.). All movements of the thoracic and lumbar spine gave pain at the thoraco-lumbar junction. The lower limbs were normal. Radiographs (Figs. 1 and 2), of poor quality because of her build, showed some enlargement and alteration in texture of the first lumbar vertebra. There was no abscess or soft-tissue shadow in relation to it, and radiographs of the pelvis and thoracic spine showed no other abnormality. Routine examination for a possible primary tumour elsewhere revealed no abnormality. About five weeks after her first attendance she was noticed to have early paraplegia, with weakness and sensory changes in the legs, and double incontinence. Laminectomy from T.12 to L.2 was undertaken, partly to relieve pressure and partly to obtain a specimen for histological examination. The dura was found to be pulsating under the lamina of T.12, but there was no pulsation below that level. The dura and its contents were broadened and flattened, and pushed backwards at the level of the first lumbar vertebra, and, on retraction of the dura laterally, greyish tumour material could be seen anterior to the meninges. Only a limited biopsy of the tumour material from
Histological sections from biopsy specimen. Figure 3—General appearance of the tumour with vacuolation of the cells. (×225.) Figure 4—High power. (×485.) Typical appearance with physaliphorous and signet ring cells.

After radiotherapy: increased density and some collapse.
Figure 7—Necropsy specimen from in front, showing compression of the first lumbar vertebra, and the extent of the tumour. Figure 8—The specimen from behind, showing tongue of tissue passing down anterior to the cauda equina (retracted) and engorgement of posterior spinal vessels above the area of pressure on the cauda equina.

Radiographs of the specimen, showing the altered texture and size of the body of the first lumbar vertebra. In the original radiograph (though not in the reproduction) a tongue of soft tissue is seen passing down anterior to the cauda equina.
the first lumbar vertebra was performed, as there were large overlying veins, but the decompression appeared satisfactory, and the dura was pulsating at the conclusion of the operation. A specimen sent for section was diagnosed as a chordoma (Dr R. J. Sandry, of Frenchay Hospital, Bristol) (Figs. 3 and 4). Subsequent progress was complicated by wound infection, which appeared to delay the recovery that had been expected from the relief of pressure on the cord; but after drainage of the infected haematoma the paraplegia began to improve. Two months after the laminectomy a course of radiotherapy by Cobalt 60 (5,400 r in twenty-seven treatments) was given. A month later radiographs showed considerable sclerosis and some collapse of the first lumbar vertebra (Figs. 5 and 6). Five months after the laminectomy moderate power had returned to the legs, but she complained of intractable pain in the distribution below the first lumbar segment. She had a further short course of Cobalt 60 therapy (500 r in three daily treatments) in an effort to relieve this pain. Thereafter she deteriorated, and bedsores got out of control. She died in August 1959, eleven months after her first attendance.

Necropsy (Dr A. L. Taylor) revealed a soft, rounded tumorous mass in the region of the first lumbar vertebra, presenting on both sides of the spinal column, mainly on the left. Otherwise there was no significant abnormality for a woman of her age and build, apart from a heart muscle which was heavily laden with fat, some atheroma of the cardiac vessels, and marked cloudy swelling of the kidneys. There were no signs of any secondary deposits. The cause of death was given as chordoma of the first lumbar vertebra, operation for decompression and biopsy, pressure sores with toxic absorption, and myocardial degeneration.

Notes on the necropsy specimen (Dr C. H. G. Price)—Further examination of the clean specimen of the spinal column did not show any further extension of the tumour. It was restricted to the first lumbar vertebra, where it measured on the left side 5·5 × 4·3 centimetres and was joined to a further mass on the right side by an isthmus of tissue 1 centimetre deep from above downwards; the mass on the right side measured 3·5 × 1·8 × 1·5 centimetres. In the mid-line the tumour had infiltrated but had not entirely destroyed the anterior longitudinal ligament. The front of the body of the first lumbar vertebra was compressed (Fig. 7). Posteriorly the specimen was approached through the scar of the surgical operation. The area of the laminectomy was defined and the dura reflected to reveal the cauda equina; this was displaced and stretched over a "knobly" mass of opaque tissue which projected downwards and backwards as a "tongue" into the spinal canal. This tissue was up to 1·5 centimetres thick and could be seen in the lateral radiograph of the specimen (Fig. 10) and is shown in Figure 8 which shows the specimen from behind. In this view a conspicuous feature is the engorgement of the posterior spinal vessels above the area of pressure on the cauda equina. Figures 9 and 10 show radiographs of the specimen.

Histology—A block of tissue was taken from the edge of the larger paravertebral mass on the left side. Sections from this showed that the tumour cells were mostly shrunken and distorted. The matrix was very vacuolated, many of the vacuoles being empty, and the basophilia not nearly so marked as in the biopsy specimen. No mitoses were observed. The cells at the growing edge of the tumour did not appear to be invading the adjacent compressed fibrous tissue, and growth was mainly nodular, namely by expansion rather than by infiltration—as in a chondroma. The most striking features were: 1) the loss of deep staining of the tumour cell nuclei, and 2) the diminution of the matrix basophilia.

COMMENT

Chordoma has been dealt with in detail by many authors, including Dahlin and MacCarty (1952), Harvey and Dawson (1941), Faust, Gilmore and Mudgett (1944), Baker and Coley (1953), and Congdon (1952). No attempt will be made here to repeat the well known facts and observations that have been made in those articles. The interesting points about this case appear to be as follows.
Site—The thoracic spine is the least common part of the spine for a chordoma. The commonest sites are the sphenoid-occipital and sacro-coccygeal regions, and the next most common are the adjacent areas of the spine, namely the cervical and lower lumbar spine. Of 252 cases collected by Faust, Gilmore and Mudgett (1944) only thirty-four involved vertebrae, and, although the sites are not detailed, only a very small proportion of these would have been in the lower thoracic or upper lumbar regions. Congdon (1952) reported one case involving the first lumbar vertebra, and Dahlin and MacCarty (1952) reported one case involving the eleventh thoracic vertebra. No other reference to the occurrence of chordoma in the upper lumbar or lower thoracic vertebrae has been found.

Diagnosis—This patient presented as a case of acute back pain, and normal examination revealed no physical abnormality. The initial radiographs (Figs. 1 and 2) were of poor quality, but it could be seen that the first lumbar vertebra was expanded and its texture altered in a way that did not suggest Paget's disease, but rather a secondary deposit or primary tumour. Most reports of the radiographic changes of chordoma in the vertebrae suggest that destruction is conspicuous, as it usually is in the sacro-coccygeal region and to a lesser extent in the sphenoid-occipital region. In some cases, however, expansion is mentioned. In this case there was no suggestion of any destruction of the involved vertebra.

Treatment—No diagnosis was arrived at by the ordinary investigations, but, when an early paraplegia supervened, laminectomy was done for the purpose of decompression and of biopsy. Undoubtedly the decompression was effective, though its effects were temporarily nullified by an infected haematoma. Once this was evacuated, neurological recovery did occur fairly rapidly. After diagnosis I consulted my neurosurgical colleague, Mr G. L. Alexander, who considered that it would probably have been better to have tried to obtain a needle biopsy and then to have done an antero-lateral decompression, which would have enabled a large part of the body of the first lumbar vertebra to be removed, and a more permanent and effective decompression of the cauda equina to be achieved. No such antero-lateral compression was possible after the laminectomy involving T.12, L.1 and L.2, and the subsequent treatment was therefore limited to radiotherapy. A fairly large dose of radiation by Cobalt 60, however, did not appear appreciably to alter the appearance of the tumour histologically: although its growth does appear to have been restrained somewhat, there was probably no regression, and further irradiation would only have led to massive necrosis with damage to the cauda equina. This conforms to the usual experience that these tumours are not cured by irradiation, and at the most their growth is only slightly restrained. Undoubtedly, radical excision is better, if the diagnosis can be established without making this impossible, and if the situation allows. Many cases are reported of several years' survival after radical excision, particularly in the lumbo-sacral region, although ultimately there has usually been recurrence and death.

SUMMARY

A case of chordoma affecting the first lumbar vertebra is reported, with comments on its situation, diagnosis and treatment.

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REFERENCES


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