TERATOMA OF THE SPINAL CORD

A CASE REPORT WITH CT SCANS

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Teratomas in the spinal cord are rare. We report a case in a 54-year-old man. CT scans revealed tumours of different densities within the spinal canal; this heterogeneity may help to differentiate teratoma from other spinal cord tumours.

After resection of the tumours under microscopy, the result was excellent. Histological examination showed a variety of tissues, including elements of all three germinal layers.

A 54-year-old Japanese man complained of gait disturbance with muscle weakness and numbness of the legs. He had no back pain or sciatica. Lasègue's sign was absent and the Wassermann test negative. There was slight bilateral patellar hyper-reflexia, but the calcaneal tendon reflex was absent on both sides. The Babinski reflexes were negative. After admission, he soon developed urinary and faecal incontinence, and had a sudden onset of meningitic symptoms.

Metrizamide myelograms showed intradural, extramedullary tumour formation from the level of the conus medullaris to the cauda equina. CT scans of this region revealed tumours with different densities in the spinal canal at T12 and L1 levels. The absorption coefficient of these tumours varied from 46 in one area to -150 in another. One ossified area was also seen. These findings clearly indicated that the tumours contained heterogeneous tissues (Fig. 1).

At operation in January 1986, a midline incision of the dura exposed four intradural extramedullary tumours, which markedly compressed the conus and the cauda equina and were firmly adherent to them. The upper tumour was a soft spherical greyish cyst about 1.5 cm in diameter, and the lower tumour, closely adherent to the upper one, was a yellow encapsulated parenchymatous mass measuring $3.5 \times 2 \times 1.5$ cm. The

two other tumours were anterior to the first pair; one was a cyst 5 mm in diameter and the other a cylindrical osseous tumour.

Using an operating microscope, the two cysts and the osseous tumour were successfully removed from the conus and cauda equina. The parenchymatous tumour could not be resected completely because of its firm adhesion to the cauda equina, but as much of the tumour as possible was resected. On the sixth postoperative day, meningitic symptoms developed, but these subsided in four days. Apart from this the postoperative course was uncomplicated with good recovery and the patient was able to return to his previous work 12 weeks after the operation.

HISTOLOGICAL FINDINGS

The cysts were lined with simple columnar epithelium, contained mucus and were partly multilocular. The epithelial cells were ciliated and showed marked myxopoiesis, there being many goblet cells (Fig. 2). The osseous tissue contained bone trabeculae, smooth muscle and epithelium like that of the uterine cervix (Fig. 3). The parenchymatous tumour consisted primarily of adipose tissue, with small amounts of striated muscle, nerve fibres and Meissner's corpuscles (Fig. 4). It also contained glands with a two-layer epithelium resembling that of the sweat, mammary or salivary glands. Tissues derived from all three germinal layers were seen.

DISCUSSION

Teratoma of the spinal cord is very rare. Slooff, Kernohan and MacCarty (1964) reported only two cases in 1,322 patients with primary tumours of the spinal cord. In all, 49 cases of spinal cord teratoma have been

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Fig. 1

CT scans and a sagittal reconstruction show tumours of differing densities in the spinal canal. The conus medullaris was compressed to the left by a tumour with an absorption coefficient of 46, while the tumour at the level of the lower margin of L1 had an absorption coefficient of -150 . An ossified area was also seen.

Fig. 2

Histology of one of the cysts. They were lined with simple columnar epithelium, and contained mucus.

reported, the first by Gowers (1876) and the most recent by Padovani et al. (1983). Gowers (1876) reported an adult case with intradural myolipoma (teratoma) at the conus medullaris. Hosoi (1931) reported one case of intradural teratoma and reviewed the first 10 cases in the literature.

In 28 of the 49 reported cases, the tumour was a cystic teratoma, and six cases were intramedullary in origin. A teratoma is a true neoplasm composed of all three germinal layers, but the presence of only two germinal components does not necessarily rule out this

Fig. 3

Sections of the osseous tissue mass which also included smooth muscle and epithelium resembling that of the uterine cervix.

diagnosis. The current classification of spinal teratoma does not include epidermoid and dermoid cysts, or sacrococcygeal teratoid or enterogenous cysts (Rosenbaum, Soule and Onofrio 1978).

The origin of teratoma of the spinal cord is controversial. Kubie and Fulton (1928) speculated that the tumour was an ependymal diverticulum. Ugarte, Gonzalez-Crussi and Sotelo-Avila (1970) hypothesised that the persistence of the neurenteric canal resulted in the formation of teratoma. The theory of germinal cell aberration is supported by Bucy and Buchanan (1935) and Rewcastle and Francoeur (1964).

It is not easy to differentiate a teratoma from other spinal cord tumours on clinical grounds. In our case, CT scans revealed tumours of differing densities within the expanded spinal canal. This finding, suggestive of heterogeneity of the tumour contents, makes it possible to differentiate teratoma from other tumours and was useful in establishing the diagnosis before operation.

The neck pain and stiffness with high pyrexia are probably due to transient aseptic chemical meningitis, occurring when tumour contents are released into the subarachnoid space. Larbrisseau et al. (1980) reported the only other case in which a teratoma of the spinal cord produced similar symptoms.

Total resection is the treatment of choice, but this is almost impossible without some injury to neural tissue, as the tumour is firmly adherent. Because of the slow growth of teratomas, partial resection produces long-term improvement in most cases. It is important to resect as much of the tumour as possible while preserving all neural tissue.

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Fig. 4

Sections of the parenchymatous tumour, which consisted primarily of adipose tissue, but also included small amounts of striated muscle, nerve fibres and Meissner's corpuscles.