Spinal Extradural Cyst

Case Report

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One of the rare causes of compression of the spinal cord is an extradural cyst of the spinal canal. The case we describe here is comparable in many respects to the 61 cases described previously, yet it is of interest because it illustrates the probable congenital origin of the lesion and the valvular mechanism previously postulated.

Case Report

A woman of 21 was admitted to the hospital in November, 1965. When 11 years old she began to suffer from coldness and reddish-blue discoloration of the right leg. At about the same time it was first noticed that the right leg was shorter than the left. There was enuresis with occasional incontinence even in the daytime until 2 years before admission when a spontaneous improvement occurred.

One month before admission the patient developed pain in the back, radiating down the left leg to the knee along the front of the thigh. The pain was aggravated by bending, coughing, and sneezing, and was relieved by lying down flat. For 2 weeks there had been weakness of both legs and a feeling of pins and needles in the left knee.

Examination. Clinical examination showed the right leg to be 1 inch shorter. There was generalized muscle atrophy of the right leg and fasciculations in the right thigh, and both legs were spastic and weak.

There was sensory loss to pinprick corresponding to the segments of D-10 to L-3 on the left side, sparing the left leg below the knee and the sacrum, and hyperesthesia over the segments of D-10 to D-12 on the right. The knee jerks and ankle jerks were pathologically brisk, the plantar responses extensor. Position sense and vibration sense were absent in both lower limbs.

X-ray examination of the spine demonstrated widening of the spinal canal with corresponding flattening of the pedicles on both sides from D-12 upward to the midthoracic region. Myelography showed an almost complete block at D-12. Above this level the contrast medium ran in streaks and tended to collect in pockets along the length of the dorsal part of the vertebral column (Fig. 1).

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First Operation. Laminectomy was carried out from D-7 to D-12 inclusive. There was a thin-walled cyst lightly adherent to the dorsal surface of the dura with a rounded end at D-12. Laterally, the cyst extended from nerve root to nerve root. The inferior end of the cyst was dissected clear of the dura and stripped upward to the upper limit of the exposure. We had already removed six vertebral spines and laminae and therefore decided not to extend the exposure on this occasion. The wall of the cyst was cut straight across. Cerebrospinal fluid was seen issuing from the upper end of the cyst in pulses synchronous with the heart beat. The cut end was tentatively occluded with silver clips, but the remainder of the cyst filled up so quickly with cerebrospinal fluid from above that the clips were removed. The wound was closed carefully in layers.

Histological examination of the cyst wall demonstrated collagenous connective tissue only, without epithelial covering.

Postoperative Course. The wound healed uneventfully without leakage of cerebrospinal fluid. The abnormal neurological signs quickly receded until there remained only slight spasticity of the right leg and impaired position sense in the toes. Intensive physiotherapy was given until the patient's gait became almost normal. It was our intention to remove the remainder of the cyst as soon as recovery had occurred, but this was postponed for social reasons. Two months after the first operation, while on her way to work, the patient slipped and fell. After the accident, walking deteriorated and the legs became increasingly stiff.

Second Admission. In February, 1966, both legs were spastic with increased tendon reflexes, and the plantar responses were extensor. Position sense was absent in the toes and in the left ankle. Vibration sense was absent in the left leg. There was no loss of sensation to pinprick. Lumbar puncture yielded a few drops of pale yellow fluid and on manometric examination there was a complete block. The protein content of the cerebrospinal fluid was 1.4 gm/100 ml. There were 106 white cells, with 20% polymorphs and 80% lymphocytes. Cisternal myelography revealed a partial block at the level of D-3, where the contrast medium escaped toward the right side in droplets, running in an irregular fashion into the sac of the cyst, down to the level of the previous operation at D-7, where there was a complete block.

Second Operation. The laminectomy was extended to include D-2 and continued downward to D-7, displaying the upper limit of the previous exposure. The cyst had reformed and became adherent to the dura. It could be separated again from the posterior aspect of the dura and dissected upward to D-2. When the narrow neck connecting it with the normal meninges was opened, it became apparent that folds of meninges were acting as a valve at the entrance to the cyst (Fig. 2). The neck was tied and divided, and the cyst removed.

Postoperative Course. Power in the legs was regained quickly and the patient was soon able to stand and walk. When the patient was discharged, the legs were still slightly spastic and position sense absent. When last seen 3 months after the second operation, she had already been back to work for 2 weeks and was able to walk as normally as the shortening of the right leg would allow. Position sense was regained in both feet.

Discussion

Extradural cysts of the spinal column were considered congenital by Elsberg, et al., Nugent, et al., and Gortvai. A traumatic origin was postulated by Meredith, who found hemosiderin in the cyst wall of two cases with previous history of injury. In our case there was no history of trauma and no evidence of trauma was found at operation. The presence of the lesion since early childhood suggests, instead, a congenital origin.

The clinical characteristics of this case are typical in many ways. The patient was young, and the lesion was in the thoracic region. Elsberg, et al., felt that a history of remissions was so typical that a clinical diagnosis might be made on this basis. Our patient did not achieve continence until the age of 19, but for the last 2 years before operation, control of micturition was normal. Nevertheless, once serious symptoms occurred, progression was relentless toward spastic paraplegia. Remissions occurred in 21 of the 61 cases reported previously. Pain has been a usual feature and was an important symptom in our case.

The diagnosis can be made on myelog-
The neck of the cyst displayed at operation. The cyst has been incised longitudinally, and the wall is held on each side with stay sutures. The narrow valvular communication with the subarachnoid space is shown, surrounded by folds of meninges.

ography which commonly demonstrates filling of the cyst. X-rays of the spine often show erosion of the pedicles and/or scalloping of the bodies of the vertebrae. A rounded paravertebral shadow, caused by lateral extension of the cyst, has also been described.

Spinal compression is caused by accumulation of fluid in the cyst when the pressure in the cyst exceeds the hydrostatic pressure of cerebrospinal fluid in the subarachnoid space. The pressure differential cannot build up unless the communication between the cyst and the subarachnoid space is valvular. At the first operation, pulsatile flow of cerebrospinal fluid was seen from the cut sac, indicating that flow could occur from the subarachnoid space into the cyst. Return of fluid from the cyst into the subarachnoid space was prevented by a valvular mechanism in the neck of the sac displayed at the second operation.

The best treatment is excision and obliteration of the abnormal opening of the subarachnoid space. Success has also followed wide incision and free drainage of the cyst, or obliteration of the neck only. Had the neck been demonstrated preoperatively, exposure and ligation might have sufficed, without extensive laminectomy and removal of the cyst. The communication was only demonstrated with absolute certainty when the neck was displayed at operation.

**Summary**

We have reported a case of spinal cord compression caused by an extradural cyst of the spinal canal, of probable congenital origin. We have described our successful removal of the cyst in two laminectomies and our findings of a valvular mechanism in the neck of the sac.

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**References**


