LUMBAR AND SACRAL CYSTS CAUSING PAIN*

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We have discovered in about 1 of each 100 patients operated upon after a diagnosis of low lumbar disc rupture a red herring consisting of a lumbar or sacral cyst. These cysts are fluid-filled swellings within the nerve or arise from the dura as meningoceles and compress a cauda or a nerve tract as it emerges from the dura. After Tarlov described this lesion in 1948 we recognized its significance.

Our first experience with such a lesion occurred in 1942. The patient, a white female 58 years old, presented a typical history and signs of a lumbosacral disc rupture, with pain and hypesthesia in the area of distribution of the left 1st sacral nerve. Air myelograms were not helpful. At operation a herniated nucleus was not found, but a cystic swelling, 1.5 cm. in diameter, was uncovered in the 1st sacral nerve beneath the upper edge of the sacrum. The overlying sacrum was rongeured away but the mass was not disturbed. The patient was unrelieved of her discomfort.

In 1949 Dr. Frederick Fischer, the orthopedic surgeon, was doing a fusion on a patient with spondylolisthesis and called us into the operating room after the sacrum was exposed. Two areas of erosion in the left upper sacrum were seen overlying cysts in the 1st and 2nd sacral nerves. The cysts were about 1.5 and 2.5 cm. in diameter, respectively, and the overlying sacrum was paper-thin. The cysts were not molested but were left uncovered. The patient did not complain of immediate postoperative pain but died suddenly 1 month after operation, presumably from a pulmonary embolism.

The findings in 3 patients who came to exploratory surgery during 1950 we believe throw some light on the development of these sacral cysts. Whereas the cyst described by Tarlov and those we saw earlier appeared smooth, as if of long standing, the findings in these patients suggested that the lesions were acute and had developed recently within a short period of time.

REPORT OF CASES

Case 1. J. McG., a white male 42 years old, was a heavy, muscular foreman who had been troubled with recurrent back pains for a year. Five days prior to admission he had experienced excruciating pain in his back and left leg while bending over to feed his dog. The left ankle jerk was absent, raising the left leg was impossible because of pain, and hypesthesia was present over the left 1st sacral distribution. Because of the unremitting pain the lumbar sacral space on the left was explored. A herniated nucleus was not found. However, the 5th lumbar lamina was markedly

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mobile. The 1st sacral nerve was covered with granulation tissue and was swollen to a diameter of 1.5 cm. at one point just below the upper edge of the sacrum. In appearance, the swelling suggested local trauma to the nerve and we speculated that such trauma could be associated with the abnormally mobile 5th lumbar lamina. The sacrum was unroofed over the bruised swelling in the nerve. The patient was advised to have a fusion but he was free of pain postoperatively and elected to wait.

Case 2. V. McC., a slight, athletic white female 46 years old, was admitted with a one-day history of severe low back and left leg pain. Since a fall while dancing in a night club some years previously, she had been troubled with episodes of moderate low back pain, although they had not been disabling. On examination lumbar tenderness was not present. Raising the right leg produced pain in the left buttock. Both ankle jerks were absent. There was hypesthesia over the 1st sacral distribution on the left. After 10 days of orthopedic observation, manipulation and traction, the pain increased in severity and myelograms were obtained (Fig. 1). The 4th and 5th laminae were removed and the dura was opened. A soft mass, about 1 inch in diameter, was found compressing the cauda extradurally in the 5th lumbar nerve. The nerve was sectioned above and below the swelling and the mass was removed (Fig. 2). The lesion was thought to be a neurofibroma, but on section it was found to consist of a hemorrhage into the nerve (Figs. 3 and 4). The patient was entirely relieved of her pain.

Case 3. R.C., a white female 48 years old, was first admitted with a history of back and left leg pain for over 20 years. Eighteen months previously she had been in an automobile collision, following which she was incapacitated by the low back and left leg pain. Neurological findings suggested an impingement of a herniated
nucleus on the left 5th lumbar nerve. Myelograms were not thought to be remarkable. At operation the left 4th and 5th lumbar laminae and the left upper sacrum were exposed. A laterally placed nucleus was removed from the left 4th space and the patient was relieved of her left leg pain.

Six weeks after surgery she began to complain of lateral pain along the right thigh and leg and to experience difficulty in emptying her bladder. These manifesta-

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**Figs. 3 and 4. Case 2.** Photomicrographs showing (left) hemorrhage in section of 5th lumbar nerve removed, and (right) histological appearance of the lesion under higher power.

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**Figs. 5 and 6. Case 3.** Roentgenograms at the time of first admission to hospital, showing (left) collection of pantopaque beneath upper sacrum on right side, and (right) intact appearance of sacrum over cyst.
tions became progressively more severe during the 12 months before she was re-admitted. There had been complete urinary retention for the last 2 days.

Raising either leg produced pain. The knee and ankle jerks were normal. Aside from an area of hypesthesia laterally on the right thigh, other sensory changes could not be found. Myelograms (Figs. 5 and 6) of the lumbosacral spine revealed a collection of pantopaque beneath the upper sacrum on the right side. The myelograms (Fig. 7) obtained on the previous admission had shown this collection of pantopaque and it appeared again on roentgenograms obtained some 3 months later. The sacrum overlying the pantopaque collection was thinner than in the film taken a year earlier.

The right upper sacrum was exposed surgically, revealing a paper-thin bulging, 2.5 cm. in diameter, in the sacrum about 2.5 cm. below its upper edge. A cyst, 3 cm. in diameter, was uncovered in the 2nd sacral nerve by removing the overlying sacrum. Small incisions were made at the upper and lower ends of the cyst and its contents were irrigated with saline. The fluid was colorless, with flecks of pantopaque. The wall of the cyst was very thin, apparently consisting of neural tissue and nerve sheath. Tissue was not removed for fear of further disturbing bladder function.

Postoperatively, relief of pain was immediate and bladder function returned promptly.

Although the localized swelling in the 1st sacral nerve of Case 1 was not proved to be a cyst, we have the impression that local trauma may be the forerunner of such cysts. We feel that the lesion found in Case 2 may represent an intermediate stage in the formation of intraneural cysts. In Case 3, the marked erosion of the sacrum in the 14 months elapsing between lumbosacral roentgenograms implies some factor other than a congenital one in the production of such cysts, and the 3 cases suggest a progressive sequence: (1) Nerve trauma, (2) Intraneural hemorrhage, (3) Intraneural cyst.

One of the authors (F.S.) and Nielsen² reported another type of lumbar cyst which is epidural but communicates with the subarachnoid space and for which surgery had not been done previously.

A commoner lesion of this type occurs postoperatively. We have had experience on several occasions of inadvertently nicking the dura with the Kerrison rongeur without opening the arachnoid. The result has been an immediate bulging of the arachnoid through the dural defect and this would have remained as a meningocele if the dural defect had not been closed with a suture. It is our impression that if such a defect in the dura cannot be

![Fig. 7. Case 3. Roentgenogram showing erosion of sacrum over cyst during 14 months intervening from initial examination (Fig. 6).](image-url)
sutured it would be best to incise the bulging arachnoid. Probably some of the instances of meningocele following hemilaminectomy which are reported as having been overlooked at the time of a nucleus pulposus removal are really postoperative, the dura or nerve sheath having been injured at the time of the first operation. The following case illustrates this situation.

Case 4. Z.V., a white male 30 years old, was admitted in September 1950 because of a dull ache in the right hip which had gradually become disabling during a period of a few weeks. In December 1947, a large herniated nucleus at the left lumbosacral space had been removed through a left-sided approach and the pain, sensory and reflex changes classical of 1st sacral nerve compression had entirely disappeared. In December 1949, signs of right 1st sacral nerve compression developed after the patient had lifted a bag of flour, and a herniated nucleus was removed from beneath the right sacral nerve. In teasing the nerve away from the underlying protrusion the nerve sheath had been torn, with escape of some spinal fluid. The man had been free from pain until the current admission.

Neurological examination revealed no sensory, motor or reflex changes. Myelograms (Fig. 8) revealed a collection of panto-paque in a cyst at the right lumbosacral level. The cyst could be emptied of panto-paque by changing the tilt of the table.

At operation a thin-walled cyst, 2.5 cm. in diameter, was found beneath the upper edge of the sacrum at the junction of the dura and the exit of the 1st sacral nerve. The small pedicle was ligated and the cyst removed in toto (Fig. 9). The histological characteristics of the cyst wall were those of a meningocele.

Pain has not recurred since operation.

The cyst in Case 4 was not present at the time of previous operation. No doubt the stage was set for the development of the cyst when the nerve sheath or dura was torn while teasing the nerve from the posterior ligament overlying the large herniated nucleus pulposus.

CONCLUSIONS

1. Perineural or epidural, lumbar or sacral cysts may be evidenced by symptoms similar to those produced by a herniated nucleus pulposus.

2. A post-traumatic or postoperative etiology for such cysts is suggested.
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REFERENCES