Case Reports and Technical Notes

Diverticuli of the Nerve Root Sheaths

Case Report

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There have been numerous reports of so-called perineural or arachnoidal cysts, since they were described by Tarlov as autopsy findings in 1938, and later in 1948 by the same author as a cause of lumbo-sciatic pain.\(^9,^{10}\) Myelographically, they were first diagnosed by Schreiber and Haddad\(^4\) in 1951. The number of cases actually operated on, either because of lumbar pain or mistakenly as a disc protrusion, is relatively small. Strully\(^6\) in 1956 found 30 cases in a review of the literature and added four new cases of his own. We are reporting the one case in our experience in 28 years.

**Case Report**

A 49-year-old woman had had mild hypertension for several years and had suffered trauma to the low back 5 years before admission. Her present complaints had started shortly after the trauma incident, with low back pain that later radiated down the distribution of both sciatic nerves, especially in the left one. She also complained of intermittent pain in the arms and neck (cervico-brachialgia).

**Examination.** There were no signs of brachial root involvement. Severe sacral pain was evident, increased by physical straining and by the erect position. There was spontaneous bilateral sciatic pain increased by straight leg raising especially on the left side, an area of hypalgesia and hypesthesia at L5-S1 on the left side, and a diminished left ankle jerk. Cerebrospinal fluid cell count, chemistry, and pressure were normal. Cervical spine x-ray films showed disc protrusion at C5-6 and C6-7 interspaces. Lumbosacral spine x-ray studies were normal.

During an episode of cervico-brachialgia in this hospital, the patient was treated by cervical traction in Fowler's position for 8 days, after which the pain disappeared; at the same time, however, pain in the lumbar and sacral areas was greatly intensified, as were the sciatic signs. She was then treated with pelvic traction for 6 days, but the pain remained unchanged. In view of this, a myelogram was done, which showed at first only doubtful evidence for compression at the S-1 level but when repeated the following day showed clearly two cysts in the sacral region (Fig. 1).

**Operation.** A complete laminectomy was done at the L5-S1 and S-2 levels, and two cysts were found. The one on the right was about 2 cm in diameter, attached to the L-5 root and associated with a traumatic type of neuroma in its proximal portion. This was completely excised. On the left side a cyst about 7 cm in diameter was found; it was incised and the walls removed.

**Postoperative Course.** Recovery was uneventful. The patient was completely free from both the lumbosacral and sciatic pain.

**Discussion**

This case presents some of the classical features attributed to Tarlov's perineural cyst or diverticulum of the nerve root sheaths. Most authors agree that sacral pain without a clear clinical picture and unmodified by routine conservative treatment suggests a cyst.\(^5,^{10}\)

Despite the normal plain x-ray studies in our patient, it is well known that diverticuli, through changes in hydrostatic pressure, can produce bony erosions especially visible by plain x-ray films in the posterior wall of the spinal canal in the sacral area. Tomography is obviously more helpful.\(^1,^{5,8}\) Myelography showed what is considered the classical finding of delayed filling of the diverticuli, first described by Schreiber and Haddad.\(^4\) Most authors, particularly Strully, insist on the value of delayed myelography to allow time for the diverticuli to fill adequately.\(^1,^{4,5,8}\)

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Three etiological factors have been suggested. Rexed and Wennstrom\textsuperscript{3} believe that the condition is due to arachnoidal proliferation combined with cystic degeneration of the nerve root and spinal ganglion. Histologically this resembles a tuberculous or syphilitic lesion. Tarlov\textsuperscript{4,10} believes that it is due to degenerative changes in the roots following repeated trauma and hemorrhages. Strully\textsuperscript{9} believes the diverticuli of the nerve root sheaths are due to hydrostatic phenomena. Smith\textsuperscript{7} agrees with this last theory based on the fact that the cysts are systematically distributed especially in the lower part of the spinal canal, are more frequent in the aged, and fill with blood in cases of subarachnoid hemorrhage. This same author shows through myelographic studies that they are occasionally found along the spinal canal, although they are definitely more frequent in the lower spine.

The fact that, in our patient, pain was greatly exacerbated following traction in Fowler's position suggests the influence of a hydrostatic factor.\textsuperscript{2,8} It is generally agreed that these cases should be treated by extensive sacral laminectomy and that the cysts can usually be excised completely, since the involved root is usually non-functioning, as in our patient.

In spite of the rare incidence of these cysts, they justify the more frequent use of delayed myelography in the study of lumbosacral pain not responding to the usual treatment.

**Summary**

We have reported the case of a patient with diverticuli of the nerve root sheaths whose complaint was lumbosciatic pain. The condition was diagnosed by myelography and successfully treated surgically. Related reports have been reviewed and the value of delayed myelography in atypical lumbosacral pain not responding to routine treatment stressed.

**References**