Intramedullary Spinal Neurilemmoma
Case Report

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The total removal of an intramedullary spinal neoplasm is no longer unusual; delicate bipolar cauterization with magnification has simplified the procedure, which sometimes can be followed by good neurological recovery. We are reporting an intramedullary neurilemmoma.

In 1964, in his review of the literature, McCormick found nine cases of intramedullary neurilemmoma; two of these neoplasms had been removed successfully, with some residuals. One of them recurred and was again resected. Schilp successfully removed an intramedullary neurilemmoma.

Case Report

This patient, a 37-year-old farmer, was admitted to the Neurosurgical Service at Ellis Hospital complaining of numbness and weakness of the legs and staggering gait of 2 or 3 months' duration. Recently, he had had difficulty sleeping because of pain in the left costovertebral angle. There had been no urinary incontinence or rectal sphincter disturbance. The patient had a wide-based gait and a positive Romberg. He clutched for support as he walked. The patellar and Achilles reflexes were exaggerated. Plantar stimulation evoked a flexor response. Vibratory and position sensation were impaired in the legs. There was loss of pain and light touch below T-10 bilaterally, with sacral sparing. Routine blood studies and radiographs of the cervical, dorsal, and lumbar spine were normal. Lumbar puncture disclosed a positive Queckenstedt test, and myelography demonstrated a complete block at T-11. The spinal fluid protein was 1000 mg%.

Operation. Laminectomy at T-8, T-9, and T-10 revealed a tense swollen dura. When a midline dural incision was made, the spinal cord appeared distended and bluish. No extradural or intramedullary mass was found. Aspiration of the expanded cord with a 25-gauge needle produced no fluid. An incision was made into the left posterior column because of bluish tint in this region. Fine bipolar cautery technique was employed, and at a depth of 2 mm a purplish, firm, fairly well encapsulated tumor was encountered. It was detached from the vascular supply entering each end by the use of the coagulating unit. When it had been completely isolated by careful dissection, the tumor, which was 3 cm long, was lifted from its bed. The dura was closed with a continuous No. 5-0 silk suture and 30 cc of normal saline injected into the subdural space before routine closure.

Pathological Studies. The soft, oval encapsulated tumor measured 3.2 × 1.5 × 1.0 cm. The surface was shiny, mottled, and reddish-gray. The microscopic sections revealed a cellular tumor composed of elongated fibroblastlike cells with many foci of palisading. The center was less cellular and here collagen-like material was found. Bodian Sharr S 3, PTAH, Luxol Fast Blue, and Masson's Trichrome stains all demonstrated that the material was collagen. The more cellular areas stained as connective tissue. There were many areas of interstitial hemorrhage. No nerve tissue or Rosenthal fibers were seen, nor were any Rosenthal fibers apparent. The tumor corresponded to the Antoni-A-type of neurilemmoma (Fig. 1).

Postoperative Course. Weakness of both legs was apparent. The patient was unable to flex the left knee, and there was only minimal flexion and extension in the left foot. A good range of motion was present in the right leg, but diffuse weakness was noted. An indwelling Foley catheter was required. Strength in the legs gradually improved over the next 2 weeks. Perception of pain and light touch was still absent below T-11, and vibratory and position sensations were diminished bilaterally.

One month following surgery, the patient was able to walk with a long brace on the
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left leg and Canadian crutches. The Foley catheter was no longer necessary. Extensor responses were elicited bilaterally on plantar stimulation, and the patellar and achilles reflexes were exaggerated. Clonus was present bilaterally. Abdominal and cremasteric reflexes were present. Six months following surgery, the long leg brace was still required on the left, and the patient was using one Canadian crutch. The sensory level had descended to L-1 bilaterally. The sphincters were intact. The patient stated that he was working on his farm and driving his tractor for about 6 hours each day.

Discussion

In previous reports the cells of origin of intramedullary neurilemmomas have been discussed and have been considered to be Schwann cells. Some believe that the sheath cells are hamartomatous at this site; others postulate that they originate in sheaths of nerves accompanying spinal arteries. On review of the previous cases, it is interesting to note further that all these tumors were located in the lower cervical, thoracic, or upper lumbar segments of the spinal cord. All were near the periphery in close proximity to the dorsal root ganglion and all were of the Antoni A type. There was no other associated neurologic or neoplastic disease present. One can speculate that this region where the incoming nerves lose their sheaths on penetrating the pia may be the critical area. It is conceivable that some sheath cells may accompany the nerves for a short distance. The tumor might arise from pial cells here, since both pial cells and Schwann cells are thought to be neuroectodermal in origin. Their similarity has also been demonstrated in tissue culture. No evidence for these tenets can be offered at this time.

We were surprised and gratified to find a neurilemmoma in an intramedullary location. The attempt at radical removal was made without expectation of finding a benign tumor within the spinal cord. The experience has impressed us with the justification of exploring an intramedullary spinal neoplasm.