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Multiple Spinal Canal Meningiomas

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Three cases of multiple spinal canal meningiomas are presented, bringing the total number of documented cases in the American literature to nine. While the exact incidence of multiple spinal meningiomas is difficult to determine, their possible occurrence warrants careful myelographic examination of the whole spinal canal, particularly if multiple clinical levels are present. When a complete block to the contrast agent is encountered, myelography should also be carried out via an upper cervical puncture. The radiographic appearances of multiple meningiomas are nonspecific.

In most published series meningiomas constitute about 25% of spinal canal neoplasms [1, 2]. Multiple meningiomas within the spinal canal are extremely rare. Multiple meningiomas are usually situated intracranially [3]; a combination of cranial with a spinal canal meningioma may be found [4, 5]. Coexistence of a meningioma or meningiomatosis with neurofibroma or neurofibromatosis is well known [8].

To the best of our knowledge, the literature contains no more than six cases of multiple spinal canal meningiomas [1, 6–8]. No report has appeared dealing specifically with the myelographic appearance of these tumors. We report three cases of multiple spinal canal meningiomas to alert the physician to the possibility of these often clinically unsuspected multiple spinal tumors. Failure to demonstrate the presence of a second meningioma may be due to an incomplete myelographic examination of the whole spinal canal and to a low index of suspicion by the physician.

Case Reports

Case 1

A 57-year-old woman was admitted with a 3 month history of progressive right knee buckling associated with numbness in the left hand and the lateral aspect of both feet. Neurologic examination revealed a mild motor weakness of the dorsiflexors of the right ankle. Sensory examination showed a decrease in position sense of the right big toe and an area of hypesthesia on the right side extending anteriorly from T7 to T10. Pantopaque myelography revealed two intradural extramedullary lesions, one at T4 (figs. 1A and 1B), the other at C7 (fig. 1C). Both tumors were removed. Microscopy showed that both lesions were meningiomas.

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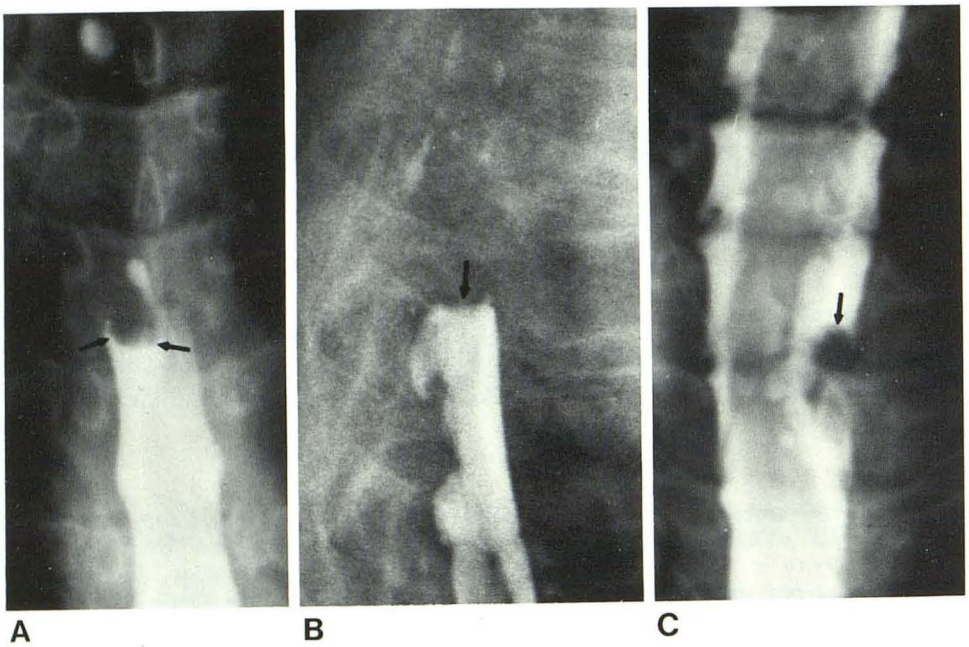

Fig. 1.—Case 1. **A**, Posteroanterior view. Sharply defined defect displaces spinal cord (*arrows*) at T4 level. **B**, Lateral view confirms complete block (*arrow*). **C**, Posteroanterior view. Second intradural tumor at level of C7. Displacement of spinal cord to right (arrow).

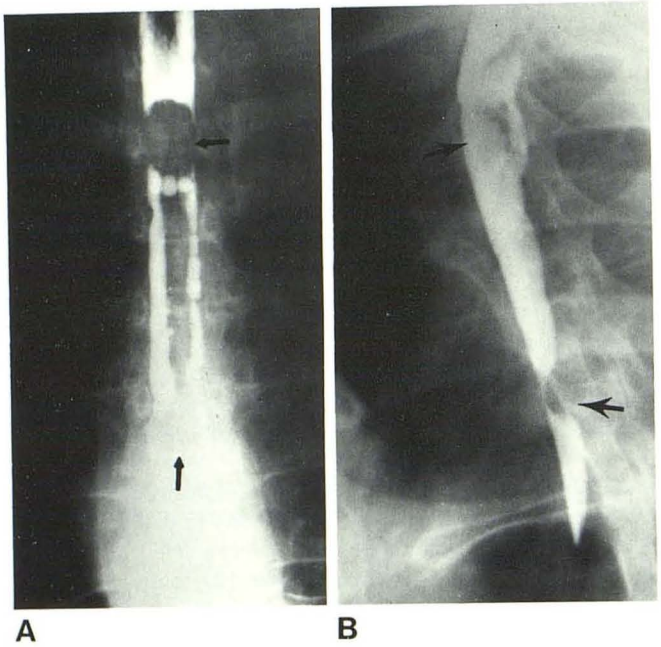

Fig. 2.—Case 2. **A**, Two sharply outlined lesions at T4 (*upper arrow*) and T8 (*lower arrow*). **B**, Lateral view. Two intradural lesions (*arrows*).

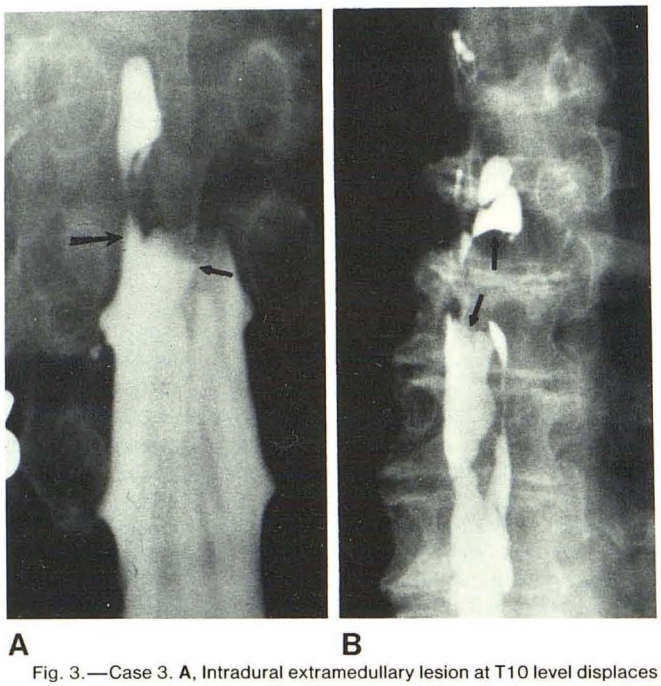

Fig. 3.—Case 3. **A**, Intradural extramedullary lesion at T10 level displaces spinal cord to left. **B**, 5 years later. Sharply-defined intradural, extramedullary lesion (*arrows*) at T5–T6 level is discovered.

Case 2

A 66-year-old woman with a 3 month history of weakness of both legs was admitted with numbness of the feet and vague numbness of the rib cage. Neurologic examination revealed a mild paraparesis, greater on the left side than on the right, with a pin-prick level below T7. Pantopaque myelography revealed two intradural extramedullary lesions, at T4 and T8 (fig. 2). Both lesions were removed and meningiomas were histologically verified.

Case 3

A 74-year-old woman was admitted with a 6 month history of low back pain. Neurologic examination revealed bilateral sensory and motor deficits, greater on the left side than the right. Pantopaque myelography showed an incomplete block due to an intradural extramedullary lesion at the T10–T11 level (fig. 3A). A meningioma was removed at surgery.

She gradually developed low back pain 5 years later. In the 4

days before admission, she had increased weakness and numbness of her left leg. Neurologic examination revealed absence of the deep tendon reflexes in the lower extremities. There was decreased vibratory and touch sensation in both legs. Pantopaque myelography revealed an almost complete block at T5–T6 (fig. 3B). At surgery, a meningioma was removed.

Discussion

The incidence of the multiple spinal meningiomas is difficult to establish. In a series of 55 spinal meningiomas, Bull [9] reported that none were multiple. Similarly, Cushing and Eisenhardt [3] did not record a case of multiple meningiomas in their book *Meningiomas*. Lombardi and Passerini [1] reported two cases of multiple meningiomas in 69 patients with proven spinal meningiomas. Isolated cases have been reported [4, 6, 7]. The incidence, however, of *multiple* cerebral meningiomas is reported as 1%–2% [3, 10–12].

Multiplicity of the lesion is usually clinically obvious, although in Rand's case [6], the second meningioma was clinically silent. The second meningioma may only be recognized when new symptoms develop (case 3).

Meningiomas appear as intradural extramedullary lesions on myelography. Once the diagnosis of a tumor is established, all attempts should be made to outline the whole spinal canal, particularly if the clinical picture suggests multiple levels. The examination should if necessary be carried out with the patient supine. If the meningioma, which in 70%–80% of cases is located in the thoracic region, causes a complete block, a myelogram via a C1–C2 or cisternal puncture should be performed. Roth et al. [7] used a cisternal myelogram to outline the upper limit of the second meningioma in the cervical region. The water-soluble contrast agent, metrizamide, may flow by a relatively high-degree block and obviate a second spinal puncture.

The differential diagnosis of multiple intrathecal spinal tumors includes multiple neurofibromas, the combination of a meningioma and neurofibroma, "seed" metastases from medulloblastomas and ependymomas and, rarely, extra-CNS metastases. The radiologic appearance of these lesions can mimic intradural meningiomas and the differentiation is seldom possible without clinical clues.

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