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## **Thoracic spinal meningioma associated with hydrocephalic dementia.**

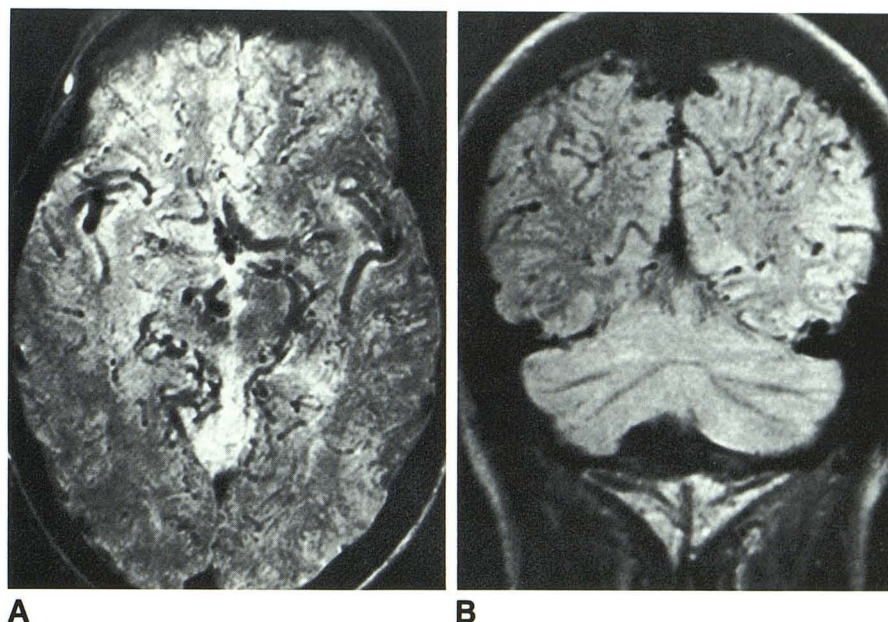
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Fig. 2.—A and B, MR in axial and coronal planes, SE 30/300 done on 0.5-T Phillips Gyroscan, showing void signals of arterial, venous, and sagittal sinus dilatation. Coronal view shows sparing of cerebellum.



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## Thoracic Spinal Meningioma Associated with Hydrocephalic Dementia

Spinal tumors occasionally cause hydrocephalus [1-11] and dementia [1-4]. We report a case of thoracic spinal meningioma in which both conditions existed on presentation and were reversed after surgical resection of the tumor.

## Case Report

A 75-year-old woman was admitted to our hospital with a 2-year history of low back pain, now radiating down both legs. She had increasing difficulty in walking, and some evidence of dementia.

A cranial CT scan showed ventricular dilatation and periventricular hypodensity, consistent with a communicating hydrocephalus (Fig. 1). Metrizamide myelography demonstrated an intradural extramedullary tumor at the level of T12, confirmed on metrizamide-enhanced CT (Fig. 2). On excision, it was proved histologically to be meningioma. The CSF protein was elevated to 1300 mg/dl and the pressure at lumbar puncture was normal during myelography.

Postoperatively, the patient did well. Sixteen months after surgery, cranial CT showed almost complete resolution of the hydrocephalus (Fig. 3); her dementia, walking difficulties, and incontinence were greatly reduced.

## Discussion

Many theories have been proposed to explain the hydrocephalic dementia that occurs with spinal tumor, but none has been verified or explains all the clinical observations.

Intracranial symptoms are rare, despite the frequency with which these tumors cause elevated CSF protein levels [5]. Meningeal spread of tumor leads to obstruction of CSF flow [6], but this is unlikely, because most of the reported tumors are benign. Furthermore, surgical removal of the spinal tumor alone improves the intracranial symptoms dramatically [2]. Hydrocephalus secondary to tumor-induced subarachnoid hemorrhage has rarely been documented in the described cases [2]. Tumor-induced secretion of CSF fluid over and above the absorbable amount cannot explain the hydrocephalic dementia, because it has been reported with extradural tumors [5, 7]. Compression by tumor of the spinal venous plexus might lead to hydrocephalus [8], but this does not explain why the syndrome also occurs with small lesions [2]. An elevated CSF protein level or perhaps an unusual protein constituent [9, 10] could cause a generalized "clogging" of the CSF absorptive pathways. Localized arachnoiditis resulting from substances foreign to normal CSF in patients with spinal tumors may also lead to hydrocephalus and dementia [11]. The rapid improvement of intracranial symptoms and signs after spinal tumor removal alone may imply that the arachnoiditis is not self-sustaining but requires continued production of irritative substances to outstrip adaptability of CSF absorptive structures. It seems less plausible, however, that arachnoiditis sufficient to cause hydrocephalus would regress after removal.

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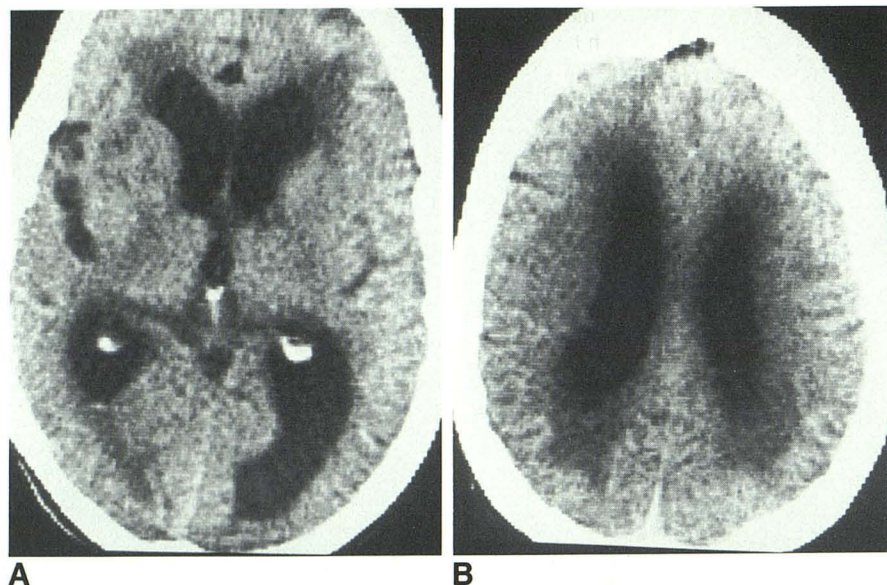


Fig. 1.—Cranial CT scan before spinal surgery at levels of the third ventricle (A) and lateral ventricles (B) showing moderate dilatation of ventricles and periventricular hypodensity.

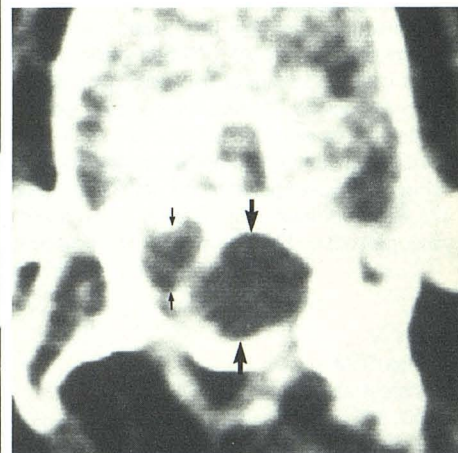


Fig. 2.—Metrizamide-enhanced CT scan at level of T12, demonstrating intradural extramedullary tumor (arrows) on left, which displaced spinal cord (short arrows) to right.

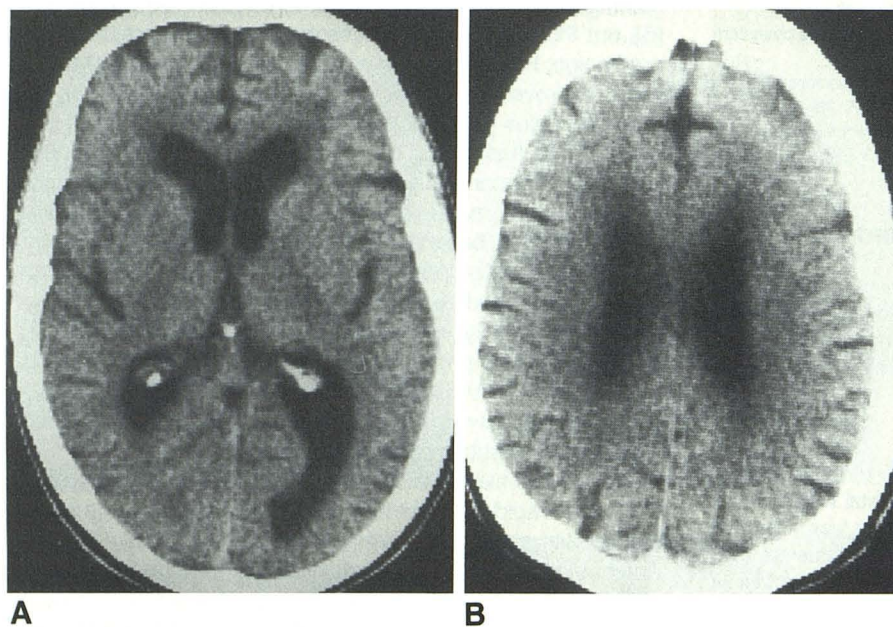


Fig. 3.—Follow-up cranial CT scan 16 months after spinal surgery, at levels of third ventricle (A) and lateral ventricles (B). The periventricular hypodensity has almost completely resolved, and ventricles are much less enlarged. The sulci, which were small in Figure 1, now appear to be normal in size for age.

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