

# Intramedullary Schwannoma of Thoracic Spinal Cord

## Case Report

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**Abstract :** Intramedullary localisation of schwannomas are rare. Only 36 cases have been reported up to 1991. In this report, an additional

case of intramedullary schwannoma treated surgically is presented.

**Key Words :** Intramedullary localisation, Schwannoma, Surgery

### INTRODUCTION

Intramedullary schwannomas are rare tumours (2,6,11,13,15,17). It has been reported they comprise approximately 0.3 % of primary intraspinal neoplasms (16). Reviewing the pertinent literature only 36 cases of intramedullary schwannoma reported were found at cervical, thoracic or lumbar regions (7,21,22,25). Several theories have been proposed to explain the cell origin of intramedullary located schwannomas (1,2,5,8,9,11,15,19,25,26).

In this report an additional case of intramedullary schwannoma of the upper thoracic spinal cord treated surgically is presented, and the diagnostic, therapeutic difficulties encountered related to these rare tumours are discussed.

### CASE REPORT

30-year-old woman (AD, 289269) was admitted to neurosurgery department complaining of numbness and weakness of the right leg over a period four months and urinary incontinence and numbness of the left leg for two months. There was no family history or physical signs of von Recklinghausen's disease. Laboratory and physical examination results were in normal limits. Neurological examination revealed hypoesthesia below the level of thoracic (Th) 2, mild degree weakness of the right lower extremity,

slight degree weakness of the left lower extremity and Babinski sign bilaterally. Deep tendon reflexes (DTR) were hyperactive bilaterally in the lower extremities. Sense of two point discrimination, proprioception and vibration were within normal limits. There was no abnormality on plain x-rays of cervico-thoracic region.

Metrizamide myelography showed widening of the spinal cord at the level of Th 2-3 and complete block of the spinal subarachnoid space at Th 3 (Figure 1).

The patient with the preoperative diagnosis of thoracic intramedullary cord tumour was operated and cervical (C) 5, Th 1-2 laminectomy was performed. After dural sheet opening enlargement and stretching of thoracic spinal cord was seen. After midline myelotomy between C 7, Th 1-2 level a reddish capsulated tumour strongly adherent to the cord substance was encountered. There was no connection between the tumour capsule and the dorsal roots of the spinal cord. The tumour, wholly located intramedullary, was removed subtotally by microsurgical technique.

Twenty hours after the first operation as the patient's neurological status deteriorated and paraplegia set in a second emergency operation was performed. With additional Th 3 laminectomy the tumour region was reexplored. When the dura was opened severe

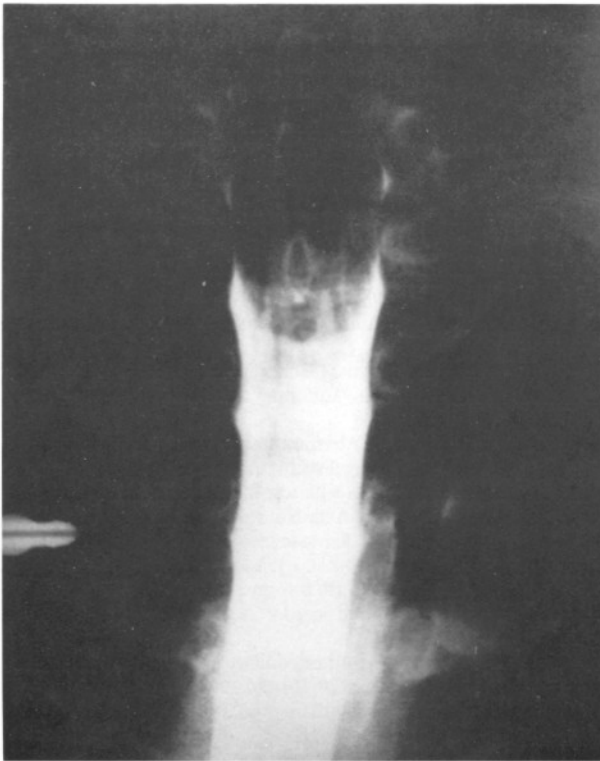


Fig. 1 : Metrizamid myelography of the intramedullary schwannoma of the thoracic spinal cord. Myelographic view resembles an intramedullary tumour.

edema of the spinal cord was encountered. By using the same myelotomy residual tumour was removed completely with operating microscope.

Following haemostasis the dura was left opening and the remaining anatomical layers were closed. At early postoperative examination, there was partial recovery of the paraplegia. The postoperative period after the second operation was uneventful.

Histopathological examination revealed a benign tumour composed of bipolar fusiform cells with pale cytoplasm, chromatin poor ovoid central nuclei and inconspicuous nucleoli. This pattern was consistent with the Antoni A and Antoni B areas of a typical schwannoma (Figure 2). Van Gieson staining of the tumour specimen also showed only a little stromal collagen.

Control neurological examination of the patient six months after the second operation revealed a slight degree of the paraparesia and hyperactivity of DTR of lower extremities. She could walk without help.

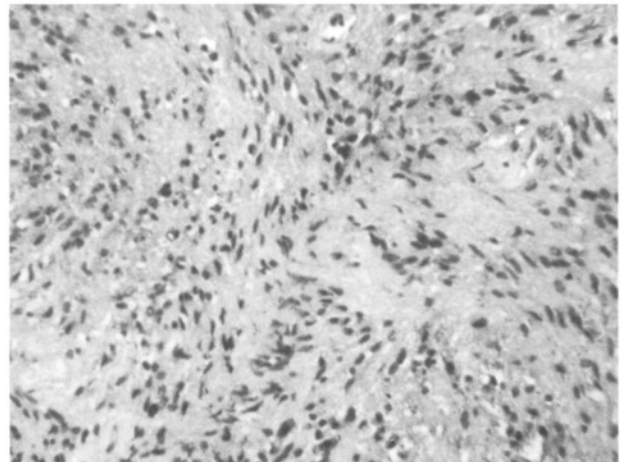


Fig. 2 : Light microscopy showing typical Antoni A and Antoni B areas of intramedullary schwannoma (H&E x 200).

Magnetic Resonance Imaging (MRI) performed four months after the second operation showed postoperative changes and a liquor pouche at the C 5-Th 2 level (Figure 3).



Fig. 3 : Control MRI photograph of the thoracic intramedullary schwannoma excised totally. Post operative changes of the spinal cord substance and liquor pouche are seen.

## DISCUSSION

Because schwann cells are not normally found in the spinal cord and brain parenchyma, intramedullary localisation of the schwannomas are rare (7,16, 17,21). Herregodts et al. reviewed and summarized

schwannomas located intramedullary up to 1991. They found 35 cases in the literature in addition to their case (7). The clinical symptoms and signs of these cases were similar to other intramedullary spinal cord tumours (10,12,13,19). Of the 36 reported cases surgery produced complete neurological recovery in 30 % the patients and partial recovery or a stable functional deficit in 52 %. The best surgical results were obtained when complete resection of the tumour could be performed (7,16). These tumours locate frequently in the cervical region of the spinal cord (20,21,23,26).

According to recent reports MRI and high resolution computerized tomography techniques facilitate the diagnosis and localisation of intramedullary spinal cord tumours (22,24). Myelography has some diagnostic difficulties especially in ascertaining the intramedullary or extramedullary localisation of spinal tumours (10,16).

Several theories have been proposed to explain the pathogenesis of intramedullary schwannomas, none has gained universal acceptance (1,8,12,15,16,18,19,24,26). Intramedullary schwannomas are rare because the fibers in the central nervous system do not contain a myelin sheath or Schwann cells (1,9). Central displacement of Schwann cells during embryonic development and possible neoplastic growth from dorsal root Schwann cells located in a critical area has more universal acceptance as a presumed aetiology (12,16,26).

Intramedullary schwannomas are benign well delineated and posteriorly located tumours (7,12). These characteristics make surgical excision the preferred procedure (3,4,7,13,14). Sometimes adhesions of the tumour capsule to the cord substance can cause some difficulties during surgery as in our case. For adequate treatment complete resection of the tumour by microsurgery is essential (7,12,16). The cavitron ultrasonic surgical aspirator (CUSA) facilitates removal of intramedullary tumours with minimal damage to the adjacent cord substance (7). Complete resection of an intramedullary benign tumour can cause deterioration in neurological status postoperatively (14,27). When an intramedullary tumour is encountered, the possibility of schwannoma or benign tumour should be borne in mind and complete excision must be planned.

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