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Thoracic Mobile Schwannoma
- A Case Report -

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A 65 year-old woman was admitted to our hospital for 4 year history of lower back pain and anterior band-like abdominal pain. Imaging studies, based on plain X-ray, Computed Tomography (CT) and Magnetic Resonance Image (MRI) scan revealed thoracic mobile schwannoma. Mobile intraspinal tumor such as schwannoma or ependymoma in film terminale is relatively more reported at cauda equina than thoracic area. Up to our knowledge, there has been only two reports of this mobile schwannoma in the midthoracic spine and the cervicothoracic junction. We report a case of thoracic mobile schwannoma, with review of surgical, pathological, radiological findings of this tumor.

Key Words: Mobile schwannoma · Thoracic

INTRODUCTION

Mobile intraspinal tumors have been rarely reported. Wortzman G et al[13] first reported intraspinal mobile ependymoma at filum terminale in 1963. In most cases, they were located in the cauda equina[3,4,11]. Only three were reported in thoracic region. two being thoracic schwannoma[5,8] and the rest mobile spinal neurenteric cyst, migrated from T3-4 to L2-3[7]. To our knowledge, there were only one schwannoma cases located at midthoracic cord level[8]. In most of mobile intraspinal tumors, It can be missed in routine radiological examination or physical examination. Extending the laminectomy up or down to seek the missing tumor and re-exploration after a repeat examination has been described[3,7,11]. There were some attempts such as intraoperative myelography, intraoperative sonography, and myelography after postural change to prevent these problems.

In this report, a case of thoracic mobile schwannoma was presented with therapeutic and diagnostic, surgical strategies.

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CASE REPORT

This 65-year-old-woman was referred to our hospital complaining of low back pain and anterior abdominal band-like pain since 1999. She had this pain after slip down injury at 1999, and visited in other hospital at 2001.

1. Physical examination

On physical examination, there was no neurologic deficit except direct tenderness on her back at the thoraco-lumbar area. motor power, sensory, and Deep tendon reflexes of the lower extremeties were normal. She had no vesicorectal dysfunction.

2. Radiological finding

Plain radiograph showed no abnormality except anterior wedge compression deformity in T12 vertebral body. and this is a landmark for comparing location with other MRI studies.

Inital MRI showed an intradural extramedullary tumor located at the T9-10 level(Fig. 1). it was isointense signal on both T2 and T1 weighted image and strongly homogenously enhanced lesion. After her admission, we took MRI again to define the current status of the tumor in our hospital(about 2 years after

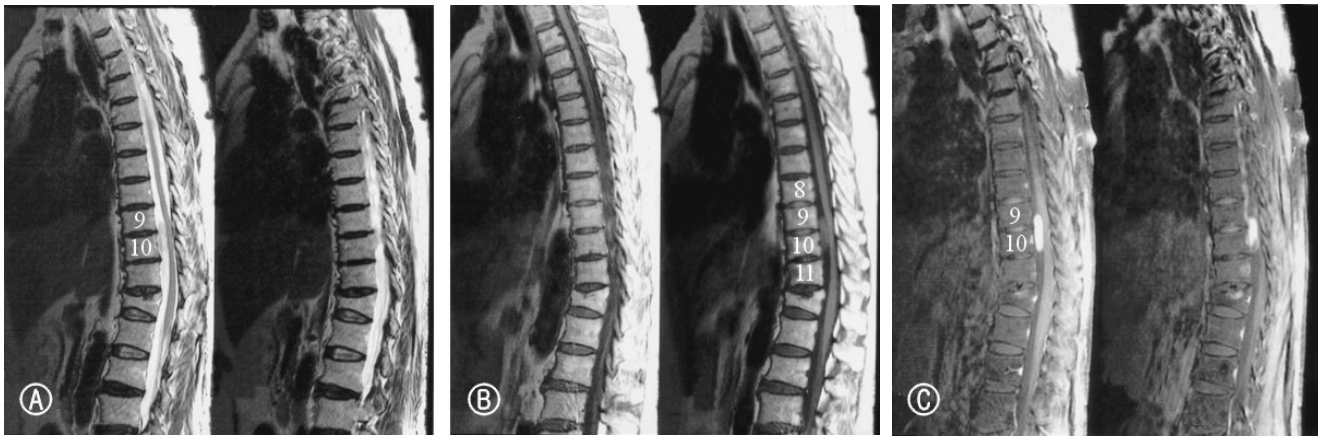

Fig. 1. Initial MRI showed an intradural extramedullary tumor located at the T9-10 level. It was isointense signal on both T2(A) and T1(B) weighted images and strongly enhanced lesion(C).

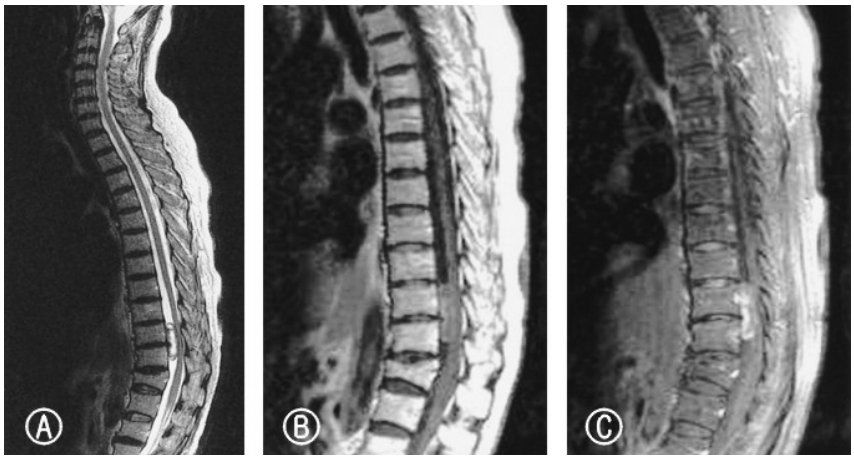

Fig. 2. Second MRI performed at our hospital, revealed a different tumor location at the T10-11 level. It was heterogenously signal intensity on T2(A) and T1 wighted images(B) and enhanced less than previous MRI scan(C). Tumor was heterogenous signal in both T1 and T2. weighted images and enhanced heterogenously, it suggested intratumoral hemorrhage and central irregular cavitary lesion.

initial MRI) (Fig. 2). Second MRI revealed a different tumor location at the T10-11 level vertebrae level. It was heterogenously signal intensity on T2 and T1 weighted images and enhanced less than previous MRI scan(Fig. 2). So we performed myelogram at the next day after second MRI and myelogram showed complete block at the level of T9-10 and also Postmyelogram CT revealed about 3×1×1.5 cm sized intradural extramedullary well defined mass lesion at T9-10 level. So we took third MRI because there was a discrepancy between the second MRI and myelogram and it revealed different location of the tumor which is located at T9-10 vertebrae level(Fig. 3). tumor was heterogenous signal in both T1 and T2 weighted images and enhanced heterogenously, it suggested intratumoral hemorrhage and cetral irregular cavitary lesion.

3. Surgical operation

The patient underwent tumor removal via a posterior approach. the patient was placed in a prone position and head-up slightly to make the tumor downward fixed. Last MRI revealed the tumor location as T9-10 level, so total laminectomy of the T9 and T10 level was performed because the lesion could migrate during laminectomy. after laminectomy, we were able to see the dark colored mass beneath dura. We performed a dural incision, and overlooked the tumor. It was a long ovoid shape and purplish gray colored. the tumor had cystic portion at left lateral aspect to it. the tumor capsule was not adherent to adjacent membrane, and originated from T9 root. We aspirated cystic portion and the tumor shrunked after aspiration of cystic portion, tumor was resected without cord retraction. The tumor was totally removed and histological examination revealed it to schwannoma with massive cystic and he-

Fig. 3. Third MRI after myelography revealed a different tumor location at the T9-10 level from the second MRI. Tumor was heterogenous signal in both T2(A) and T1(B) weighted images.

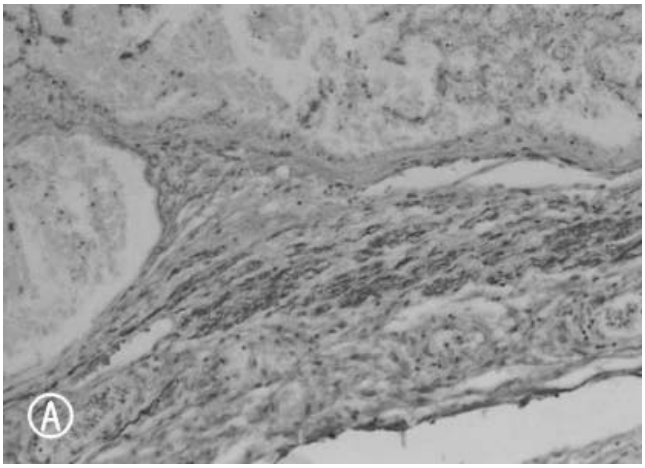

Fig. 4. A; Hemorrhagic cystic and necrotic mass is rimmed by scanty viable cells(H & E ×40).

morrhagic degeneration.

4. Pathological findings

The gross specimen was a long ovoid purplish gray hemorrhagic mass from the spinal cord, measuring 3.5×1×1.5 cm.

Histologic findings showed that hemorrhagic cystic and necrotic mass was rimmed by scanty viable cells(H & E×40) (Fig. 4-A), the rimming cells show spindle and wavy shape(H & E × 200) (Fig. 4-B). and the wavy cells are immunoreactive to S-100 protein(Immunohistochemical stain ×200) (Fig. 4-C).

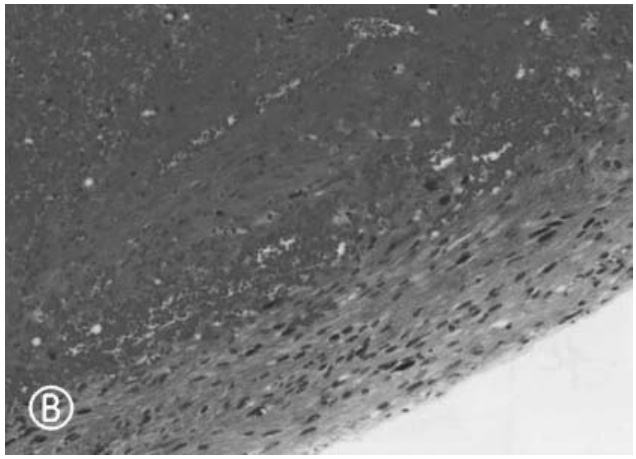

Fig .4. B; The rimming cells show spindle and wavy shape(H & E ×200).

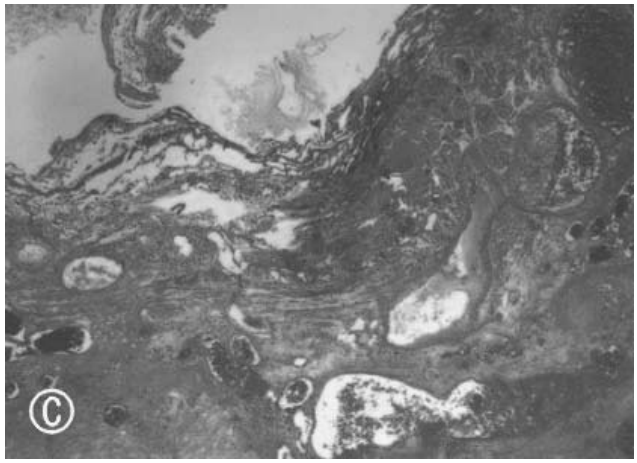

Fig. 4. C; The wavy cells are immunoreactive to S-100 protein(Immunohistochemical stain ×200).

5. Postoperative course

The postoperative course was uneventful. Mild CSF collection was noticed at postoperative 5 day due to CSF leakage. It resolved until 30 days after surgery by compressive dressing. Three months after the operation date, final neurological examination showed no abnormality. And her low back pain and anterior band-like pain were much improved and controlled by medication.

DISCUSSION

Mobile intraspinal tumor are rare, and most have been reported in the cauda equina[3,4,6,13].

Patients	age	sex	initial symptom	neurologic finding	location of the tumor
Hollin SA et al	56	F	pain in the lower thoracic spine	weakness of dorsiflexion and eversion of the left foot bilateral perianal hypoalgesia	lower end of the tumor was mobile from L1-2 to L4-5
Pau et al	50	F	Low back pain	absent achilles tendon reflex	lower end of the tumor was mobile from L2-3 to L3-4
Tavy et al	45	M	Low back pain	diminished sensation in the right leg	lower end of the tumor was mobile from L1-2 to L4
Namura S et al	51	M	gait disturbance	paraparesis vesicorectal dysfunction	lower end of the tumor mobile from T4-5 to T9-10
Iizuka H et al	48	M	right anterior chest pain and clumsiness of the right hand	diminishd pin-prick and tactile sensation in C8-T1 deep tendon reflex was exaggerated	lower end of the tumor mobile from T1-2 to T2-3

1. Pathogenesis of the mobility

Several authors suggested that possible mechanisms of tumor mobility include abnormal dilatation of the subarachnoid space attributable to spinal cord deformity induced by extramedullary tumor, and elongation of the nerve root by tension resulting from tumor weight[6,12]. However intraoperative finding of our case did not show abnormal dilatation of subarachnoid space and elongation of the nerve root. The author thought that it may be movable if the volume of the tumor is much smaller than thoracic canal size or patient`s thoracic canal size is much larger than normal variation. but patient`s thoracic canal size varied from 17.6 mm to 23 mm(T8/9-T10) in width and from 15.3 mm to 17.1 mm in depth. It is within normal variation(17~20 mm in width, 15~17 mm in depth, T9-T10)[1,9]. This meant that the spe- cific circumstance of thoracic region was different from that of cauda equina region.

The authors think that the intraspinal mobile tumor has the potential to move if it has the cystic portion of tumor which diminished the pressure from the surrounding structures and it has no adhesion to adjacent structure. Hollin SA et al[4] insisted that the tumor was pushed upward by the injection of contrast medium. In our case, it may be conceivable because second MRI was performed after myelography then the tumor migrated up to T9-10 level.

2. Surgical strategies

If patients were asymptomatic or had no symptom fluctuation, physician easily neglect the possibility of these like tumor. It is important to localize the these-like tumors, the main problem of the mobile intraspinal tumors is the accurate localization of the tumors, without it, it may result in unnecessary extension of laminectomy level or even in second operation to find missing tumors.

There were several clinical trial or intraoperative methods to localize tumor accurately[2,3,5,6,8,12]. Friedman JA et al[2] stated that intraoperative ultrasonography was useful to localize and to avoid extension of durotomy.

Intraoperative myelography is helpful in order to confirm the precise tumor location. however, it should be remembered that the lesion could migrate during laminectomy procedure, probably due to the positive pressure ventilation and the position of the patient (even if it was fixed)[3,6].

It may be useful to repeat myelography while the patient is in a sitting position with a relatively small amount of contrast medium so as not to drive the tumor rostrally[7]. Varughese G et al recommended that MRI must be repeated for patients with changes in neurological symptom or signs after postural change or fluctuation of symptoms over time[12]. Intraoperative MRI may be helpful to localize the intraspinal mobile tumors in the future.

CONCLUSION

We experienced a rare case of mobile intraspinal cord tumor especially in thoracic level. If symptoms of the patient do not change after postural change or time go by, there are many cases to be neglected possibility about mobile tumor. Physician must keep in mind these kind of tumor when patient has the fluctua-

tion of symptom or the change of the neurological signs after postural change. It may be useful to localize tumor location precisely if we performed intraoperative myelography.

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