

Purely Extradural Spinal Meningioma of the Cervical Spine

Jun-Woong Choi, M.D.,¹ In-Seo Park, M.D.,²
Seung-Hwan Yoon, M.D.,¹ Jong-Oon Park, M.D.¹

Departments of Neurosurgery,¹ Pathology,² Inha University Hospital, Incheon, Korea

Spinal meningiomas located purely in the extradural space are rare, and they may easily be confused with malignant neoplasm. We report an unusual case of a purely extradural spinal meningioma mimicking metastatic neoplasm. A 38-year-old woman had neck pain and left side weakness. MRI scan revealed extradural spinal mass. Preoperative and intraoperative diagnosis was metastatic carcinoma, but permanent diagnosis was extradural meningioma.

KEY WORDS : Extradural meningioma · Metastatic neoplasm.

Introduction

Spinal meningiomas account for approximately 25% of all primary neoplasms of the spinal cord and spinal canal. Most spinal meningiomas are located in the intradural extramedullary space and extradural meningiomas are less common. because of their growth patterns, they may be easily confused with malignant neoplasm that are much more common in this location.

We report a case of purely epidural spinal meningioma in the cervical region in a patient with a 3-month-duration of neck pain and left side weakness.

Case Presentation

A 38-year-old woman was admitted to our hospital with a 3-month history of neck pain and left side weakness. She complained about neck pain, left lower arm and hand tingling sensation.

MRI scan revealed extradural spinal mass. Well enhancing soft tissue mass was seen in left neural foramen from C2-3 level to C5 level with extension to anterior and posterior epidural space of spinal canal and left vertebral artery. The mass obliterated the anterior and posterior subarachnoid space and compressed the spinal cord. It was isointense on T1-weighted images and T2-weighted images, it showed homogeneous

contrast enhancement(Fig. 1).

Preoperative diagnosis of neuroradiologist was a metastatic neoplasm. The authors performed metastatic work up and there were no abnormal finding in other organ . The extradural mass was removed via a posterior approach. After laminectomy of C2 and C4, a tumor was only found extradurally. The tumor was subtotally excised because tumor of anterior part was not accessible. So that mass in anterior epidural space of spinal canal was remained. The intraoperative histologic evaluation revealed a metastatic carcinoma.

The postoperative course was uneventful, and the patient was discharged 11 days after surgery in excellent condition. However, final histologic examination confirmed the diagnosis of meningotheliomatous meningioma(Fig. 2). Neurological abnormalities were completely recovered after surgery.

Discussion

Meningiomas are thought to account for about 25% of all primary spinal tumors⁷. Extradural spinal meningiomas are rare. Arseni and Ionesco reported that the frequency of extradural meningiomas was 7.8% in a series of 114 spinal meningiomas¹. Fortuna et al found 6.4% in a series of 62 cases⁴, Bret et al reported 3.3% in a series of 60 cases². However, these series did not always differentiate between totally extradural tumors and tumors with both extradural and intradural components. In their review of 367 cases of spinal meningiomas, Haft and Shenkin found 92% to lie intradurally; 3.5% were primarily intradural with an extradural extension, whereas only 3.5% were almost exclusively epidural⁶. Thus, the frequency of exclusively epidural meningiomas may thus be lower than initially thought.

• Received : May 27, 2004 • Accepted : June 10, 2004

• Address for reprints : Seung-Hwan Yoon, M.D., Department of Neurosurgery, Inha University Hospital, Sinheung-dong 3-ga, Jung-gu, Incheon 400-711, Korea

Tel : 032) 890-3508, Fax : 032) 890-2947

E-mail : nsysh@inha.ac.kr

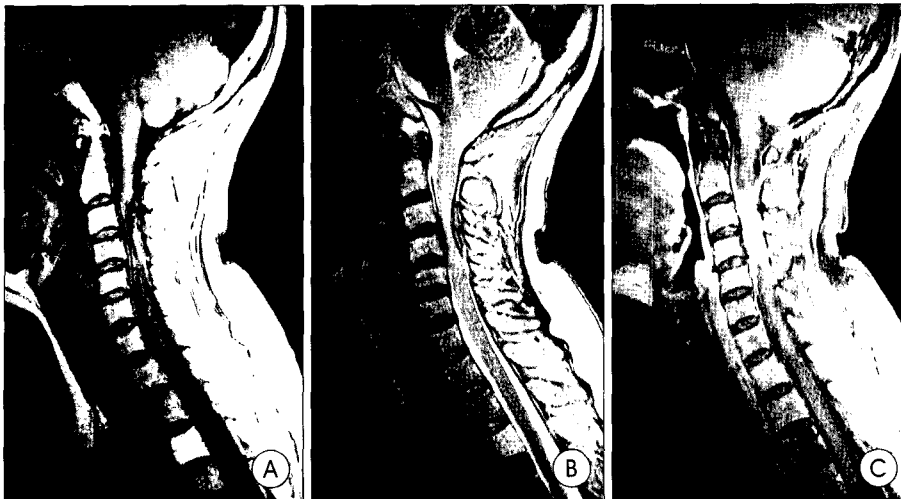


Fig. 1. Sagittal T1(A) and T2(B)-weighted magnetic resonance(MR) images of the cervical spine showing an isointense mass in the anterior and posterior epidural space at C2-C5 level. Gadolinium-enhance MR(C) shows an homogeneous enhancement of the mass.



Fig. 2. Histology of the tumor showing meningothelial meningioma. (A) On low power magnification (H & E, X100), the tumor cells infiltrate dura mater and bone. Tumor cells form lobules with surrounding collagenous tissue. (B) Tumor cells are largely uniform with oval vesicular nuclei and pale eosinophilic cytoplasm. The nuclei have small nucleoli and on occasion show central clearing (H & E, X400). (C) Immunohistochemically, the cytoplasm of tumor cells are strong positive for epithelial membrane antigen (EMA immunostaining, X200).

On MRI, meningiomas tend to be well circumscribed and appear isointense with the spinal cord on T1-weighted images and isointense or slightly hyperintense on T2-weighted images. Takemoto et al.¹¹⁾ described spinal meningiomas as isointense on T2-weighted images and different from schwannomas, which gave high signal. Contrast enhancement is immediate and uniform⁹⁾. Extradural meningiomas in men are proportionately more common than the intradural variety, and the average age at onset of symptoms is lower. In a review of 35 cases of extradural spinal meningioma, Calogero and Moosey found that 16 (46%) of the patients were male; the average age was 37 years five of the patients being 14 years of age or less³⁾.

Extradural meningiomas are more aggressive than intradural ones, showing a more rapid course and more invasive. Levy et al⁸⁾ reported that three of seven extradural meningiomas were invasive, two having destroyed both the vertebral arch and pedicles. Their 90 cases of intradural meningioma were noninvasive.

Although the optimal treatment for primary spinal meningioma

was total microsurgical resection, some authors advocated adjunctive radiotherapy^{5,10)}. Its role as adjuvant therapy after subtotal resection was controversial because of the tumor's typically indolent nature^{5,10)}. It has been indicated that radiotherapy should be considered after subtotal primary excision in cases of recurrent meningiomas, or as an alternative to surgery when the operative risk is too high because of comorbidities or tumor location^{5,10)}.

In the present case, an extradural meningioma was subtotally removed. The patients may need adjuvant radiotherapy if the tumor is growing at follow up examination.

Confusion may occur in a patient with a suspected spinal meningioma, which presents intraoperatively in extradura. Even in patients without a guiding clinical history, the tumor may be misinterpreted as a metastatic lesion and may be mistreated by a debulking procedure and then a second operation would be necessary to completely excise the meningioma.

In this case, preoperative imaging diagnosis and intraoperative histologic diagnosis were metastatic carcinoma. So, the tumor was mistreated by a debulking procedure. But, final diagnosis was meningioma. The patients may need a second operation or radiation therapy.

Meningioma located in the epidural space should be included in the differential diagnosis of the epidural mass. The authors stress the importance of intraoperative and postoperative histologic examination for adequate surgical decision-making.

Conclusion

Extradural spinal meningiomas are rare and may mimic metastatic disease.

Extradural spinal meningioma may be misinterpreted as a metastatic lesion on preoperative radiological findings and intraoperative histological examination and may be mistreated only as a debulking procedure. Intraoperative and postoperative histology provide an optimal therapy.

References

1. Arseni C, Ionesco S : Les compressions medullaires dues a` des tumeurs intrarachidiens : etude clinicostatistique de 362 cas. **J Chir(Paris)**75 : 582-594, 1958
2. Bret P, Lecuire J, Lapras C : Les meningiomes intrarachidiens : reflexions a` -propos de 60 observations. **Neurochirurgie** 22 : 2-22, 1976
3. Calogero JA, Moossy J : Extradural spinal meningiomas. **J Neurosurg** 37 : 442-447, 1972
4. Fortuna A, Gambacorta D, Ochipinti EM : Spinal extradural meningiomas. **Neurochirurgia** 12 : 166-180, 1969
5. Gezen F, Kahraman S, Canakci Z, Beduk A : Review of 36 cases of spinal cord meningioma. **Spine** 25 : 727-731, 2000
6. Haft H, Shenkin H : Spinal epidural meningioma : case report. **J Neurosurg** 20 : 801-814, 1963
7. Kim KJ, Kim JH, Nam DH, Kim JS : Spinal Epidural Meningioma of the Thoracic Spine. **J Korean Neurosurg Soc** 28 : 259-262, 1999
8. Levy WJ Jr, Bay J, Dohn D : Spinal cord meningioma. **J Neurosurg** 57 : 804-812, 1982
9. Parizel PM, Balriaux D, Rodesch G, Segebarth C : Gd-DTPA-enhanced MR imaging of spinal tumors. **AJR** 152 : 1087-1096, 1989
10. Roux FX, Nataf F, Pinaudeau M, Borne G, Devaux B, Meder JF : Intraspinal meningiomas : review of 54 cases with discussion of poor prognosis factors and modern therapeutic management. **Surg Neurol** 46 : 458-464, 1996
11. Takemoto K, Matsumura Y, Hashimoto H, Inoue Y : MR imaging of intraspinal tumors-capability in histological differentiation and compartmentalization of extramedullary tumors. **Neuroradiology** 30 : 303-309, 1988