Spinal atypical meningioma

Because of their rarity, outcomes regarding spinal atypical meningiomas (AMs) remain unclear.

Noh et al., from the Department of Neurosurgery, Spine and Spinal Cord Institute, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea retrospectively reviewed the data from all patients who underwent spinal cord tumor excision between 1994 and 2017. Seventeen patients were pathologically proven to have atypical spinal meningioma.

They examined patients' neurologic status by determining their Nurick scores before and after surgery. Moreover, imaging studies, laboratory data, and the employed surgical method were analyzed retrospectively, as was the Ki-67 index and prognosis following postoperative radiation therapy.

The ranges, locations, and pathologic diagnoses of the tumors were extracted from the radiological and pathological records of each patient. The extent of surgery and progression of disease were confirmed using postoperative enhanced magnetic resonance imaging. Patients were divided into 2 atypical spinal meningioma groups: primary and metastatic. The demographics, age, sex, presenting symptom duration, tumor location, Simpson resection grade, Ki-67, radiotherapy, recurrence, overall survival, and progression-free survival of patients in both groups were compared.

Seventeen patients were included in the analysis, of whom 12 (70%), 4 (24%), and 1 (6%) had tumors in the thoracic, cervical, and sacral regions, respectively. Complete and subtotal resections were achieved in 15 (88%) and 2 (12%) patients, respectively. Overall and progression-free survival rates in patients who underwent complete resection were longer than those in patients who underwent subtotal resection ($P<0.001$). Four patients (24%) had metastatic meningiomas in the brain, among whom 3 were administered adjuvant radiotherapy after surgery. Two patient with intramedullary atypical spinal meningioma had metastatic tumors and experienced poorer prognoses. The 5-year overall and progression-free survival rates were 84.4% and 85.2%, respectively. The Simpson resection grade, Ki-67 index, and preoperative neurologic status were found to be important prognostic factors on univariate Cox regression analysis ($P<0.05$).

Complete resection should be considered as a primary treatment modality for individuals with atypical spinal meningioma. If subtotal resection is performed, adjuvant therapy can be administered [1)].

Data from all patients who presented with spinal AMs to 2 tertiary referral centers between 1998 and 2013 were obtained by chart review.

From 102 patients with spinal meningioma, 20 AM tumors (7 cervical, 11 thoracic, 2 thoracolumbar) were identified in 18 patients (median age, 50 years [range, 19-75] at time of resection; 11% male; median follow-up, 32 months [range, 1-179] after resection). Before resection, patients had sensory deficits (70%), pain (70%), weakness (60%), ataxia (50%), spasticity (65%), and incontinence (35%). One tumor presented asymptomatically. Simpson grade I, II, III, and IV resection were achieved in 3 (15%), 13 (65%), 2 (10%), and 2 (10%) tumors, respectively. One patient that underwent Simpson grade III resection received adjuvant radiation therapy. After Simpson grade I-III or gross total resection, no tumors recurred (0%; confidence interval, 0%-17.6%). After Simpson grade IV resection, 1 tumor recurred (50%; confidence interval, 1.3%-98.7%). With the exception of 1 patient who had paraplegia perioperatively, all other patients experienced improvement of preoperative symptoms

after surgery (median time, 3.6 months [range, 1-13] after resection).

Despite published cases suggesting an aggressive clinical course for spinal AMs, this series of spinal AMs reports that gross total resection without adjuvant radiation therapy resulted in symptom resolution and low recurrence [2].

1)
Noh SH, Kim KH, Shin DA, Park JY, Yi S, Kuh SU, Kim KN, Chin DK, Kim KS, Yoon DH, Cho YE. Treatment outcomes of 17 patients with atypical spinal meningioma, including 4 with metastases: A retrospective observational study. Spine J. 2018 Jun 12. pii: S1529-9430(18)30284-5. doi: 10.1016/j.spinee.2018.06.006. [Epub ahead of print] PubMed PMID: 29906618.
2)
Sun SQ, Cai C, Ravindra VM, Gamble P, Yarbrough CK, Dacey RG, Dowling JL, Zipfel GJ, Wright NM, Santiago P, Robinson CG, Schmidt MH, Kim AH, Ray WZ. Simpson Grade I-III Resection of Spinal Atypical (World Health Organization Grade II) Meningiomas is Associated With Symptom Resolution and Low Recurrence. Neurosurgery. 2015 Mar 12. [Epub ahead of print] PubMed PMID: 25774702.