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Case Report

Extradural cervical spinal meningioma without myelopathy

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ABSTRACT

Background: Only 2.5-3.5% of all spinal meningiomas are extradural.

Case Description: A 45-year-old female presented with chronic neck pain and bilateral arm numbness but was otherwise neurologically normal. The cervical magnetic resonance (MR) imaging revealed a right-sided extradural extramedullary lesion extending from C5 to C7. Through a C4-C7 laminectomy, the patient underwent subtotal tumor excision; the intracanalicular portion of the tumor was excised, leaving behind some extraforaminal components. The histopathology was consistent with a typical meningioma (i.e., containing meningothelial cells and psammomatous calcifications).

Conclusion: Extradural cervical spinal meningiomas are rare. Following MR studies, patients may undergo routine dorsal resection of the intracanalicular components of the meningioma, leaving behind extraforaminal extension if warranted. Early recognition and treatment lead to the most favorable outcomes.

Keywords: Cervical spinal meningioma, Extradural tumors, Neck pain, Nerve tumor

INTRODUCTION

Purely extradural meningiomas occur 2.5–3.5% of the time and must be differentiated with biopsy/resection from more typical extradural lesions (i.e., including lymphomas, metastatic tumors, or intradural/extradural schwannomas).[1,2,7] We identified just five cases of purely extradural meningiomas occurring predominantly in patients with minimal myelopathic symptoms.[5,6,8,9,13] Here, a 45-year-old female presented with a right-sided extradural extramedullary lesion extending on magnetic resonance (MR) from C5 to C7 that pathologically proved to be a classical meningioma.

CASE PRESENTATION

Over 2 months, a 45-year-old female patient presented with chronic neck pain and bilateral arm numbness, but without a focal neurological deficit. The cervical MR image revealed a right-sided extradural extramedullary lesion extending from C5 to C7 [Figure 1]. The T2-weighted MR showed that it occupied over 50% of the spinal canal and was clearly separated from the cord. The

T1 contrast MR demonstrated homogenous enhancement of a lesion that resulted in severe intracanalicular cord compression plus foraminal/extraforaminal compression of multiple nerve roots [Figure 2]. The original differential diagnoses included meningioma, spinal metastasis, and, less likely, sarcoma. Using an operating microscope and intraoperative neuromonitoring through somatosensory and motor-evoked potentials, intracanalicular and foraminal tumor excision was accomplished through a C4-C7 laminoplasty, while extra-foraminal C5-C7 tumor was left behind. Pathologically, the lesion proved to be a benign meningioma.

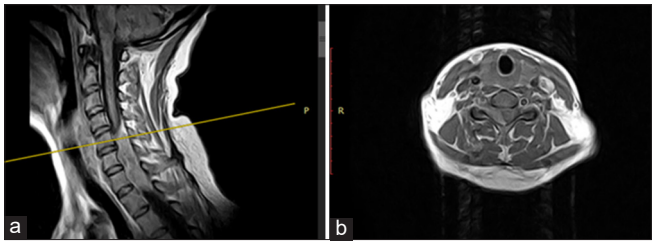

Figure 1: T1 Gadolinium-enhanced magnetic resonance imaging of the cervical spinal cord. (a) Sagittal view showing an extradural mass at the C5–C7 levels with severe cord compression. (b) Axial view demonstrating foraminal and extraforaminal tumor extension along the right nerve roots.

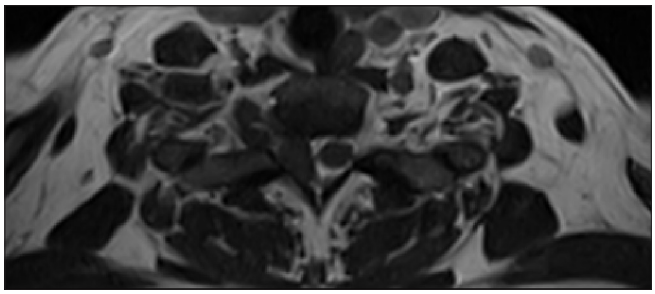

Figure 2: T2-weighted magnetic resonance imaging of the cervical spine showing a spinal mass with a clear plane between the normal cord and the lesion.

DISCUSSION

Extradural spinal meningiomas are rare and are more frequently associated with more aggressive behaviors compared to their intradural counterparts.[1] They are typically meningothelial (i.e., as in our patient), but other forms include fibroblastic, transitional, and psammomatous variants.[5] Most of the approximate 50 patients with extradural spinal meningiomas reported in the literature present with major myelopathy (i.e., paraplegia and/or urinary incontinence).[11] However, there is a subset of five cases like ours that exhibited extradural cervical meningiomas with only minimal myelopathic features [Table 1].

MR Findings for extradural spinal meningiomas

MR scans for patients presenting with cervical extradural meningiomas typically include high signal intensity seen on T1-weighted imaging, and mild hyperintensity noted on T2-weighted imaging with marked homogeneous enhancement with contrast (i.e., also often a classical dural tail and/or calcification).[4]

Treatment of choice for extradural meningiomas

Pathological confirmation utilizing biopsy or tumor resection is essential to differentiate extradural meningiomas from other lesions (i.e., metastases, lymphomas, schwannomas, and neurofibromas).[10] The treatment of choice is gross total surgical excision (i.e., utilizing a laminectomy with/without fusion) if feasible, reserving subtotal resections

Table 1: Literature review of extradural spinal meningiomas diagnosed with minimal signs of clinical myelopathy.

Author and year	Age, sex	Clinical presentation	Location	Pathology	Treatment
Zevgaridis and Thomé Spine, Journal, 2002[13]	75 F	Asymptomatic	T11-T12	PM	TE T11-T12 LAM
Saade *et al*., Head and Neck, 2015[8]	59 M	Right neck stiffness	C1-C3	SPC	T En-blocR
Sakamoto *et al*., Journal of Clinical Neuroscience, 2018[9]	57 F	LUE motor and sensory deficits	C6-T1	FibM	ST C5-C7 HL
Raesh and Shetty Int J Preclinical Clin Res, 2021[6]	18 M	Left neck swelling×1 year; neck *P* LUE	C4-C5	FM	ST C4-C5 LAM
Hsieh *et al*., Exp Ther Med, 2024[5]	64 M	Left shoulder P numbness, LUE mild weakness	C6-T1	SLGP/STC	ST C6-C7 LAM Excision C7 Root Phrenic Nerve Transfer Neurolysis C8 Root

FibM: Fibrous meningioma, FM: Fibroblastic meningioma, HL: Hemilaminectomy, LAM: Laminectomy, LUE: Left upper extremity, P: Pain, PM: Psammomatous meningioma, SLGP: Sheet-like growth pattern, SPC: Spindle polygonal cells, ST: Subtotal excision, STC: Spindle tumor cells, TE: Total excision, TEblocR: Total *en bloc* resection, yr: Year

for less surgically accessible tumor components. Adjunctive stereotactic radiosurgery may also be indicated for residual lesions.[12] Notably, extradural meningioma histopathology, consisting of either a typical or atypical lesion, should direct further adjunctive treatment and the ultimate prognosis.[3]

CONCLUSION

Only 2.5–3.5% of all spinal meningiomas are extradural. Here, a 45-year-old female did well following subtotal resection of a combined intracanalicular (full removal)/foraminal (residual tumor) benign extradural meningioma through a right-sided C4-C7 laminectomy.

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