

Spinal Intradural Metastasis

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Abstract

We describe a rare case of intradural Spinal metastasis. We discuss herein the clinical presentation and role of surgery and radiotherapy in such cases.

Key words

Spine, Metastasis, Intradural

Introduction

Spinal cord tumours account for about 15% of central nervous system neoplasms. Intramedullary tumours arise within the substance of the spinal cord, whereas extramedullary tumours are extrinsic to the cord. About two thirds of spinal cord tumors in adults are extramedullary in location, among which nerve sheath tumors, meningiomas and Filum terminale ependymomas account for the most. Metastatic involvement of the spinal intradural compartment as mass lesion occurs rarely.

Case Summary

A 60 year male was treated for renal cell carcinoma six months back by way of total Nephrectomy. Six months later, he presented with pain and progressive paraplegia with bladder/bowel involvement of 10 days duration. His main problem was root pains. On examination, he had lower motor neuron paralysis of both lower limbs with loss of reflexes and sacral anaesthesia with sphincter dysfunction. X-ray chest was normal. X-rays of lumbosacral region were non-contributory except for spondylotic changes (Fig 1).

MRI of Lumbar spine showed intradural lesion at L1-L2 level (Fig 2). A diagnosis of metastatic lesion was

made. Emergency Laminectomy was done in view of fast developing paraplegia. At operation, no extradural abnormality was detected. Dura was opened and a fleshy mass of the size of 1cm x 0.75cm entangling nerve roots at L1-L2 level was noticed. A near total removal was possible leaving small portion engulfing roots behind. Post-operatively, patient did well. His root pains subsided. Histopathology of mass excised confirmed secondaries from renal cell carcinoma (Fig 3). He was advised a course of postoperative radiation.



Fig. 1. X-ray lumbar spine showing spondylotic changes with mild scoliosis.

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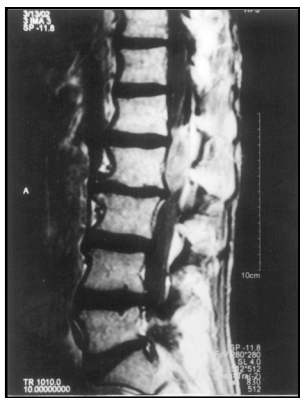


Fig. 2. MRI of lumbar spine showing intradural extramedullary mass at L₁-L₂ level.

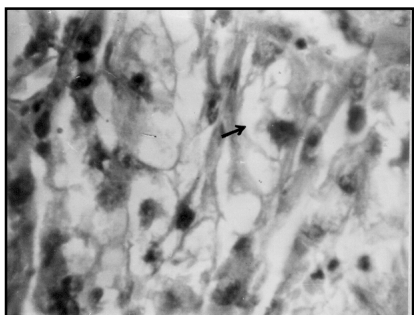


Fig. 3. Deposits of renal cell carcinoma - Clear cell type showing optically clear large tumour cells (→) 40X H&E stain.

Discussion

One third of adult spinal cord tumors are intramedullary and rest are extramedullary. Common extramedullary tumors are schwannoma, meningioma and filum terminale ependymoma (1). Numerous neoplastic and non-neoplastic processes may rarely present as extramedullary lesions. These include dermoids, lipomas, teratomas and inclusion cysts, etc. Although spinal carcinomatous meningitis frequently complicates systemic cancer, secondary metastatic involvement of spinal cord is rare (2). Metastasis usually comes from prostate, kidney, thyroid, lung and breast. Five to ten percent of cancer patients develop spinal metastasis (3). One in ten patients with symptomatic spinal metastasis present without a known primary (4,6).

Majority of spinal secondaries occur extradurally. Extradural metastases originate from arterial embolisation, by direct extension or by venous spread. While intradural extramedullary metastases are uncommon, these deposits are for the most part tertiary tumors that arise as seedlings from cerebral

secondaries and are transported through CSF to become entangled among the spinal nerve roots of cauda equina (7-9). Botterell *et al* had 125 cases, out of which 1.6% were intramedullary and 98% extradural and no case of intradural metastasis was seen by them (4). Perrin *et al* (7) had 200 spinal metastasis cases out of which extradural constituted 94%, 0.5% were intramedullary and only 5% were intradural extramedullary. Edelson (10) had 175 cases, out of which 3.4% were intramedullary, rest were extradural, but no intradural extramedullary case was noticed.

An intramedullary spinal cord metastasis from renal carcinoma was reported by Poggi *et al* in Clinical Nuclear Medicine (11). Sinardet *et al* reported neurological outcome of 152 surgical patients with spinal metastasis. They reported improvement in sensory status in 31%, 56% in motor and decrease in pain intensity in 47% cases after surgical decompression (12). In their experience, zero motor power is not a good surgical indication because of lack of postoperative improvement.

Devos *et al* reported leptomeningeal metastasis from ethmoid sinus adenocarcinoma (13). Brown *et al* reported metastatic spinal cord compression in patients with colorectal cancer who were treated with irradiation alone (14). Maghsudi *et. al* reported surgical decompression benefits patients with symptomatic spinal metastasis (15). Tanriover *et al* reported a rare case of chiasmatic low grade glioma presenting with sacral intradural spinal metastasis (16).

Pain is seen in 90% cases. There may be local tenderness. Often pain is attributed to slipped disc, muscle spasm, etc. Weakness, sensory loss and sphincter dysfunction come after pain. Plain X-Ray in majority show erosion of pedicle, sclerosis of bone, collapse vertebra and even pathological fracture in some cases. In our case. Plain X-ray showed none of these features. In fact except for some spondylotic changes, nothing significant was seen. It was MRI which clinched the diagnosis in our case. It showed intradural extramedullary mass at L₁-L₂ level.

Management of spinal metastasis is undertaken to relieve pain and preserve neurological function. Palliation is the real treatment goal. Therapeutic irradiation and surgical decompression are the principal and complementary treatment options. Irradiation is

particularly effective for metastasis of lympho-reticular origin, moderately effective for secondaries from breast/prostate and less effective for lung secondaries.

Indications of surgery are :

- Failure of irradiation therapy
- Unknown diagnosis
- Pathological fracture dislocation
- Rapidly progressing paraplegia

In our case, surgery was done to do effective decompression of nerve roots due to rapidly progressing paraplegia. Metastatic lesions from thyroid/kidney being vascular may need preoperative embolisation to minimize blood loss (17-19). Prognosis is based on degree of deficit, duration of symptoms, whether ambulatory preoperatively, type of tumour, location of tumour and degree of advancement of disease. Camins *et al* reported prognosis as follows (20) :

Surgery for spinal metastasis :

Preoperative condition	Postoperative		Survival time
	Walking ability	Satisfactory condition	
Normal 5/5	100	57	16 months
Weak 4/5	93	50	9.1 months
Bed ridden 3/5	62	35	0.7 months
Paraplegic 0/5	-	-	1.5 months

Operative treatment for spinal metastasis should not be relegated to the realm of last resort. Therapeutic irradiation and surgery are complementary management options that should be applied in a setting of multidispline cooperation among oncologist, radiotherapist, neurosurgeon and other spinal specialist.

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