

Role of Myelography in Spinal Tumours

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To assess the utility of myelography in various spinal tumours, 42 patients were selected from the Neurosurgical unit of Lahore General Hospital and this study was carried out for one year from August 1993 to July 1994. All the patients underwent myelographic examination. Age range of the patients was between 22 and 67 years (mean 44.5 years). The commonest spinal tumour seen was Neurofibroma 21/42 (50.0). Others were meningioma 8/42 (19.0%), metastases 6/42 (14.2%), lymphoma 3/42 (7.2%), ependymoma 2/42 (4.8%) and astrocytoma 2/42 (4.8%). The level at which these lesions were commonly seen was the thoracic spine 19/42 (45.2%) and the commonest nature of spinal lesion was intradural extramedullary tumour 23/42 (54.8%). Neurofibroma was mainly found to be intradural extramedullary in nature i.e., 17/21 (80%). Meningiomas accounted for 5/8 (62.5%) cases which were intradural extramedullary. All the cases of metastases 6/6 (100.0%) and lymphomas 3/3 (100.0%) were extradural. All the astrocytomas 2/2 (100.0%) were intramedullary, whereas 1/2 (50.0%) of Ependymomas were intramedullary. The study concludes that myelography is specific in diagnosing the nature of the spinal tumours (i.e. extradural, intradural extramedullary or intramedullary) and localizing the exact site and extent of the lesion, and assisting the neurosurgeon in excision and biopsy taking.

Key Words: Myelography, Spinal Tumours

The spinal tumours may be conveniently grouped into three broad classes based upon their anatomic relationship to the spinal cord and its meningeal coverings. Those which occupy the substance of the cord are called intramedullary (ependymoma, astrocytoma, oligodendroglioma, haemangioblastoma), those which are present between the cord and its meningeal coverings are intradural extramedullary (meningioma, neurofibroma, dermoid, epidermoid) and which are outside the dura are termed as extradural (metastases, lymphoma, neurofibroma).

Myelography is the radiological visualization of the spinal canal after instillation of radio-opaque contrast medium into the spinal subarachnoid space by lumbar puncture. Earlier oily contrast substances e.g. Myodil was used, but now they are replaced by water soluble non-ionic low osmolar contrast agents e.g. Iohexol due to their very low toxicity.

On myelography, the extradural lesions are seen as an external bulge in the contrast column or the column is seen slanting away from the inner margin of the spinal cord. A somewhat rounded filling defect is observed in the contrast column in cases of intradural extramedullary lesions. In intramedullary lesions the contrast medium is divided into two columns which flow on either side of the enlarged cord. The main aim of study was to analyse the myelographic findings of various spinal tumours and to assess the utility of myelography in these lesions.

Materials and Methods

This study was carried out for one year from August 1993 to July 1994. 42 patients of spinal tumours were collected from the Neurosurgical unit of Lahore General Hospital, Lahore.

10 ml of Omnipaque 300 mg was injected with complete aseptic technique in the subarachnoid space through a lumbar puncture needle of 20 gauge. The level of puncture was between L2 and L3, if unsuccessful, L3 and L4 was approached. The patient was placed in the left lateral decubitus or prone position with the table tilted slightly feet down. The routine films taken with under couch tube were AP, lateral, 45 degree right posterior oblique and left posterior oblique.

When thoracic or cervical region was the center of interest, the patient was turned prone, the head of the table lowered and the patient's neck hyperextended. After the examination the patient was instructed to use a soft pillow while lying down and encouraged high fluid intake.

Results

Table-1 Incidence of spinal lesions on myelography

Lesion	n=	%age
Extradural	16	38.1
Extramedullary	23	54.8
Intramedullary	3	7.1
Total	42	100.0

Table 2 Incidence of various spinal tumours (total 42).

Tumour	n=	%age
Neurofibroma	21	50.0
Meningioma	8	19.0
Metastases	6	14.2
Lymphoma	3	7.2
Astrocytoma	2	4.8
Ependymoma	2	4.8

Table 3 Sex incidence of various spinal tumours (total 42)

Tumour	Total	Male		Female	
		n =	%age	n =	%age
Neurofibroma	21	13	16.9	8	31.0
Meningioma	8	2	25.0	6	75.0
Metastases	6	4	66.7	2	33.3
Lymphoma	3	3	100.0	0	0.0
Astrocytoma	2	1	50.0	1	50.0
Ependymoma	2	0	0.0	2	100.0
Total	42	23	54.8	19	45.2

Table 4 Age of patients with various spinal tumours

Tumour	Total	Min. Age	Max. age	Mean Age
Neurofibroma	21	22	60	35.0
Meningioma	8	38	60	48.5
Metastases	6	30	67	47.8
Lymphoma	3	25	45	32.0
Astrocytoma	2	30	40	35.0
Ependymoma	2	23	27	25.0

Table 5 incidence of myelographic findings in various spinal tumours

Tumor	Total	Extradural		Extramedullary		Intramedullary	
		n=	%age	n=	%age	n=	%age
Neurofibroma	21	4	19.0	17	81.0	0	0.0
Meningioma	8	3	37.5	5	62.5	0	0.0
Metastases	6	6	100.0	0	0.0	0	0.0
Lymphoma	3	3	100.0	0	0.0	0	0.0
Astrocytoma	2	0	0.0	0	0.0	2	100.0
Ependymoma	2	0	0.0	1	50.0	1	50.0

Table 6 Level of individual spinal tumours

Tumor	Total	Cervical		Cervico dorsal		Dorsal		Dorsolumbar		Lumbar		Lumbosacral	
		n=	%age	n=	%age	n=	%age	n=	%age	n=	%age	n=	%age
Neurofibroma	21	8	38.1	3	14.3	5	23.8	5	23.8	0	0.0	0	0.0
Meningioma	8	0	0.0	1	12.5	6	75.0	0	0.0	1	12.5	0	0.0
Metastases	6	1	16.7	1	16.7	4	66.7	0	0.0	0	0.0	0	0.0
Lymphoma	3	0	0.0	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0
Ependymoma	2	0	0.0	1	50.0	0	0.0	0	0.0	0	0.0	1	50.0
Astrocytoma	2	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
Total	42	9	21.4	7	16.7	19	45.2	5	11.9	1	2.4	1	2.4

Discussion

In this study, collectively 23/42 (54.8%) patients were male while 19/42 (45.2%) were females. The age ranged from 22 to 67 years, with the mean age being 44.5 years. Out of a total of 42 spinal tumours, 23 (54.8%) were intradural extramedullary, 16(38.1%) were extradural and 3(7.1%) were intramedullary in nature.

The spinal tumours which were encountered were neurofibroma 21/42 (50.0%). Ross et al in 1986 found this figure to be 30% in his study. 8 (38.1%) Neurofibromas were located in the cervical region, 3 (14.3%), 5 (23.8%) and 5 (23.8%) in the cervicodorsal, dorsal and dorsolumbar region respectively. But Halliday et al in 1991 found 23/42 (54.8%) lesions located at the lumbar region. In this study 17/21 (81.0%) of neurofibromas were intradural extramedullary, whereas the other 4/21 (19.0%) were extradural in origin.

The number of meningiomas were 8/42 (19.0%), 5/8 (62.5%) were intradural extramedullary and 3/8 (37.5%) were extradural in nature. Dean et al in 1982 reported 15% of spinal meningiomas to be extradural. 6/8 (75.0%) were present in the dorsal region, whereas one each (12.5%) in the cervicodorsal and lumbar areas.

The cases of metastases reported were 6/42 (14.2%), all 6/6 (100.0%) being extradural in nature. The most favored site 4/6(66.7%) being in the dorsal region. Stark et al in 1982 revealed 69% of metastases in the dorsal region. One case each (16.7%) was found in the cervical and cervicodorsal region. 3/42 (7.2%) were cases of lymphomas, all 3/3

(100.0%) being extradural in nature and all 3/3 (100%) located in the dorsal region. 2/42 (4.8%) cases each of astrocytomas and ependymomas were found. All the astrocytomas 2/2 (100%) being intramedullary whereas 1/2 (50%) each of ependymomas were intradural extramedullary and intramedullary, Cervico-dorsal region was where 1/2 (50.0%) of ependymomas and astrocytomas were found. McCormick and Stein in 1990 found 40% of all intramedullary tumours as astrocytomas, whereas this study reveals 2/3 (66.7%) incidence.

Melography was found to be a useful diagnostic modality in cases of spinal tumours. Most of the cases were intradural extramedullary in nature 23/42 (54.8%) and the commonest tumour encountered was neurofibroma 21/42 (50.0%). The level at which most tumours were seen was the thoracic region 19/42 (45.2%).

Neurofibromas 17/21 (81.0%) and meningiomas 5/8 (62.5%) were mainly found to be intradural extramedullary. All the lymphomas 3/3 and metastases 6/6 (100%) were extradural in nature. All astrocytomas 2/2 (100%) were intramedullary, whereas the ependymomas were found to be 1/2 (50.0%) intradural extramedullary and 1/2 (50%) were intramedullary.

The study concludes that myelography is specific in diagnosing the nature of a spinal tumour (i.e. extradural, intradural extramedullary, intramedullary) and localizing the exact site of the lesion and assisting the neurosurgeon in excision and taking biopsy.

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