



## LUMBAR TUBERCULOSIS AND THEIR COMPLICATIONS USING CONVENTIONAL MYELOGRAPHY VERSES CT MYELOGRAPHY

### Medical Science

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### ABSTRACT

**Background :** The syndrome of low backache with or without neurological deficit is a common diagnostic problem, an orthopedic surgeon faces in daily practice. In india tuberculosis itself is the commonest infection. It is common in males as compared to females. Common clinical manifestations in tuberculous lesion . Myelography detects earlier block in contrast column hence helpful in deciding management of the patient which will prove to be specific and cost effective instead of subjecting the victims to multiple investigations. So the purpose of the study was to compare conventional versus CT myelography in Lumbar tuberculosis.

**Materials and Methods:** The present study included 80 patients who clinically presented with complains ranging from low backache to paraplegia, with or without bladder involvement and who were clinically considered to have compressive myelopathy. All the above patients were subjected to conventional myelographic evaluation . Then the patient was subjected to CT scan evaluation of the lumbar spine by taking sequential sections on Spiral CT Scan unit.

**Results :** Only 5 out of 80 patients were observed suffering from tuberculous lesion of lumbar spine. Out of these 5, 2 patients were between 51-60 years of age and 1 each in 21-30, 31-40 and 41-50 years of age. All the patients were males. Loss of definition of end plate margins, was detected in 5 patients by both myelographies (CT myelography and Conventional myelography).

**Conclusion:** Conventional myelography proves superior in appreciating the reduction in the height of vertebral bodies, disc spaces, depicting the lesions and in extending the information pertinent to the deviations in the spinal curves.

### KEYWORDS:

### INTRODUCTION

The syndrome of low backache with or without neurological deficit is a common diagnostic problem, an orthopedic surgeon faces in daily practice. Such patients initially are treated conservatively with analgesics, short wave diathermy, tractions and exercises. Such patients attend the OPD with a variety of presentations and localization of lesion is too difficult at times. Such patients are subjected to lumbar myelography.<sup>1,2</sup>

The compressive lumbar myelopathies are resultant of multiple causes ranging from osteophytic growths to metastatic lesions. Initial anatomical dimensions of canal also play a great role in presentation of such patient.<sup>3,4</sup> Roomy lumbar canal may keep the lesion hidden for a long time, whereas, a congenital narrow canal may bring the patient of compressive myelopathy in a very early stage.

The compression of the cord or nerve roots in lumbar region may present with simple pain or may result into an irreversible damage. It is therefore very important to promptly detect and locate the cause of compression of the cord or nerve roots in lumbar region. Early detection helps in prompt surgical management thus preventing the agony and irreversible damage. The facility for examining the patient by CT scanner being available in the Institute, the study was taken for comparing the results of the routine conventional myelography with the myelographic CT evaluation of the patients presenting with compressive myelo/neuropathies.<sup>5,8</sup>

There are multiple lesions affecting lumbar region, however besides degenerative disc lesion and canal stenosis tuberculosis infection stands important entity. In india tuberculosis itself is the commonest infection. It is common in males as compared to females. Common clinical manifestations in tuberculous lesion of lumbar spine include constitutional symptoms, backache, spinal tenderness, paraplegia with deformity. Myelography detects earlier block in contrast column hence helpful in deciding management of the patient.<sup>9-12</sup>

Weighing the advantages and disadvantages, it will be possible for one to plan the investigations in the victims ranging from low backache to paraplegia with or without bladder involvement which will prove to be specific and cost effective instead of subjecting the victims to multiple investigations. With this in mind the present study of comparative study conventional versus CT myelography in Lumbar tuberculosis was undertaken.

### Materials and Methods

The present study included 80 patients who clinically presented with symptoms ranging from low backache to, paraplegia, with or without bladder involvement and who were clinically considered to have compressive myelopathy. All the above patients were subjected to conventional myelographic evaluation.

Detail clinical evaluation by noting the presentation of the patient's clinical examination, past history, and family history. CNS evaluation was performed in detail by evaluating sensory and motor systems. Bladder and/or bowel involvement was noted. Plain radiography of lumbar vertebral column was studied by carrying out antero-posterior and lateral views and if needed oblique views of lumbar spine were taken. In some cases the radiographs available with the patients were reviewed to avoid extra-radiation to the patient. Radiography was carried out on Siemens 500mA X-ray unit on 12"x15" or 10"x12" size x-ray films. Wherein Kv ranging from 70 to 90 and : MAs ranging from 80-125 depending on the thickness of the part of the patient to be examined, were applied. Bucky radiography with the tube distance of 100cms was used as the fixed parameters. Myelographic evaluation - The referred patients were advised the preparation for the abdomen . On prior day, at the time of giving the appointment for myelography patients were also evaluated by Ophthalmologist for signs of raised intra-cranial tension.

On the day of examination, valid consent of the patient was taken. Blood pressure, pulse, status of hydration and sensitivity to the contrast were noted. Conventional Myelography was done under all aseptic precautions by doing lumbar puncture at L 2-3 or L3-4 level and using 8-10ml of Inj. Omnipaque (300mg Iodine/ml). Then the patient was subjected to CT scan evaluation of the lumbar spine by taking sequential sections on Spiral CT Scan unit ( Somatome Plus 4-A - Siemens make).

The CT scan examination of the lumbar spine (L-S) was performed by selecting 5mm thickness of a slice with 5mm feed. If required, slice thickness was reduced to 3mm. The gantry tilt was planned according to the level of lesion. Post processing of the images was done by using 3-D functions i.e. Multi-Planner Reconstruction (MPR) and Shaded Surface Display (SSD). The examination covered the adjoining area of the level of lesion, for example lower thoracic evaluation was carried out when the level of lesion was at L 1 .The images were documented by using the KODAK Laser Camera by observing the protocol of 20 or

25 cut on one film (14" x 17") and in different windows.<sup>13-16</sup>

After the myelographic and CT evaluation procedure were over the patient was hospitalized under the clinician's care for post-myelography observation. The data collection was done and analyzed using appropriate statistical method.

**Table No. 6 (A) Observations regarding tuberculous lesions of the lumbar spine**

Age (years)	Male	Female	Total
< 10	0	0	0
11 – 20	0	0	0
21 -30	1	0	1
31 – 40	1	0	1
41 – 50	1	0	1
51 – 60	2	0	2
61 – 70	0	0	0
71 – 80	0	0	0
> 80	0	0	0
Total	5	0	5

**Table No. 2 Radiological features in 5 patients presenting with tuberculous lesions of lumbar spine and their comparison between conventional myelo and CT myelographic evaluation**

Radiological features	No. of cases	Detected on		Remarks
		Con. Myelo	CT Myelo	
Loss delineation of endplate margins	5	5	5	Both methods are equally sensitive
Narrowing of disc space height	5	5	3	Con.Myelo better
Destruction of V.body/bodies	5	5	5	Both methods equally effective
Wedging of vertebral bodies	4	4	4	Con. myelo better
Collapse of vertebral body	4	4	4	Both method equally sensitive
Angular kyphosis /scoliosis	2	2	1	Con.Myelo better
Sclerotic changes in vertebral bodies	1	0	1	CTM picks up earlier changes
Soft tissue involvement in paraspinal area	4	1	4	CTM far more superior & sensitive
Calcific densities in the soft tissues in	3	1	3	CTM superior
Myelographic Block	1	1	1	Both methods equally depicted blocks
Complete-----	4	4	4	
Partial-----				

**Discussion :** Tuberculosis is the commonest infection in developing countries. Extrapulmonary tuberculosis is called Pott's disease. When it occurs in spine is called Pott's spine. It usually affects lower thoracic & upper lumbar vertebrae. Tuberculous lesion of the spine was observed common in males. (Epstein)<sup>14-17</sup>. It appears common in young adults. Prevalence in asia is much more than western countries. Destruction of adjacent vertebral bodies, destruction of intervertebral space, collapse of spinal elements, anterior wedging are the major findings with x rays and CT. Few cases may show sclerotic changes in vertebral bodies and /calcific changes in soft tissue with /without myelographic block. Block can be partial/ complete.<sup>18-21</sup>

Only 5 out of 80 patients were observed suffering from tuberculous lesion of lumbar spine. Out of these 5, 2 patients were between 51-60 years of age and 1 each in 21-30, 31-40 and 41-50 years of age. All the patients were males.

When compared, it was observed that loss of definition of end plate margins, was detected in 5 patients by both myelographies (CT myelography and Conventional myelography). Disc space narrowing was better depicted on conventional myelography i.e. out of 5 patients detected to have narrowing in the disc space by conventional myelography only 3 could be picked up on CT myelography. Angular kyphosis/scoliosis could be appreciated in 2 patients on conventional

myelography as against in only one patient on CT myelography.<sup>22-24</sup>

Destruction of vertebral body was appreciated in 5 patients by either of the methods but all the 5 patients had gross destruction of vertebra/vertebrae. In fact, smaller lytic areas in the vertebrae were best appreciated on CT examination.

Soft tissue involvement in paraspinal area was detected on CT myelography in 4 patients, but conventional myelography revealed the same in only one patient. Calcifications in the soft tissue in paraspinal areas was seen in 3 patients on CT myelography as against, it was picked up in only one on conventional myelography. In respect of a block in contrast column, whether it is complete or partial was best detected on CT than on conventional myelography. As CT myelography can detect trace of the contrast crossing the block which, conventional myelography may not be able to detect. It is therefore, CT myelogram stands superior to conventional except in the areas of appreciating disc space narrowing and kyphotic/scoliotic deformities. For the rest of the parameters CT myelography proved accurate, sensitive and specific.<sup>25,26</sup>

There is no bar so long the age and sex are concerned, even then the present study revealed the male preponderance. It was observed that CT myelography proves superior in extending the information pertinent to lytic lesions of the body, involvement of appendages, extension of the lesion in soft tissues, calcification in the soft tissues and in depicting the severity of the block in the CSY circulation.

Conventional myelography proves superior in appreciating the reduction in the height of vertebral bodies, disc spaces, depicting the skip lesions and in extending the information pertinent to the deviations in the spinal curves.

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