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Original Research Paper

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PREVALENCE OF POTT'S SPINE IN THE STATE OF JHARKHAND AMONG THE PATIENTS OF COMPRESSIVE MYELOPATHY

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ABSTRACT

AIMS: Cross sectional observational comparative study in a tertiary care hospital on "Prevalence of pott's spine in Jharkhand among the patients presented with Compressive Myelopathy".

MATERIAL AND METHODS: 100 subjects (71 male and 29 female) were selected for the study, who had presented with acute or chronic backache, restricted movements, paraesthesia, sensory or/and motor weakness and sphincter disturbances.

RESULTS: Total 100 cases were taken for study, among them 88 had been detected as compressive myelopathy due to various causes. The maximum numbers of patients had compressive myelopathy belongs to age group of 40-50 years (37.5%) followed by age group of 50-60 years (26.1%). Most of the cases of Compressive Myelopathy were due to pott's spine (39.7%), followed by Traumatic, Metastatic, Spinal neoplasm, Pyogenic Osteomyelitis and Degenerative disc disease with the prevalence of 18.1%, 15.9%, 10.2% and 5.6% respectively.

CONCLUSION: Out of 100 patients, 88 had been detected with compressive myelopathy due to various causes. The prevalence of pott's spine was highest (39.7%) among the patients presented with compressive myelopathy in the state of Jharkhand.

KEYWORDS : Compressive Myelopathy, Pott's spine.

INTRODUCTION

The pott's spine is tuberculosis of spine caused by Mycobacterium Tuberculosis infection, remains a major public health hazard mostly among low socio economic group in Jharkhand; where poverty, malnutrition, alcoholism and drug resistance have combined to spread of the disease. In this study total 100 cases were selected from various age groups of both sexes (Table-1).

The thoracic and the thoraco-lumbar spine are the most common area involved, comprising 48% to 67% respectively and the lumbar spine about 27%. Most of the cases are seen during the first four decades of life. Pott's spine is one of the oldest diseases known to mankind and has been found in Egyptian mummies dating back to 3400 BC [1]. The Pott's spine name traces back its origin from the description of tuberculous infection of the spine by Sir Percival Pott in his monograph in 1779 [2].

In 2016, as per the World Health Organization (WHO) there was an estimated incidence of 10.4 million new TB cases [3] .The South East Asian Region alone had 46.5% of the global TB burden, whereas European region contributed only 3% [4, 5]. Approximately 10% skeletal involvement in case of extrapulmonary tuberculosis have been noted. Most commonly spines followed by the hip and knee are affected. 50% cases of skeletal tuberculosis are spinal tuberculosis [6]. Thoracic spine (42%), thoracolumbar spine 67% and lumbar spine (26%) regions are most affected with other regions less than 12% each [7]. Spinal tuberculosis is secondary to hematogenous spread from a primary infection most commonly the lungs. Since paradiscal vessels supplies the subchondral bone on either side of the disc space; therefore paradiscal vertebral involvement is most common. The other patterns are central (with predominant vertebral body involvement), posterior (involving the posterior structures primarily) and non-osseous involvement (presenting with the abscess) [8, 9]. Progressive vertebral destruction leads to spinal kyphotic deformity and instability.

Back pain is typical presentation in uncomplicated cases; whereas deformity, instability, and neurological deficit are associated with complicated tubercular spine disease. Secondary to inflammation; back pain in tuberculosis may be due to the active disease, bone destruction and instability. Rest pain is pathognomonic. Weight or appetite loss, fever, and malaise/ fatigue are least likely with extrapulmonary tuberculosis [10, 11].

Early diagnosis and effective management by "functional treatment," can resolve the disease completely. Many joints will heal with retention of functional arc of motion in moderately advanced disease,; Surgical treatment can offer a mobile joint with healed status in advanced disease [12].

METHODOLOGY:

The study is a part of a major study entitled "MRI Evaluation of Compressive Myelopathy of Dorsolumbar Spine in Adults" was conducted in Rajendra institute of Medical sciences, Ranchi, in the department of Radio-Diagnosis. The target of present study is those patients of Jharkhand hailing from rural as well as urban background. Cases were referred from Medicine, Neurosurgery and Orthopedics departments with the complains of acute or chronic backache, restricted movements, paraesthesia, sensory or/and motor weakness and sphincter disturbances.

PROCEDURE:

Total 100 patient of back pain were taken from different department with symptoms suggestive of Compressive Myelopathy were selected for MRI. Presenting complains with detail history taken. Clinical examination with basic laboratory test was done along with X-Ray Chest PA view, Dorsolumbar spine AP and lateral view. However plain radiographs have no role in early diagnosis of spinal TB but 60% to 70% of spinal TB may have an active pulmonary lesion, and thus chest radiograph is essential [13].

MRI:

There are four common sites of vertebral tuberculosis: paradiscal, central, anterior and appendicial type [12]. On an average, involvement of 3.4 vertebrae was reported by

Hodgson and Stock in each patient[14]. A figure of 3.8 was given by Mukopadhyaya and Mishra [15]. Hoffman et al [16] compared the usefulness of CT and MRI in 25 children with spinal tuberculosis. Axial CT was the most accurate method for visualizing the posterior bony element. Sagittal MRI best showed the severity and content of extradural compression and helped to differentiate between an abscess and fibrous tissue. MRI is the neuroimaging of choice for spinal tuberculosis. It is more sensitive than x-ray and more specific than CT. MRI allows for the rapid determination of the mechanism for neurologic involvement [17, 18, 19, 20]. Gadolinium-enhanced MRI further helps in differentiating TB from other causes of infective spondylodiscitis [21,22]. Whole spine screening aids in identifying skip lesions. MRI is also of immense value in assessing the response to treatment [23].

All the patients underwent plain and contrast enhanced MRI. Pre and post contrast T1 weighted spin-echo (T1W SE), T2 weighted spin-echo (T2W SE) sequences in axial, sagittal and if required coronal plain were obtained. IV Gadolinium Dimeglumine at the dose of 0.1 mmol/kg of body weight of the patient was used for contrast.

On the basis of MRI picture we compare the signal intensity of the lesion subjectively with signal intensity of muscles and categorized the lesions in the following types:

On T1Wi: Hypointense/ Isointense/ Hyperintense
On T2Wi: Hypointense/ Isointense/ Hyperintense

On Contrast Enhanced MRI: Nonenhancement/ Enhancement.

Multiplanar MRI helps in lesion localization and extension i.e. Thoracic, Thoracolumbar or Lumbar/ Single or Multiple/ Pre and paravertebral soft tissue extension/ Epidural extension with spinal cord and nerve root compression/ Evidence of vertebral collapse (complete or partial) and kyphotic deformities were identified.

RESULTS:

In present study total 100 patients with history of back pain and various symptoms were properly evaluated by clinical methods, laboratory tests and imaging (Table-2). 88 cases had been detected as compressive Myelopathy (Table-4). Prevalence is more in males (70.45%) than female (29.54%) in the age group 41-50 years; thoraco-lumbar spines are most commonly involved. Most common cause is pott's spine.

DISCUSSION:

In present study it has observed that the Pott's Spine is the major cause of compressive myelopathy. Out of 88 cases of compressive myelopathy 62 were male and 26 were female (table-3). So, it clearly indicates that the compressive myelopathy is more common in males may be due to more outdoor activities and exposure. Most of the patients presented with weakness of lower limbs 89% (78), followed by back pain, weight loss, bladder dysfunction, tingling & numbness and fever i.e.: 82.9% (73), 46.5% (41), 43.18% (38), 37.5% (33) and 35.22% (31) respectively (Table-2).

Out of these 100 cases 88 had the positive MRI reports suggestive of compressive myelopathy of various etiologies i.e.: Pott's spine, Traumatic, Metastatic, Neoplastic, Pyogenic and Degenerative disc diseases; Pott's Spine is the most common cause of compressive myelopathy (39.7%) (Table-4). In pott's spine most common site of lesion is thoraco-lumbar spine (62.8%) followed by lumbar spine (37.1%) (Table-6). Out of 35 cases of pott's spine; males were 57.14% (20) and females were 42.85% (15).

Predisposing factors for tuberculosis includes poverty, overcrowding, illiteracy, malnutrition, alcoholism, drug abuse, diabetes mellitus, immunosuppressive treatment, and HIV infection [24].

CONCLUSION:

The prevalence of Pott's spine in the state of Jharkhand among the patients of Compressive Myelopathy was 39.7% (35), whereas sex wise distribution in males were 57.14% (20) and in females 42.85% (15).

According to age wise distribution more common in the age group of 41-50years 42.8% (15) followed by 31-40, 51-60, 18-30 and 61-70 i.e.: 25.7% (9), 17.1% (6) 8.57% (3) and 5.7% (2) (Table-5). Most common site of lesion in pott's spine is thoracolumbar spine 62.8% (22) followed by lumbar spine 37.1% (13) (Table-6).

So, this study suggests that pott's spine is the major cause of compressive Myelopathy in the state of Jharkhand. Because of poverty, illiteracy, malnutrition, alcoholism and poorly available health care facilities patients' early diagnosis and treatment compromised; results in development of such co-morbidity. So the health awareness, health education, proper nutrition, early diagnosis and proper treatment will minimize the burden of mortality and co-morbidity due to pott's spine.

Table-1: Age wise Number of population examined

Sl. No	Age Groups in Years	No. of Cases
1	18-30	13
2	31-40	22
3	41-50	35
4	51-60	24
5	61-70	6
6	Total	100

In this study total 100 cases were taken. According to age group 18-30, 13 cases were taken, followed by 31-40, 41-50, 51-60 and 61-79 i.e. 22, 35, 24 and 6 respectively.

Table-2: Symptom wise distribution of Population examined.

Sl. No.	Presenting Features	No. of Cases	Percentage
1	Back Pain	73	82.9
2	Weakness of lower limbs	78	89
3	Tingling and Numbness	33	37.5
4	Fever	31	35.22
5	Weight loss	41	46.5
6	Bladder Dysfunction	38	43.18

Out of total 88 cases of Compressive Myelopathy, 82.9% (73) were presented with back pain, 89% (78) were presented with weakness of lower limbs, 37.5% (33) were presented with Tingling sensation, 35.22% (31) were presented with Fever, 46.5% (41) were presented with weight loss and 43.18% (38) were presented with Bladder dysfunction.

TABLE - 3: Male: female ratio of the compressive myelopathy cases.

Sl. No.	Sex	No. of Cases	Percentage
1	Male	62	70.45%
2	Female	26	29.54%

Out of total 88 cases of compressive Myelopathy male 70.45% (62) and female 29.54% (26). This study is also suggestive that males are more prone to develop Compressive Myelopathy.

Table-4: Cause wise distribution of the population examined.

Sl. No.	Etiology of Compressive Myelopathy	No. of Cases	Percentage
1	Pott's Spine	35	39.7

2	Traumatic	16	18.1
3	Metastatic	14	15.9
4	Neoplastic	9	10.2
5	Pyogenic	9	10.2
6	Degenerative disc disease	5	5.6
7	Total	88	100%

This table gives the picture of individual etiological prevalence among the patients examined presented with Compressive Myelopathy. According to study most common cause of Compressive Myelopathy in the State of Jharkhand is Pott's Spine (39.7%), followed by Traumatic, Metastatic, Neoplastic, Pyogenic and Degenerative disc disease i.e.: 18.1%, 15.9%, 10.2%, 10.2% and 5.6% respectively.

Table-5: Age wise distribution of the pott's spine cases.

Sl. No	Age group in years	No. of Cases	Percentage
1	18-30	03	8.57
2	31-40	09	25.7
3	41-50	15	42.8
4	51-60	06	17.1
5	61-70	02	5.7

In this table it is suggestive that maximum cases of pott's spine in the age group of 41-50 i.e.: 42.8% (15 out of 35), followed by age group 31-40, 51-60, 18-30 and 61-70 i.e.: 25.7% (9), 17.1% (6), 8.57% (3) and 5.7% (2) respectively. In this study it clearly indicates that pott's spine is more common among the age group of 41-50 years in Jharkhand.

Table-6: Site of lesion wise distribution of pott's spine cases.

Sl. No	Location	No. of Cases	Percentage
1	Thoraco-lumbar	22	62.8
2	Lumbar	13	37.1

This Table suggests that the Pott's spine mostly involves Thoraco-lumbar Spine 62.8% (22 out of 35) followed by Lumbar spine 37.1% (13 out of 35).

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