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A Study on the Clinical Profile and Radiologic Features of Patients with Non- Traumatic Myelopathy in A Tertiary Care Centre

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ABSTRACT

Background: *Myelopathy is a disabling disease, which not only affect the motor, sensory &autonomic functions, but also have serious psychosocial sequelae. This study aims at assessment of the clinical features of patients suffering from non-traumatic myelopathy in a tertiary care centre and also to study whether the clinical localization correlates with the radiological findings.*

Objectives: *To study the clinical and radiological profile of patients admitted with non-traumatic myelopathy in Government Medical college hospital, Thiruvananthapuram, Kerala. To estimate the prevalence of compressive and non-compressive aetiology in patients admitted with non-traumatic myelopathy in medical wards. To study the agreement between clinical spinal segmental level estimate and radiological findings.*

Materials and Methods: *This is a hospital based descriptive study on patients admitted with quadriplegia or paraplegia. The details of patients including demographics, symptoms and signs, etiology and radiological diagnosis were using pretested structured data sheet.*

Results: *A total of 64 patients were studied of which 37 (57.8%)were male and 27(42.2%) were females. 36 patients (56.3%) presented with clinical features of acute myelopathy, 8 patients (12.5%) had sub-acute presentation and 20 (31.3%) had chronic history of symptoms. 13 (20.3%) patients had quadriparesis and 51 (79.7%)patients had paraplegia. 32 (50%) had compressive myelopathy and 32 (50%) had non compressive myelopathy The most common cause of Compressive myelopathy in our study was Tuberculosis of spine (34.3% among compressive myelopathy) followed by cervical spondylitis (31.2%) and metastasis(6). Out of 11 patients with tuberculosis of spine, in seven patients the spinal segment level diagnosed clinically were within ± 1 spinal segment in MRI and in 4 patients within ± 2segments in MRI. The most common cause of non-compressive myelopathy inour study was Transverse Myelitis (24 cases among 32 cases of non compressive myelopathy) (75%). Only in 6 patients (18.75%), spinal segment level diagnosed clinically corresponded to spinal level in MRI of spine.*

Conclusion: *Tuberculosis of the spine is the most common cause of compressive myelopathy and Transverse Myelitis is the most common non compressive myelopathy in this study. The clinical spinal segment estimate and radiological spinal segment level has more agreement in compressive myelopathy than non-compressive myelopathy. Magnetic resonance imaging is an essential tool in the diagnosis of myelopathy.*

Keywords: *Compressive myelopathy, Non-compressive myelopathy.*

Introduction

The term "Myelopathy" implies diseases of the spinal cord. They are broadly classified into compressive and non compressive myelopathies. The consequence of myelopathy can be motor, sensory, autonomic or a combination of these deficits which can range from mild spasticity to severe quadriplegia or paraplegia leading to severe morbidity. The size of the lesions range from small to extensive[1]. This study is on non-traumatic myelopathy. Non traumatic myelopathy has a variety of aetiologies.Imaging plays a crucial role in accurate assessment of the level of lesion and in diagnosing the underlying etiology. Magnetic Resonance Imaging (MRI) is the mainstay in evaluation of myelopathy [4,6]In our study, vertebral tuberculosis made the most common etiology for compressive myelopathy which is similar to studies conducted in South East Asian countries as well as in African countries.[5] B Vaishnav *et al*; ina study on acute non traumatic paraperesis inIndian population 50% of cases accounted by compressive etiology and 30% noncompressive and the rest 20% of unknown cause. Most common etiology beingvertebral tuberculosis or Pott's spine (40%) followed by acute transverse myelitis (26%). MRI helps to confirm the site and etiology[7]

Aims and Objectives

To study the clinical profile and clinicoradio-logical correlation of patients admitted with non-traumatic myelopathy

Materials and Methods

It is a Hospital based descriptive study conducted in the medical wards of Govt: Medical College, Trivandrum from March 2015 to March 2016. Patients admitted with quadriplegia, quadriparesis, paraplegia and paraperesis due to non-traumatic myelopathy inthe medical wards of Medical college Hospital, Trivandrum were included. A structured questionnaire was used to collect the data. The details of patients including demographics, symptoms and signs, etiology and radiological diagnosis were assessed.Appropriate investigations like CSF study, Mantouxtest, Erythrocyte Sedimentation rate (ESR), Sputum Acid Fast Bacilli (AFB) examination, HIV, VDRL, serum Vit B12 levels were done.Patients were classified into compressive and non compressive myelopathy based on clinical and radiological findings. Accuracy of clinical level estimated was compared with the radiological level.

Inclusion criteria

Patients of age more than 15 years admitted with non traumatic myelopathy.

Exclusion criteria

1) Prior history of trauma to spine
2) Patients not willing to participate in the study.
3) Patients with hypokalemia, peripheral neuropathy, myopathy or myasthenia.

Data analysis

The collected data was consolidated and analysed using appropriate statistical
techniques using SPSS.

Ethical considerations

Written informed consent was obtained from the participants.
Confidentiality was ensured.

Observations and Results

Of 64 patients 37(57.8%) were males and 27 (42.2%) were females. Age of presentation varied from 14 to 75 years with mean age of 44.59 (±14.585) years. Of them, 36 (56%) presented with acute myelopathy, 8 (12.5%) with sub acute and 20 (31.3%) with chronicmye-lopathic symptoms. Among the 64 patients, 32 had compressive myelopathy and 32cases had non compressive myelopathy.24 patients (37.5%) had transverse myelitis, an immune demyelinating disease affecting the cord. Among the cases of transverse myelitis, 58% were males. Potts spine

was seen in 17% of cases and 91% of patients were males. The mean age of presentation was 35 years in transverse myelitis, 49.6 years in Pott's spine, 59.1 yrs in Spondylotic myelopathy, 58.6 years in metastatic myelopathy, 37years in spinal cord intramedullary tumours and 30.5 years in multiple sclerosis.51 patients (79.6%) had weakness of lower limbs (paraplegia) on presentation while 13 (20.3%) patients had involvement of all four limbs (quadriparesis). All patients with tuberculosis of spine had paraperesis while 79% (19 out of 24) of patients with transverse myelitis had paraplegia. On presentation, 46.9% had hypertonia of limbs while 40.6% had hypotonia and 12.5% had normal tone. 56% patients presented with less than grade 3 muscle power (Medical Research Council criteria for grading of power) and 44% withmore than or equal to grade 3 muscle power. Deep tendon reflexes were brisk in 48%, sluggish in 25% and normal in 27% of patients. 64.1% of patients had posterior column involvement. 67.2% of patients had pain and temperature sensory loss. 67.2 % of patients had a definite sensory upper level. 31.8 % of patients had patchy sensory level. Radicular pain was reported by 35.9% of patients.

Elevated CSF protein was seen in 42.2 % of patients, elevated ESR was seen in 23.4% of patients, HIV test was positive in 1.6% Various etiologies studied in our study were Transverse Myelitis (24), TB spine (11),Intervertebral Disc Prolapse (10), CNS tumors (3), Metastasis (6) , Multiplesclerosis (2) and others (8).Others included anterior spinal artery occlusion (2), Arteriovenous malformations (2), HIV myelopathy (1), Systemic lupus erythematosis (1), Hereditaryspastic paraplegia (1) and spinal canal stenosis. The most common cause of Compressive myelopathy in our study was Tuberculosis of spine (11). In the study conducted in BHU, Varanasi by Chaurasia R N et al, tuberculosis was the most common cause of non traumatic compressive myelopathy (in 35.7% of cases)[2].In the study conducted by Bhumika Vaishnav et al most common cause of acute non-traumatic paraperesis was Pott's Spine(40%) [5]. In our study, the mean age of patients withtuberculosis of spine was 49.64 (±14.045). Out of 11 patients, 10 were males and 1 was female. All the elevenpatients presented with paraplegia .Most common symptoms were inability to walk, sensory loss and radicular pain .Majority presented with hypertonia, brisk deep tendon reflexes, sensory loss and sharp sensory level. Mantoux test was positive in all patients. Sputum AFB was positive in 3 patients. Magnetic Resonance Imaging (MRI) of spine was performed in all 11 patients .Lowerthoracic vertebrae were the most commonly affected. MRI showed increasedsignal intensity in T2 Weighted images from the vertebrae, disc and soft tissues and T1 weighted images showed decreased signal from the affected vertebral marrow. Focal and heterogenous enhancement was seen with contrast. Inseven patients the spinal segment level diagnosed clinically were within ± 1spinal segment in MRI and in 4 patients within ± 2 segments in MRI.

The second most common cause for compressive myelopathy was Cervical Spondylosis (10 cases). Of the 10 patients 6 were males and 4 were females. Mean age of presentation was 59.10 (±8.425). 4 patients presented with paraparesis and 6 with quadriparesis. Most common symptoms were in ability to walk with upper limb involvement, paraesthesia and radicular pain.MRI of spine was done in all of them. All patients had radiological changes such as degenerative changes in cervical disc, osteophytes, reduced disc spaceand evidence of cord compression on MRI. All had multilevel involvement. Next most common cause of compressive myelopathy is metastasis (6cases). Of the 6 patients 2 were males, 4 were females. Two had Multiple Myeloma, 1 had prostate cancer, 1 had colonic malignancy and 2 hadCarcinoma Breast. Clinical spinal segment level estimate did not agree with spinal segment level in 2 patients, corresponded to ± 1 segment level in 3patients and ± 2 segment level in 1 patient.Fourth most common cause of compressive myelopathy was spinal cord (3

cases). All were females. 2 had meningioma and 1 had hemangioblastoma. Clinical spinal segment level corresponded to ±1spinal segment level in MRI in all 3 of them.Other causes of compressive myelopathy included spinal canal stenosisin 1 patient and AV malformation in 2 patients. The most common cause of non- compressive myelopathy in our study was Transverse Myelitis (24 cases). In the study conducted in BHU, Varanasifrom 2002 to 2004, the most common cause of non- compressive myelopathywas Transverse Myelitis. In another study by BhumikaVaishnav[7] et al also themost common cause for non -compressive myelopathy was acute TM. (26%). The mean age of presentation was 35.08 (±10.198). 19 patients presented withparaplegia and 5 with quadriplegia. Of the 24 cases 14 were males and 10were females. Most common symptoms were bowel and bladder symptoms, paraesthesia and inability to walk. It was associated with fever in 91% ofpatients. Majority presented with hypotonia, less than grade 3 power, posteriorcolumn involvement, extensor plantar and a sharp sensory level. CSF proteinwas elevated in 95% of them. MRI of Spine was performed in all 24 of them. Most common spinal segments involved were cervical and thoracic. Mostcommon MRI finding was long segment T2 hyperintensity of cord more than 3 segments involving more than 2/3rd of cord cross section. Only in 6patients, spinal segment level diagnosed clinically corresponded to spinal level in MRI of spine. Multiple Sclerosis was seen in 2 patients. Both were females. Mean age was 30.50 years (±13.435). Clinical segment level was not inagreement with spinal segment level in MRI spine in 1 patient and corresponded to ±2 segment level in 1 patient.Other causes of non-compressive myelopathy included Anterior SpinalArtery Occlusion (2 patients), HIV myelopathy (1 Patient), SLE vasculitis (1patient) and Hereditary Spastic Paraplegia (1 patient).Overall in44% ofpatients there were no agreement between clinical and radiological spinal segmental level. 68% of cases with non-compressive myelopathy did not showagreement and 18% of compressive myelopathy did not show agreement.

Discussion

Over all the most common cause of non-traumatic myelopathy in our study wasTransverse Myelitis which is different from other Indian studies where Pottsspine were the most common cause. Majority of cases of transverse myelitis had a long segment of longitudinal demyelination. Tuberculosis of the spine is the mostcommon cause of compressive non traumatic myelopathy which is similar to other Indian studies. The clinical spinal segment estimate and radiological spinal segment level hasmore agreement in compressive myelopathy than non-compressive myelopathy. Magnetic resonance imaging is an essential tool in the diagnosis of myelopathywhich helps in early and accurate detection of etiology which is crucial in treatment and outcome.

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